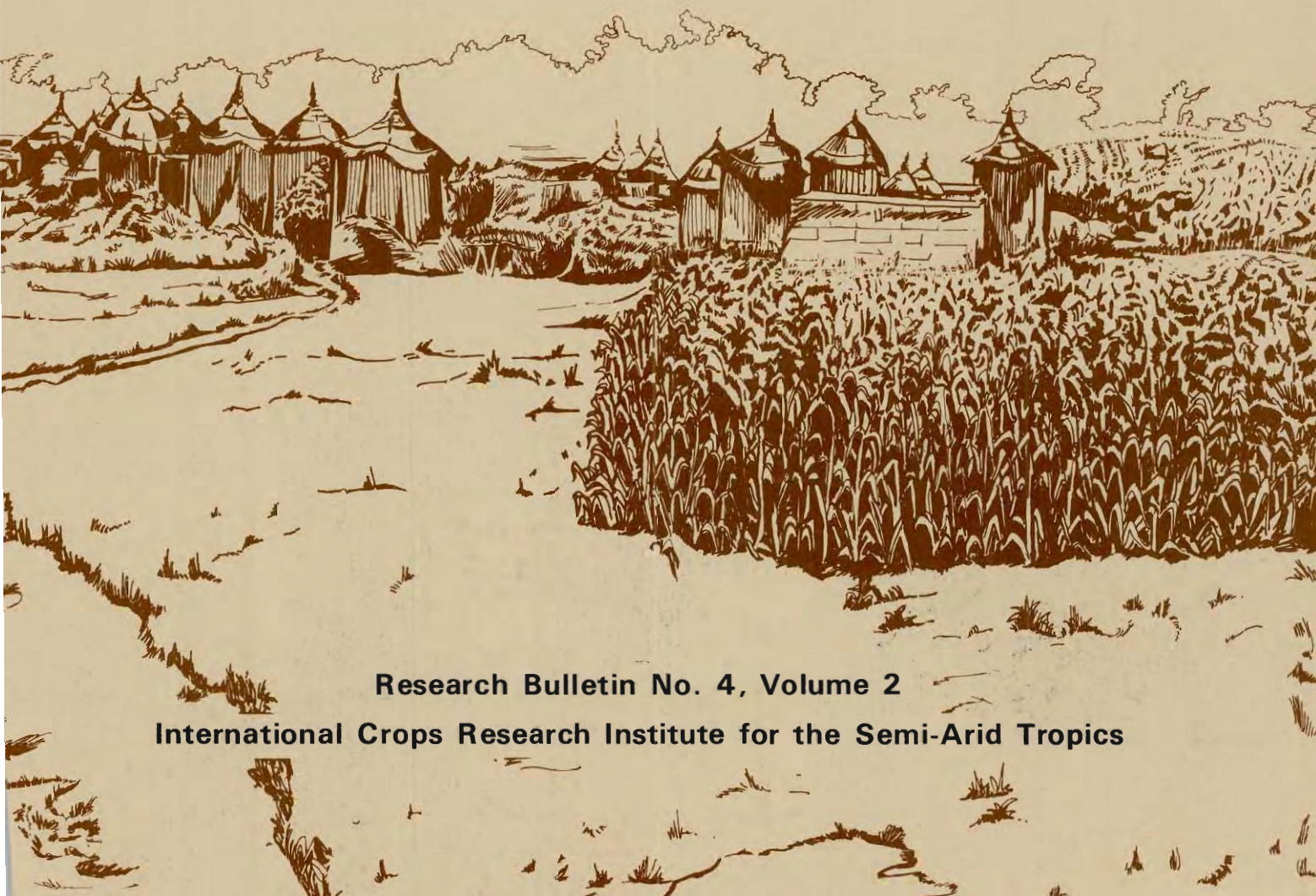
THE FARMER IN THE SEMI-ARID TROPICS OF WEST AFRICA:

A Partially Annotated Bibliography



Research Bulletin No. 4, Volume 2

International Crops Research Institute for the Semi-Arid Tropics

Abstract

This is a partially annotated bibliography of formally and semi-formally published documents on socioeconomic aspects of farm and village production systems in the semi-arid tropics of West Africa. These references were used in preparing the companion volume to this report by the same authors entitled *Farm and village production systems in the semi-arid tropics of West Africa: an interpretative review of research* (ICRISAT Research Bulletin no. 4, Volume 1, October 1981).

A total of 1045 réferences are included, 561 of them with annotations from various sources. Most of them are dated from 1960 to 1980, and cover material relating to ten countries: Benin, Camaroon, Chad, Gambia, Ghana, Mali, Niger, Nigeria, Senegal, and Upper Volta. The literature cited is predominantly socio-economic in nature, and mainly concerns rainfed crops. Livestock and irrigation are considered only in the context of their interactions with rainfed crop production.

The literature is arranged by topic, author, and country and cross-referencing has been employed. The topics include methodology, external institutions, community structure, norms and beliefs, land, labor, capital and cash flows, goals and management, crops, livestock, level of living, village-level studies, and bibliographic studies. Some of the semi-formally published documents cited were acquired by the authors and are available for reference in the ICRISAT library, in Patancheru, Andhra Pradesh, India.

Résumé

Ce rapport est une bibliographie partiellement annotée de documents publiés ou à faible diffusion portant sur les aspects socio-économiques des systèmes de production à la ferme et au village dans les zones tropicales semi-arides de l'Afrique de l'Ouest. Ces références ont été utilisées dans la préparation du rapport d'accompagnement à cette bibliographie, publié par les mêmes auteurs sous le titre *Farm and village production systems in the semi-arid tropics of West Africa: an interpretitive review of research* (ICRISAT Research Bulletin No. 4, Volume 1, October 1981).

Cette bibliographie comprend en tout 1045 références, dont 561 ayant des annotations de sources diverses. La plupart des références datent de 1960 à 1980 et se rapportent aux dix pays suivants: Bénin, Cameroun, Gambie, Ghana, Haute-Volta, Mali, Niger, Nigeria, Sénégal, et Tchad. La littérature citée est principalement de nature socio-économique et porte sur les cultures pluviales. L'élevage et l'irrigation n'o n'ont été abordés que dans le contexte de leur interaction avec la production de ces cultures.

La littérature est groupée par sujet, auteur, et pays; un système de croisement de références a aussi été utilisé. Les sujets incluent sont les suivants: méthodologie, institutions extérieures, structure de la communauté, normes et croyances, sol, main-d'oeuvre, capital et flux de liquidité, buts et gestion, cultures, élevage, niveau de vie, études de village et études bibliographiques. Quelques-uns des documents à faible diffusion ont été acquis par les auteurs et se trouvent à la bibliothèque de l'ICRISAT, à Patancheru, Andhra Pradesh, Inde.

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PREFACE

This bibliography arises out of an assignment requested by ICRISAT concerning a review on the socioeconomic aspects of farm and village production systems in the semi-arid tropical region of West Africa.

In undertaking a review of this nature, especially in a short time span, one inevitably becomes greatly indebted to a large number of individuals. Without their support it would have been impossible to undertake this assignment. Unfortunately we cannot hope to name all those that have contributed one way and another to the study. However, some of them are as follows. In Senegal we wish to express our gratitude to the Director General of ISRA, Monsieur Fall, and Monsieur Pochtier at CNRA, Bambey, and Monsieur Faye and Monsieur Niang in the Unite Experimentales at Kaolack Also a special word of gratitude is due to Monsieur Diop, Directeur du Centre National de Documentation Scientifique et Technique, who produced a comprehensive computer listing of papers on Senegal relevant to the subject matter of the review. In Gambia a special word of gratitude is due to Mr. Lowe, Project Manager of the Rural Development Project. In Mali Dr. F. Traore was most helpful in facilitating our work. In Niger assistance was provided by Dr. M. Garba, Director of INRAN, Mr. Challon of UNDP, and USAID Niamey. In Nigeria we are very grateful for the help provided by Drs. Abalu and Krishnaswamy of IAR at Ahmadu Bello University. In addition to these specific individuals in the various countries we would also like to express our gratitude for help provided by individuals linked one way or another with work in the region. Specific individuals are Madame Felix of ORSTOM, Madame Jeanguyot and Monsieur Dumont of IRAT, Mr. R. Longhurst of the Institute of Development Studies, University of Sussex, Dr. W. Morris of Purdue University, Dr. C. Eicher of Michigan State University and Messrs. deBenk and Lauer of the Sahel Documentation Center, Michigan State University.

Also without the continuous support of ICRISAT personnel stationed in West Africa it would have been impossible to have undertaken this project. We wish to specifically thank the following individuals who were so helpful: Phil Serafini, Pat Pattanayak, Willhem Stoop, Shad Okiror and B.B. Singh. A special word of gratitude is also due to Claude Charreau who was so long-suffering and hospitable. Without his unending support and encouragement it would have been very difficult to have completed the assignment. However a long list of acknowledgements would not be complete unless we express our gratitude to the support of our wives. Linda Norman in particular spent a great deal of time helping and putting together the final documents.

Finally we wish to thank ICRISAT for asking us to undertake this assignment. The intellectual stimulus that we have received is very significant, and we hope it will have an impact beyond the bounds of the present project.

October, 1981

EXPLANATORY NOTES

This volume, which comprises a supplement to Vol.1 of ICRISAT's Research Bulletin No.4, published in 1981, consists of a partially annotated bibliography. The references included have annotations, as follows.

Country	Number of references		
	Annotated	Not annotated	Total
Benin	2	1	3
Cameroon	9	21	30
Chad	12	4	16
Gambia	12	12	23
Ghana	23	9	32
Mali	39	31	70
Niger	33	80	113
Nigeria	163	53	216
Senegal	108	79	187
Upper Volta	40	35	75
General	120	160	280
Total	561	484	1045

We recognize that the bibliography is by no means complete. The reasons for this include the following.

1. The review (Vol.1) emphasized rainfed crop production in the semi-arid tropics and West Africa. This meant that neither irrigated agriculture nor livestock pastoralism were considered except when they directly interacted with rainfed crop production.
2. The limited time available for undertaking the assignment meant that the review had to be mainly confined to information produced during the period 1960 to 1979, with considerable emphasis on the 1970s.
3. Literature on socioeconomic subjects has been emphasized in the bibliography. This means that references to papers on technical subjects have generally been omitted. However, selected papers collected personally on trips to various countries, known to be difficult to obtain or not documented elsewhere, have been included.

The section on GENERAL publications includes those that span more than one country, as well as those of general subject interest, literature from countries in Africa other than those listed, and some references to material that is not country-specific but is germane to the terms of reference given for the assignment. In square brackets at the end of each reference is a four-digit number. This number is indicative of the material included in the reference (though no claim is made for 100% accuracy!). A key explaining the four-digit numbers follows these notes. The Author Index is arranged in alphabetical order and includes relevant key numbers reflecting the topics covered. In the Subject Index, the publications are relisted according to topic numbers subdivided by country.

The annotations come from a number of sources, as follows.

CAB Commonwealth Bureau of Agricultural Economics.

CILAA Comité Interetat pour la Lutte contre la Sécheresse/Club du Sahel.

INTECH Intech Inc.

BH Barbara Harriss (1978c).

IDS University of Sussex, Institute of Development Studies.

Those that are unmarked are our own. Grateful acknowledgement is made to the organizations indicated, and to Dr. Harriss, for the information they have provided that is included in this publication.

KEY TO NUMERICAL TOPIC CLASSIFICATION

(Shown in the text in square brackets)

11.00 GENERAL INFORMATION
- 11.10 Technical element
- 11.20 Human element
- 11.30 General statistics and studies done by offices of statistics

12.00 METHODOLOGY

13.00 EXTERNAL INSTITUTIONS
- 13.10 Agricultural planning, policy and development
- 13.20 Research institutions and programs including results of technical research
- 13.30 Support systems:
  - 13.31 Development projects and programs
  - 13.32 Input side:
    - extension
    - input distribution
    - institutional credit
  - 13.33 Output side:
    - markets (macro)
    - price fixation
    - marketing boards
  - 13.34 "Cooperatives"

14.00 COMMUNITY STRUCTURES, NORMS, AND BELIEFS

15.00 LAND
- 15.10 Tenure
- 15.20 Farm size, composition, and distribution

16.00 LABOR
- 16.10 Family structures
- 16.20 Work:
  - 16.21 Farm
  - 16.22 Women (i.e., including role of women)
  - 16.23 Off-farm
  - 16.24 Migration

17.00 CAPITAL AND CASH FLOWS
(Includes credit from indigenous sources)

18.00 GOALS AND MANAGEMENT
- 18.10 Motivation and management
- 18.20 Goals including programming
- 18.20 Risk and uncertainty

19.00 CROPS
- 19.10 Rainfed:
  - 19.11 Practices
  - 19.12 Sole and mixed crops
  - 19.13 Testing and diffusion of improved technologies
- 19.20 Irrigation

20.00 LIVESTOCK
- 20.10 Crop/livestock interaction:
  - 20.11 Other than animal traction
  - 20.12 Animal traction (i.e., mixed farming)[1]
- 20.20 Pastoralism

21.00 LEVEL OF LIVING
- 21.10 Level and distribution
- 21.20 Consumption and nutrition (i.e., includes hungry season)
- 21.30 Storage
- 21.40 Marketing (micro)
- 21.40 Drought

22.00 VILLAGE LEVEL
(includes publications that have information on several of the items from 14.00 to 22.00, such as comprehensive village studies)

23.00 BIBLIOGRAPHIC
(Includes a slash, followed by another indicating the area it deals with)

30.00 UNKNOWN

[1] This section also includes a few references on tractor mechanization.

LIST OF ACRONYMS AND ABBREVIATIONS

AMIRA : Groupe de Recherche sur l'Amelioration des Méthodes d'Investigation en Milieu Rural Africain
AVV : Autorité des Amenagements des Vallées des Volta (Upper Volta)
BARA : Bureau African de Recherches Appliquées
CEEMAT : Centre d'Etudes et d'Experimentation du Machinisme Agricole (France)
CILSS : Comité International pour la Lutte contra la Sècheresse Sahelienne
CIPEA : Centre International pour l'Elevage en Afrique
CMDT : Campagnie Malienne de Développement des Textiles
CNRA : Centre National de la Recherche Agronomique (Senegal)
CNPER : Commission Nationale de Planification de l'Economie Rurale
CNRS : Centre National de la Recherche Scientifique (France)
CRED : Center for Research on Economic Development (University of Michigan, USA)
FAO : Food and Agriculture Organization of the United Nations
FSR : Farming Systems Research
GERDAT : Groupement d'Etudes et de Recherches pour le Développement de l'Agronomie Tropicale (France)
HMSO : Her Majesty's Stationery Office (UK)
IAR : Institute for Agricultural Research (Ahmadu Bello University, Nigeria)
IBRD : International Bank for Reconstruction and Development
ICRISAT : International Crops Research Institute for the Semi-Arid Tropics
IDEP : UN Institut Africain de Développement Economique et de Planification
IDRC : International Development Research Centre (Canada)
IEDES : Institut d'Etudes du Développement Economique et Social
IER : Institut d'Economie Rurale (Mali; Senegal)
IFAN : Institut Fundamental d'Afrique Noir
ILCA : International Livestock Center for Africa
ILO : International Labour Office
INRA : Institut National de Recherches Agronomiques (Francophone countries)
INRAN : Institut National de Recherches Agronomiques du Niger
INSEE : Institut National de Statistiques et d'Etudes Economique (France)
IRAM : Institut de Recherche et d'Application des Méthodes de Développement
IRAT : Institut de Recherches Agronomiques Tropicales (Francophone countries)
IRHO : Institut de Recherche pour les Huiles et Oléagineaux (France)
IRRI : International Rice Research Institute
IRSH : Institut de Recherche en Sciences Humaines (Niger)
ISRA : Institut Sénégalais de Recherches Agricoles
MDR : Ministère du Développement Rural
OACV : L'Operation Arachide et Cultures Vivrièves (Mali)
OAU : Organization for African Unity
OECD : Organization for Economic Cooperation and Development

ORD : Organisme Regional de Développement (Upper Volta)
ORSTOM : Office de la Recherche Scientifique et Technique Outre-Mer (Francophone countries)
REDSO/WA : Regional Economic Development Services Office/West Africa
RERU : Rural Economy Research Unit (Ahmadu Bello University, Nigeria)
SAED : Société d'Amenagement et d'Equippement du Delta (Senegal)
SATEC : Société d'Aide Technique et de Coopération (France)
SCET : Société Centrale pour Equipment du Territoire International
SEAE : Secrétariat d'Etat aux Affaires Etrangères chargé de la coopération
SEDES : Société d'Etudes pour le Développement Economique et Social (France)
SEMA : Société d'Economie et de Mathématique Appliquées
SODEVA : Société de Développement et de Vulgarisation Agricole (Senegal)
STRC : Standing Technical Research Committee of the Organization for African Unity
UN : United Nations
UNDP : United Nations Development Programme
UNESCO : United Nations Educational, Scientific, Cultural Organization
USAID : United States Agency for International Development

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A Partially Annotated Bibliography

Benin

COTTIN, H.J., and MESURI, L. 1968. Animation et développement rural au Borgu. Paris, France: Prohuza. [18.10]

HASLE, H. 1965. Les cultures vivrières au Dahomey. Agronomie Tropicale 28(8): 725-786. [13.00; 22.00]

The production of food crops in Dahomey is discussed, a brief introduction on its geography and its division into three agricultural regions being followed by information on rural structures, cultivation methods, agricultural calendars, labor spent on crop production, agricultural productivity, efforts to raise it, density and distribution of population, trends in agricultural production (area and yields per ha), improvement and transformation of production systems by means of cooperatives, collective farms and communal plantations. Details on research into food crops, e.g., on improved varieties, soil fertility, the use of fertilizers, and crop rotation, are also included. (CAB)

HURAULT, J., and VALLET, J. 1964. Budget familial et emploi du temps des habitants du village de Fanvi. Paris, France: Institut Géographique National. [22.00]

Excellent data (though based on small samples) on land tenure, agricultural production, labor utilization over the agricultural year, and household budgets. Methodology is discussed and an extensive mapping exercise was the basis of an earlier report. (IDS)

Cameroon

BOULET, J. 1970. Un terroir de montagne en pays Mafa: Magoumaz. Etudes Rurales 37-39: 198-211. [22.00]

BOUMAN, F.J.A., and HARTEVELD, K. 1976. The Djanggi, a traditional form of savings and credit in West Cameroon. Sociologia Ruralis 16(1,2): 103-119. [17.00]

The study of indigenous rotating credit associations in the Third World has recently received fresh attention because of their potential role in rural development. Research, however, has barely focused on the more technical details of the issuing and recovery of credit. This article tries to fill part of the gap by a description of the Djanggi in West Cameroon. Selection and credit rating of membership, problems of security, overhead costs, fraud and social control are dealt with. The analysis shows also that the Djanggi is more than simply an

institution of saving and borrowing. It combines elements of education, sociability, tradition, and recreation. Its flexibility and adaptive potential have enabled villagers to cope with the increasing demands of a changing society. In the final analysis this institution seems ideally suited to carry a community through the initial stages of socioeconomic transition. It thus offers a sound alternative to modern cooperatives and credit unions, struggling with complexity and formality of organization and procedures. (CAB)

BRAUD, M. 1967. Etude des systèmes de production au Nord-Cameroun. Bamako, Mali: IER. [13.20]

CARTER, J. 1967. The Fulani in Bamenda. Journal of Tropical Geography 25: 1-7. [20.11; 20.20]
The history of the settlement of the Fulani, a nomadic cattleherding people in the Bamenda province of Cameroon, and their way of life in relation to the present grazing practices, are discussed. The cattle population has sharply increased since the beginning of the 1930s and may amount to 250,000-350,000 head. It is inferred from land use surveys that the stocking rate is well below the level of 4 ha per head considered suitable for the prevailing natural pastures with rotational grazing. Land pressure caused by the increased cattle population and the conversion of pastures into arable land for the rapidly increasing number of land-cultivating Tikar people has resulted in serious conflicts. The difficulties inherent in the need to change the Fulani's pattern of life, involving the adoption of controlled grazing on improved pastures on an economic basis, are outlined. (CAB)

COUTY, P.H. 1965. Notes sur la production et le commerce du mil dans le département du Diamaré. Cahiers ORSTOM (Série Sciences Humaines)2(4). [19.10]

DIZIAIN, R. 1954. Population density, demography and rural economy of the sub-division of Guider, Kaile and Yagoua. Yaoundé, Cameroon: IRCAM. [22.00]

ECKEBIL,, J.P. 1970. Improvement of cereals in Cameroon. African Soils 15: 1-3. [13.20]

FERGUSON, D.S. 1973. A selected bibliography of Cameroon agricultural development. Yaoundé, Cameroon: National Advanced School of Agriculture. [23/13.10]

FRECHOU, H. 1966. L'élevage et le commerce du bétail dans le nord du Cameroun. Cahiers ORSTOM (Série Sciences Humaines) 3(2): 1-24. [20.11; 20.20]

FOURNIER, A. 1971. Système de gestion pour la ferme d'application d'une école d'agriculture située en zone soudano-sahélienne. Promotion Rurale 41: 15-26. [18.10]
In order to improve the efficiency of running an agricultural school farm in Cameroon, a number of documents to record the different operations were prepared. Their purpose and use are discussed in detail. They are meant to be completed during the season, improving accuracy of recording, budgeting, crop production, cost calculations, etc. The earning capacity of crops is analyzed and farm management is improved. (CAB)

FOURNIER, A. 1973. Draught animals in north Cameroon. Achievements and prospects for the future. Promotion Rurale 49: 3-14. [20.12]

GEORGES, M. 1974. The structure of farming units and the importance of sorghum in the subdivision of Guider. Pages 50-59 *in* Notes and papers in development no. 11 (ed. McLoughlin Associates). Comox: Peter McLoughlin Associates. [16.10; 19.10]

GLEAVE, M.B., and THOMAS, M.F. 1968. The Bagango valley: an example of land utilization and agricultural practices in the Bamenda Highlands. Bulletin de l'IFAN 30(B)(2): 655-681. [19.11]

GUILLARD, J. 1958. Essai de mesure de l'actiivité du paysan africain: le Toupouri. Agronomie Tropicale 13(4): 415-428. [16.20]

GUILLARD, J. 1965. Golonpoui: analyse des conditions de modernisation d'un village du Nord-Cameroun. Paris, France: Mouton. [11.10; 11.20; 22.00]
This comprehensive survey of the natural (geological, climatic, soil, vegetation), social, and agricultural aspects of a compact peasant society (the Toupouri) in North Cameroon includes a detailed analysis of its subsistence agricultural economy. The main features of the economy are: (a) it is based entirely on agriculture, with a high population density, scarce land, and poor soil; (b) it is basically geared to food production, with limited exchange; (c) the low per capita income and limited farming capital are related to, and reinforced by, the society's exclusive dependence on human energy; it is a classless society, without individual motivation towards improvement ("incentives"), whose socioreligious basis is the predominant stabilizing feature. (CAB)

GUILLAUME, G.M.D., and BEDERMAN, S.H. 1967. Subsistence activity in five villages on and around Mount Cameroon in Victoria District, West Cameroon. Research Paper no. 14. Athens, USA: Georgia State University, School of Arts and Sciences. [22.00]

HALLAIRE, A. 1961. Koubadje, étude d'un terroir agricole de l'Amadoua. Recherches et Etudes Camerounaises 3(5): 47-71. [15.20; 19.11]
A detailed report of the village and its land use. The life of the village depends on the soil. When it is exhausted the villagers move on in nomadic style. There is, therefore, little village stability or chance of effective development. (IDS)

HALLAIRE, A. 1971. Hodogway: un village de montagne en bordure de plaine. Atlas des Structures Agraires au Sud du Sahara no. 6. Paris, France: Mouton. [14.00]
A backward mountain community chosen in order to interpret traditional agricultural systems in an almost unaltered form. Exploitation of a poor environment has been achieved to its limits and an intense community solidarity, intimacy with the land, and sustained hard work are characteristic of the villagers. Hints of disintegration are discernible due to the beginnings of a cash economy, emigration, missionary influence, and education. (IDS)

HALLAIRE, A. 1972. Marchés et commerce au nord des Monts Mandara. Cahiers ORSTOM (Série Sciences Humaines) 9(3). [21.40]

HATA, N. 1973. The swidden crops and the planting pattern of Dourov agriculture in Nord Cameroun. African Studies (8): 93-115. [19.11]

HURAULT, J. 1964. Antagonisme de l'agriculture et de l'élevage sur les hauts plateaux de l'Adamawa. Etudes Rurales 15: 22-71. [20.11]

MARTICOU, H. 1973. Les freins à la pénétration du progrès technique dans l'agriculture camerounaise. Agronomie Tropicale 28(5): 519-536. [13.10; 19.13]
This article is based on part of the author's thesis for the Diplome d'Etudes Supérieures de Sciences Economiques for the University of Paris. Introductory remarks discuss agriculture in the Cameroon economy, the efforts put into agricultural development, and the development of agricultural production. A whole chapter on impediments to the introduction and spread of technical progress is then reproduced. These impediments include climate, agricultural tradition, and farmers' behavior. An attempt is made to demonstrate that farmers' decisions (adoption or rejection of certain production techniques, increased production by intensive techniques or by more intensive use of land already under cultivation) can be interpreted by using modern decision theory concepts. This behavior and its logic should always be taken into account when planning agricultural development projects. (CAB)

PAUVERT, J.C., and LANCREY-JAVAL, J.L. 1957. Le groupement d'Evodoula. Paris, France: ORSTOM. [30.00]

PODLEWSKI, A.M. 1966. La dynamique des principales populations du Nord-Cameroun (entre Bénoué et lac Tchad). Cahiers ORSTOM (Série Sciences Humaines) 3(4). [22.00]

PODLEWSKI, A.M. 1971. La dynamique des principales populations du Nord-Cameroun. (2e partie) Piémont et plateau de l'Adamaoua. Cahiers ORSTOM (Série Sciences Humaines) 8(special). [22.00]

REMFISCH, F. 1956. Social structure of a Mambila village. M.A. thesis, University of London, UK. [14.00; 16.20; 19.11]
A detailed anthropological account with very few quantifiable data on an isolated mountain village. Divisions of labor and agricultural practices are usefully described. (IDS)

SOEN, D., and COMARMOND, P. de. 1972. Savings associations among the Bamilike: traditional and modern cooperation in Southwest Cameroon. American Anthropologist 74. [17.00]

TISSANDIER, J. No date. Zengoaga; étude d'un village camerounais et de son terroir au contact forêt-savane. Atlas des Structures Agraires au Sud du Sahara no.3. Paris, France: Menton. [21.20; 22.00]
A detailed study of a village that is a local administrative center. Extensive data on the agricultural system, based on mapping exercises, are included. A small-scale diet survey was carried out to examine the adequacy of calorie consumption; the village is poor, has a low birth rate and noticeably bad health. (IDS)

VINCENT, J.F. 1972. Données sur le mariage et la situation de la femme Mofu (massifs de Duvanger et de Wazan). Cahiers ORSTOM (Série Sciences Humaines) 9(3). [16.22]

WHITE, S. 1941. The agricultural economy of the hill pagans of Dikwa Emirate, Cameroons. Empire Journal of Experimental Agriculture 9: 65-72. [22.00]

Chad

ANONYMOUS (Banque Centrale des Etats de l'Afrique Equatoriale et du Cameroun, Paris). 1971. Une expérience de développement régional intégré: l'opération de développement rural de la vallée du Mandoul. Etats de Statistiques 154: 302-317. [13.31]

The agricultural development project in the Mandoul valley in the South of Chad, launched in 1969 for a 4-year period, is a pilot scheme put into operation within a regional framework and intended to ensure, through State organization and foreign aid, the kind of rural development bringing both increased production and socioeconomic change. Although many problems are encountered in a venture of this kind, it is an example of international cooperation on a development project. The geographical and economic background of the valley are described and then the results obtained and problems encountered on the project itself are examined. (CAB)

BORSDORF, R. 1977. Evaluation of proposed marketing interventions for Chad. AID Research and Development Abstracts 5(2): 6. [13.33]

This report evaluates marketing conditions in Chad, along with policy recommendations concerning the design of an AID marketing development program. The small farmer who grows food crops in Chad is dependent on the trader system for sale of his output and for production credits. The traders hold down prices through their use of credit advances. The government agency, FDAR, is responsible for buying internally-produced food crops to build a reserve of cereal grains and stabilize prices. However, this agency has little impact because it lacks funds, personnel, and physical storage facilities in local market areas. The first step needed is to develop an institutional structure that can define market actions and offer farmers an alternative to the trader facilities, train manpower, and initiate an effective mechanism to reach farmers at the local level. Because so little is known about the agricultural economy, official statistics on production and marketing of cereal grains are largely guesswork. Market research personnel need to be trained and then employed by FDAR to gather data that can be used as a basis for ordering priorities of development programs. A means must also be found for supplying government credit to small farmers to rescue them from conditions imposed by the Arab, Lebanese, and Nigerian traders. (CAB)

CABOT, J. 1953. Kim, village du Moyen-Logone. Bulletin de l'Institut d'Etudes Centrafricaines 5: 41-67. [19.00]

A general account of the land use and agricultural techniques of a riverain village, cut off during the annual flooding. Rice growing has been reluctantly adopted under some government pressure. Based on the author's thesis study. (IDS)

DEGAND, J. 1972. Réflexions sur l'économie du Tchad. Cultures et Développement 4(3): 565-584. [13.10]

Agriculture provides 95% of exports of which cotton accounts for 50%; 92% of the active working population are employed in the farm sector. Various reform proposals for the predominantly peasant subsistence farming system are discussed. There is a pronounced lack of extension and advice available. Markets are poorly developed and the area suffers from a lack of communication that hampers the modernization of agriculture. (CAB)

DOCUMENTATION AFRICAINE. 1970. Tchad. Pages 509-522 *in* Documentation africaine; l'agriculture africaine Vol. 2. Paris, France: La Documentation Africaine, Ediafric. [13.10]

Policy for the rural sector in Chad is concentrated on irrigation, quantitative and qualitative improvement of existing production (millet, wheat, groundnuts, cotton, livestock) and introducing new crops (sugarcane and tobacco), all involving modernization of techniques. This modernization itself aims to create a base for a secondary industrial sector based on agricultural products. Rural development was allocated 28.4% of total investment in the current plan, but its financial allocation was reduced during the course of plan implementation. Objectives for both subsistence and export crops are detailed. Particular sections consider regional modernization and rural irrigation projects. Livestock policy is designed to cover only a limited field of activity—intensive traditional production, and small-scale pig and poultry enterprises. (CAB)

ETIENNE, S., JEANROY, J.L., and RAHARIVAIVO. 1969. Enquête socio-économique au Tachad, 1965.

Paris, France: SEDES. [21.10; 21.20]
Essential information on the standard of living and nutrition of the inhabitants of southern Chad was obtained through this survey. There is no great difference between the nutrition of rural and urban dwellers; but alterations in living standards are significant. Rural inhabitants have a much lower income level than those who live in Moundou or Fort-Archambault. Alterations in income structure are also very distinct. The difference between the rural area and urban centers decreases when overall expenditure, including consumption of home produce, is studied. (CAB)

GILG, J.P. 1970. Culture commerciale et discipline agraire: Dobadéné. Etudes Rurales 37-39: 173-197. [19.13]
A study of the gradual assimilation of cotton culture (originally enforced by the Colonial authorities) into the village agricultural system. Very few village data but land usage maps are included. Based on the author's thesis study. (IDS)

INSTITUT D'ETHNOLOGIE. 1966. Musée de l'Homme. *In* Boum le Grand: village d'Iro (C. Pairault). Travaux et Memoires de l'Institut d'Ethnologie no. 73. Paris, France: Institut d'Ethonologie. [22.00]
Scholarly descriptive study concerning all aspects of village life. There are numerous plates and illustrations. (IDS)

LEVANTE, M., MONTENEZ, J., and DROUTE, P. 1968. Etude des effets économiques de la diffusion des engrais au Tchad. 2 vol. Paris, France: SEDES. [19.13]

MATON, G. 1969. La mise en valeur des polders du lac Tchad. Coopération Développement 27: 25-34. [19.20]
This study of polder development in Chad reveals the difficulties encountered in carrying out hydraulic projects in regions whose physical characteristics are little known, and where the level of technical knowledge of the population is not comparable with that required in the project itself. Foreign aid is required to realize the full potential of land which may otherwise be abandoned. If further investment in polders occurred in Chad, thousands more hectares of fertile cultivable land could be utilized. The traditional shadoof irrigation, using water from groundwater wells, increased soil salinity. The high level of soil fertility was realized when a complete drainage and irrigation network, with its attendant technical and administrative organization, was implemented in the polders of the northeast archipelago. One wheat crop and two maize crops could then be grown each year, and experiments have involved new varieties. Three main areas were singled out for development. Baga Sola (20,000 ha); Bol (15,000 ha); and Kouloudia (25,000 ha). (CAB)

MULLER, S. No date. Etude de la production et de la commercialisation des céréales au Tchad, en République Centrafricaine et au Nord-Cameroun. [21.40]

POUILLON, J. 1964. La structure du pouvoir chez les Hadjerai. L'Homme 4(3): 18-70. [14.00]
A brief comparative study of the religious and political leadership in six villages of the Central Mountain Range, sharing a common belief in the same group of mountain and earth spirits. (IDS)

REYNA, S. 1977. Marriage payments, household structure and domestic labour supply among the Barma of Chad. Africa 47: 81-88. [16.10]

TUBIANA, M.J. 1971. Système pastoral et obligation de transhumer chez les Zaghawa. Etudes Rurales 42: 120-171. [20.20]
The Zaghawa, like most pastoralists in the western Sudan zone, have the problem of keeping vast and growing flocks alive in a country which is poor in water and grazing. They utilize these limited resources in the most rational manner possible. After the rains their flocks are sent to the more arid regions further north to consume the new grass which will soon be sun-scorched, watering them at the temporary rainwater pools, and keeping in reserve the grazing near to their permanent wells around which their livestock will gradually gather during the dry season. This system involves a double movement: 6 months of expansion and 6 months of retreat. (CAB)

VERLET, M., and HAUCHECORNE, J. 1974. Wheat cultivation at Lake Chad. Pages 31-48 *in* Notes and papers in development no. 11 (ed. P. McLoughlin Associates). Comox: Peter McLoughlin Associates. [19.12]

WESTEBBE, R. 1974. Chad: development potential and constraints. Washington, D.C., USA: IBRD. [13.10]

Chad's poverty is rooted in the low productivity of the agricultural and livestock sectors, partly caused by poor soil and the climate. To alleviate poverty, rural productivity should be raised and full use should be made of the underemployed labor-force. The incomes and markets in the country are considered too limited to offer economic opportunities for the production of most commonly imported products. Possibilities to improve the production of livestock and crops are discussed. Deficiencies in human resources, public finances, and transportation form development constraints. Planning, growth prospects, and aid outlook are set out and evaluated. (CAB)

Gambia

CENTRAL STATISTICS DIVISION, GAMBIA. 1975. Agricultural sample survey. The Gambia 1974-75. Banjul, Gambia: Central Statistics Division. [11.30]

DUNSMORE, J.R., RAINS, A.B., LOWE, G.D.N., MOFFATT, D.J., ANDERSON, I.P., and WILLIAMS, J.B. 1976. The agricultural development of the Gambia: an agricultural, environmental and socio-economic analysis. Land Resource Study no. 22. Tolworth, Surbiton, UK: Land Resources Development Centre. [11.10; 11.20; 22.00]

This study reports on the current crop and animal production practices in Gambia and on present land use and capability. The physical environment is described and the soil associations are mapped at a scale of 1:125,000. The results of comprehensive socioeconomic studies at village level are recorded. On the basis of these findings, recommendations are made that are aimed at improving food production of both crop and animal origin for local consumption, increasing exports of crop products and enlarging the forest resource. (CAB)

ERIKSEN, J. 1978. Livestock development, Gambia river basin. United Nations Multidonor Mission to the Gambia River Basin. Abidjan, Ivory Coast: USAID, Regional Economic Development Services Office. [20.00]

FAO. 1964. Report to the governments of Senegal and Gambia on integrated agricultural development in the Gambia River Basin. Rome, Italy: FAO. [19.20]

FOX, R.H. 1953. A study of energy expenditure of Africans engaged in various rural activities. Ph.D. thesis, University of London, UK. [16.00; 21.20]

Useful study of energy used and its relationship to agricultural activities.

GAMBLE, D.P. 1955. Economic conditions in two Mandika villages: Kerewan and Keneba, The Gambia. London, UK: Colonial Office. [22.00]

A revised version of an earlier report based on fieldwork in 1946-49, together with some additional later data on some topics (farming techniques, land tenure, etc.). Cropping patterns are described in depth and the precarious nature of the agricultural system is stressed. Rice swamp farming was introduced into Kerewan in the early 1950s and the changes discernible are discussed. A broad survey of annual food consumption was carried out in Keneba. (IDS)

GAMBLE, D.P. 1957. The Wolof of Senegambia. London, UK: International African Institute. [14.00]

Gives a good summary of the Wolof ethnic group. Has a useful discussion on the differences and similarities between the Wolof and Mandinka, the dominant ethnic group in Gambia. Also describes in detail the demography, history, language, economy, social organization and political system, and the life cycle of the Wolof.

GAMBLE, D.P. 1958. Kerewan: an analysis of the economic conditions and underlying factors in a Gambian Mandinka community. Ph.D. thesis, University of London, UK. [22.00]

GRANT, M.W. 1950. Nutrition field working party, food consumption data. Colonial Office Report no. 20032. London, UK: HMSO. (Mimeo.) [21.20]

HASWELL, M.R. 1953. Economics of agriculture in a savannah village. Colonial Research Study no. 8. London, UK: HMSO. [22.00]

Gives results of an economic analysis of farm family records and other information obtained during the period May 1947 to February 1950 at Genieri, located 120 miles up the south bank of the Gambia river from Banjul. During 1947 and 1948 a third of all compounds were included in the study while all 19 compounds were considered in 1949. Considers some information about

a tractor mechanization scheme that proved not to be viable. For its time it is a unique study in West Africa in the area of agricultural economics, with detailed data on all aspects of agriculture from soil content to labor costs per crop.

HASWELL, M.R. 1963. The changing pattern of economic activity in a Gambia village. Department of Technical Cooperation Overseas Research Publication no. 2. London, UK: HMSO. [22.00]
The study covers a resurvey of Genieri village in 1961-62 which was first surveyed in 1947-49 by the same author. She looks at the conditions of high labor productivity, the impact of social change on land and labor use, external influences on the village economy and at the levels of income and standard of living. Results in 1961-62 are compared with those in 1947-49 and changes, together with suggested reasons, are given. Major changes included an increase in wage employment among the male population, a change in the staple grain from millet to rice and, consequently, from the control of men to that of the women. Diets had improved considerably but real incomes have scarcely increased.

HASWELL, M.R. 1975. The nature of poverty. London, UK: Macmillan. [13.10; 22.00]
After the second world war the realization of the food shortages and nutrition problems of the developing countries in the tropics led to interdisciplinary studies of the health, food production and consumption, and socioeconomic patterns of rural people in a tropical environment. A case study of Genieri village on the south bank of the river Gambia, based on a survey in 1947-49, and resurveys in 1962 and 1973-74, is the cornerstone of the book. Changes in the village over 25 years are set against changes in the economy and circumstances of Gambia and West Africa over the period. The thesis which emerges from the analysis is that, whereas the subsistence farmer made decisions and faced hardships with weather as the main variable, entry into the cash crop (export) economy not only brought him into contact with the world market situation, but forced choices between cash and subsistence crops, and introduced alien concepts of living standards. The western world has compounded the situation by failing to understand the intricacies of human relationships in low-income tropical countries, leading to the "institutionalization of poverty", through aid programs and other devices that increase economic expectation and dependence. (CAB)

JONES, R.G.B. 1976. Report on a soil and water conservation consultancy—Republic of The Gambia, October/November 1975. Land Resources Report no. 12. Tolworth, Surbiton, UK: Land Resources Development Centre. [11.10; 13.20]

MANNEH, M. 1975. Cooperatives in the Gambia: an examination of the administrative problems of the Gambia cooperative marketing unions and their impact on national economic development. Thesis: Rutgers University, USA. [13.34]

MATTHEWS, M.D.P., and PULLEN, D.W.M. 1975. Groundnut cultivation trials with ox-drawn equipment, The Gambia, 1973/74. Silsoe, UK: National Institute of Agricultural Engineering, Overseas Department. [13.20; 19.13]

PEACOCK, J.M. 1967. The report of The Gambia ox ploughing survey. Wye, Kent, UK: Wye College, University of London. [20.12]

PEIL, M. 1977. Unemployment in Banjul: the farming/tourist tradeoff. Manpower and Unemployment Research 10(1):25-29. [16.23; 16.24]
Banjul, the capital of Gambia, and its environs, provides an example of a Third World capital which gets many migrants from a wide area but has a relatively low unemployment rate. The tourist industry provides employment during the dry season and migrants can (and do) return to their farms when the tourists leave. Traders also leave the city during the off-season. Recent expansion of secondary schooling may upset this balance if secondary school leavers are unwilling to be part-time farmers. (CAB)

PLATT, B.S. 1954. Food and its production. *In* The development of tropical and subtropical countries (ed. A.L. Banks). London, UK: Arnold. [21.20]

USAID. 1978a. The Gambia Mixed Farming and Resource Management Project. Project Paper. Washington, D.C., USA: Government Printing Office. [13.31; 20.12]
Describes the proposed 5-year $10.8 million project that was planned to commence in 1979.

WEIL, P.M. 1969. Recent agricultural development research in the Gambia. Rural Africana 8: 37-46. [13.20; 20.12]
The implementation of development programs in the Gambia, especially the mixed farm center (MFC) program and the agricultural development film program are first described. Other research has been carried out on seed stores, fertilizers, land use maps, rural economics, oil

palm, citrus fruits, vegetables, kola nuts, rice, limes, beneseed, green graham, cotton, groundnuts, and forestry. Further research suggested includes: (1) general survey of agricultural resources, including (a) a random sample study representing each different ecological area of the country and in toto representative of the entire country, asking such questions as 'what are indices?' etc., including a random sample in man-hours of yields of all types of crops; (b) a random sample soil survey of all the Gambia is needed for rational planning purposes; although planned, funds are not yet available; (c) an examination of traditional land tenure systems of major population groups to show what is valuable for agricultural development in the existing systems and which factors would work against development; (2) random sample analysis in depth of the MFC program; (3) social research to develop an effective extension program; (4) study of the total marketing system and credit apparatus. (CAB)

WEIL, P.M. 1970. The introduction of the ox plow in central Gambia. Pages 229-263 *in* African food production systems (ed. P.F.M. McLoughlin. Baltimore, USA: John Hopkins University Press. [20.12]

The paper discusses the mixed farming program that was introduced into Gambia in the 1950s. It analyses the social and economic effects of the introduction of the ox plow in Gambia. He concludes that it is a "qualified success as a program of directed cultural change".

WEIL, P.M. 1971. Political structure and processes among the Gambia Madinka: the village parapolitical system. *In* Papers on the Manding (ed. C. Hodge). The Hague, Netherlands: Mouton. [14.00]

WEIL, P.M. 1973. Wet rice, women and adaptation in the Gambia. Rural Africana 19:20-29. [16.22; 19.11]

A fundamental aspect of the adaptation of the Mandinka to an increasingly commercialized economy has been to develop two interrelated production systems from precommercial economic spheres (dryland male and wetland female) through the manipulation of precommercial social structures and cultural values. While tidal-swamp rice production as a concept and a technique has been introduced by exogenous development entrepeneurs, the shift to the production of rice as the staple food crop has been a result of action through endogenous politicoeconomic mechanisms to meet endogenously perceived adaptive needs. (Weil)

Ghana

ATSU, S.Y. 1974. The Focus and Concentrate Programme in the Kpandu and Ho districts. Technical Publication Series no. 34. Legon, Ghana: University of Ghana, Institute of Statistical, Social and Economic Research. [13.31]

The Focus and Concentrate Programmes have now been a feature of the agricultural scene in Ghana for about 6 years. They concentrate development resources on a few rather than many farmers and presuppose that these few already have a positive orientation towards making improvements on the farm and have the essential perquisites for producing surpluses. The important question arises then as to just how many impacts these and similar programs have had on the agricultural scene and whether they should become a permanent feature. This study evaluates the Focus and Concentrate Programme in two areas and agricultural improvement programs in general. This finding alone demonstrates the need to look more closely at how and why farmers have operated and are operating as they do and to incorporate these findings into any program design. (CAB)

BEALS, R.E., and MENZIES, C.F. 1970. Migrant labour and agricultural output in Ghana. Oxford Economic Papers 21:109-127. [16.21; 16.23]

BENNEH, G. 1970a. The attitudes of the Kusasi farmer of the upper region of Ghana to his physical environment. Institute for African Studies Research Review 6(3): 87-100. [19.11]

The Kusasi farmer has, through the slow process of trial and error, learned to adjust his farming activities to the seasonal distribution of rainfall and to grow the crops best suited to local soil. The farmer is unaware of the scientific classification of soils but the agricultural scientist cannot afford to ignore knowledge of the environment, since it influences decision making. Eventually, this knowledge must be passed on to the farmer if he is to become an efficient producer. (CAB)

BENNEH, G. 1970b. The Huza strip farming system of the Krobo of Ghana. Geographia Polanna 19: 185-206. [19.11]

BENNEH, G. 1970c. The impact of cocoa cultivation on the traditional land tenure system of the Akan of Ghana. Ghana Journal of Sociology 6(1): 43-61. [15.10]

BENNEH, G. 1972. The response of farmers in northern Ghana to the introduction of mixed farming: a case study. Geografiska Annaler, Series B 54(2): 95-103. [20.11]

This paper discusses the results of a field study of farmers' response to the introduction of mixed farming in the village of Manga Bawku in northern Ghana. The village had certain advantages for a study of this kind. Since it is very close to the Manga Bawku agriculture station there was the likelihood that all the farmers in the village would have had an equal chance of being exposed to the recommended practices. An agricultural survey had been carried out in the village in 1941 before any of the farmers had adopted mixed farming. It was therefore possible to know the extent of the changes that have occurred in the traditional farming systems of the people. The results show that illiterate small-scale farmers are responsive to agricultural innovation provided that the benefits of the recommended practices are demonstrated to them, the introduced technology is not too much above the level of that which is being replaced, and an attempt is made to study the problems that the recommended practices aim at solving before they are introduced. In this respect the employment of local people as itinerant demonstrators was an asset. Although most of the mixed farmers claimed that they had purchased bullocks and plows out of their own savings, perhaps out of pride, there is no doubt that the liberal loan schemes of the past years had aided the adoption of mixed farming. The prospective innovator never received cash loans that he could have used for other purposes. He was provided with a pair of bullocks and a plow and paid for these with part of his harvested crop. On the other hand the study has shown that the tendency to concentrate on "progressive" farmers, though defensible, gives to poor farmers very little chance to improve upon their farming practices. (CAB)

BENNEH, G. 1973a. Land tenure and farming systems in a Sissala village in northern Ghana. Bulletin de l'IFAN 2: 361-379. [15.10; 19.11]

The paper describes the "ring" cultivation system of northern Ghana, i.e., permanent cultivation of some fields (near the residence) and the bush fallowing of more remote fields. He stresses the importance of local use and the potential importance of the ox cart for transporting manure.

BENNEH, G. 1973b. Population, food and nutrition in a northern savannah village of Ghana. Food and Nutrition in Africa 12: 34-47. [21.20]

The aim of this study is to describe the land use pattern and techniques of farming, and the dietary habits of the farmers in a village in Ghana, and to determine the extent to which their food requirements are satisfied by what they produce. It was shown that a desirable level of calorie intake throughout the year could not always be produced. It is concluded that this situation could be improved by bringing part of the land used for grazing also under cultivation. As erosion of this land has taken place, costly reclamation will be needed, requiring help from outside. (CAB)

BENNEH, G. 1973c. Small-scale farming systems in Ghana. Africa 43(2): 34-46. [19.11]

BENNEH, G. 1974. The ecology of peasant farming systems in Ghana. Environment in Africa 1(1): 35-49. [19.11]

The paper attempts to provide en ecological analysis of two peasant agricultural systems in the savanna and forest regions of Ghana, bush fallow, and *sabala* (shallot farming), in order to illustrate the types of transformation of natural ecosystems brought about by cultivation. (CAB)

BRAY, F.R., and NODZIEVOR, S.K. 1961. Levels of living in northern Ghana: a study of some Frafra households. Legon, Ghana: University of Ghana. (Mimeo.) [22.00]

Agricultural inputs, expenditure, income, and practices are examined in two villages in a densely populated area. Data are based on a small sample only, but the authors imply that more village level development and not resettlements, as proposed by the Government, could solve most of the major problems. (IDS)

BROWN, C.K. 1972. Some problems of investment and innovation confronting the Ghanaian food crop farmer. Technical Publication Series no. 24. Legon, Ghana: University of Ghana, Institute of Statistical, Social and Economic Research. [13.32]

The aim of the study was broadly: (1) to indicate the problems of and obstacles to the promotion of innovation and entrepreneurship in Ghanaian agriculture, with special reference to the availability and use of credit facilities and extension services to food crop farmers; and (2) to suggest means of overcoming these problems and improving productivity. A total of 205

food crop farmers in 16 villages in the Atebubu and Laura agricultural districts, in the Brong-Ahafo and Upper Regions respectively, were interviewed. (CAB)

BUKH, J. 1977. Women in food production, food handling and nutrition. Structural transformation, pauperization and the role of women. A case study from Ghana. CDR Project Paper no. A77.5. (No place): CDR. [16.22; 21.10]
This paper shows how farmers in a rural area of southeast Ghana have had to change their production pattern and adapt to circumstances arising from the introduction of an export economy. Particular attention is given to the role of women in food production and nutrition, both today and historically. The relationship between changes in the division of labor and changes in crop patterns, and the impact, of these changes on the local standard of living, are considered. With the introduction of widespread commercial cocoa production in the 1920s and 1930s, women were obliged to take full responsibility for the food crops. When land for cocoa became scarce in the 1940s, the prices started to fall in the 1950s and 1960s and there was an increase in male migration from the area, resulting in the present ratio of 1.5 women to 1 man. Agricultural productivity has dropped, since the women lack resources to clear forest land and must farm the less fertile plains, and the result is increased poverty and a continuation of the same socioeconomic situation. (CAB)

CALDWELL, J.C. 1968. Determinants of rural-urban migration in Ghana. Population Studies 22(3): 361-377. [16.24]
The number of town dwellers in Ghana trebled from 180,000 to over 0.5 million between 1921 and 1948, and again to 1.5 million by 1960. Some 23% of the population is now urban. About three-fifths of this growth reflects migration, mainly from rural areas. To get a fuller picture, a survey of some 1782 rural households and 585 urban households was carried out between 1962 and 1964, the samples being drawn from four large regions where major migration was taking place, the North and Volta (predominantly emigrant), Ashanti (predominantly immigrant) and South (with flows in both directions). The village census included data on all living persons who had ever formed part of the family regardless of their current place of residence. The rural census distinguished four groups: (1) those who had never migrated to the town; (2) those who returned after one or more migrations; (3) those in the town; (4) others; and included details of migration intentions, age, sex, living standards, etc., as well as position in the family, and education. The investigation shows the towns have a higher than average proportion of young people aged 20-24 years and a much lower proportion of those over 65, as well as more than 70% of those with secondary or higher education. On the other hand rural-urban migration and back flow have produced a rural-urban human network that has made the diffusion of social and economic change from urban to rural areas comparatively easy, and town earnings have had a considerable effect in raising rural living standards. (CAB)

CALDWELL, J.C. 1969. African rural-urban migration. The movement to Ghana's towns. Canberra, Australia: National University Press. [16.24]
The kinds of people migrating to Ghana's towns are examined in terms of the effect of their migration on the rural areas they leave and the urban areas they adopt. Their methods of travel and means of solving the problems of accommodation and work, their degree of satisfaction with town life, the numbers returning to the villages and their reasons for doing so, are examined. (CAB)

DICKSON, K.B. 1972. Dynamics of agricultural innovation in northern Ghana. Ghana Social Science Journal 2(2): 10-18. [19.13]

FACULTY OF AGRICULTURE, UNIVERSITY OF GHANA. 1969. Background to agricultural policy in Ghana. Proceedings of a seminar organized by the Faculty of Agriculture. Legon, Ghana: University of Ghana, Faculty of Agriculture. [13.10]
The objective of the symposium was to discuss problems of agricultural policy in Ghana with a view to setting out the basic principles from which sound agricultural policy could be developed. The papers covered: (1) issues in agricultural policy (S. La Anyane); (2) available resources (B.E. Rourke); (3) land tenure reform (J.A. Dadson); (4) agricultural development policy and planning (J.A. Dadson); (5) land use maps as tools for agricultural development (P.M. Ahn); (6) agronomy problems in irrigation (E.F.G. Mante); (7) mechanization (W.F. Buchele); (8) irrigation (F. Penkava); (9) ("settled" farming (J. Gordon); (10) ecological zones in relation to agricultural planning and fertilizer use (P.M. Ahn): (11) crop policies (E.V. Doku); (12) policy for the cocoa industry (B.F. Rourke); (13) soil productivity in relation to agricultural development (D.K. Acquaye); (14) poultry (G.E. Williams); (15) veterinary problems (K.O. Gyening); (16) livestock industry (L.N.K. Ababio); and (17) feeds (C.W. Cameron). (CAB)

GORDON, J. 1970. Attitudes and opinions of some extension workers in Ghana. Ghana Journal of

Agricultural Science 3(2): 87-91. [13.32]
The opinions of some subprofessional officers of the Ministry of Agriculture were canvassed on various aspects of the agricultural extension organization, its successes and failures, and the "internal" and "external" causes of ineffective extension. Respondents agreed that planning in the extension organization was "from the top down", with little or no consultation between senior and junior staff, or with farmers. Of "internal" causes of failure of extension programs, "poor planning and failure to keep promises to farmers" was considered of prime importance. Of "external" causes of ineffective extension, lack of credit for farmers was considered most important. There was recognition of the need for integrated rural development programs if extension programs were to be fully effective. (CAB)

HANSEL, L.H. 1971. The socio-economic conditions affecting the use of mineral fertilizers in the peasant agriculture of Ghana. Berlin, Germany: Technische Universitat, Fachbereich Landwirtschaftliche Entwicklung. [19.13]
The aim is to determine the socioeconomic factors which influence the peasant's attitude to recommended mineral fertilizer innovation. The most important aspects are: (a) features of districts with comparatively higher fertilizer usage; (b) characteristics of farms with relatively earlier adoption of mineral fertilizers; and (c) the effect of advisers and promotional measures on the extent and distribution of artificial fertilizer use. The investigation is based on data collected in three surveys: (1) survey of fertilizer sales in 63 fertilizer sales posts under the fertilizer program; (2) survey by questionnaire in six selected villages; and (3) survey in 60 research stations in the fertilizer program. As well as making recommendations of future measures for introducing fertilizers in developing countries, the paper also indicates the characteristics of farms and areas with a higher adoption frequency and makes recommendations about factors encouraging or discouraging this innovation. (CAB)

HUNTER, J.M. 1966. Seasonal hunger in a part of the West African savanna: a survey of body weights in Nangodi, NE Ghana. *In* Markets and Marketing in West Africa (Centre of African Studies). Edinburgh, UK: University of Edinburgh, Centre of African Studies. [21.20]

KURANCHIE, P.A. 1975. Relative economic position of cowpea in the programmes of farmers in the Navrongo-Bawku and Denu-Abor areas of Ghana. Accra, Ghana: Food Research Institute. [19.12]

LAWSON, R.M. 1968. The traditional utilisation of labour in agriculture on the Lower Volta, Ghana. Economic Bulletin of Ghana 12(1): 54-61. [16.21]
A field survey of labor use was held in a traditional small-scale farming area of Ghana. A 21-household selected sample was used that was assumed to be reasonably representative for the village. Average holdings were 1 ha. It was found that an average of about 20 days/year were wholly or partially spent on economic activities. An average of 4 hours of work (including time walking to the farm) was registered per day actually worked. The average number of days worked per month was 14. Monthly variations were also registered. (CAB).

MURPHY, M.C., and ACQUAYE, E. 1972. Land tenure, land use and agricultural productivity in Ghana. A case study in Kumbungu - Tamale, Northern Region. Research Paper no. 1. Kumasi, Ghana: University of Science and Technology, Land Administration Research Centre. [15.10]
Shortly after the inauguration of the Land Administration Research Centre a series of surveys was conducted throughout Ghana to investigate the relationship between land tenure, land use, and agricultural productivity in Ghana. This report presents the findings of the first of these surveys and is published in two parts. The first section discusses the historical and legal aspects of land tenure and land use in the Dagomba District of Northern Ghana. The second section analyzes empirical data that were collected in the Kumbungu (Tamale) area. (CAB)

NIELANDER, W. 1969. The influence of state farms on the traditional peasant sector of agriculture in developing countries—illustrated by the example of Ghana. Heidelberg, Germany: Forschungsst Agrarstrukt Agrargenossensch, Entwicklungslander. [13.31]
This investigation of how the setting up of state farms in developing countries can and should affect conditions in the traditional sector goes on to consider how to improve the efficiency of planning projects for agricultural development. The decisive factor for success and for the right type of advance is the peasants' readiness for innovation. The readiness varies considerably from country to country and region to region according to ethnic, socioeconomic, cultural, and other conditions. (CAB)

QURAISHY, B.B. 1971. Land tenure and economic development in Ghana. Présence Africaine 77: 24-35. [15.10]
The questions of whether or not Ghana's existing system of land tenure is conducive to economic development, or whether it can release forces that may initiate or accelerate the

process of economic growth, are examined. The main emphasis is on economic arrangements of land as one of the factor inputs serving the agricultural industry. Three conditions should be fulfilled: (1) generating an adequate supply of capital for agricultural or other forms of investment in the economy; (2) conserving land resources in the best interests of the society; and (3) developing or adapting techniques for a more efficient use of agricultural resources. Ghana's present land tenure system is considered unsuitable for economic development because: (a) it allows security attached to land to fulfill social obligations towards the family by the farmer rather than improve economic welfare; (b) communal tenure does not ensure soil conservation (bush fallow and shifting cultivation, which tend to discourage the inflow of innovation and individual initiative, are encouraged). (CAB)

RUSSEL, K.L. 1970. Cost accounting of the production of food and fibre crops at Yendi, Ghana. Ghana Journal of Agricultural Science 3(2): 211-212. [19.12]

SOFRANKO, A.J., FLIEGEL, F.C., and PLETCHER, W.R. 1976. Agricultural modernization strategies among Ghanaian farmers. Journal of Modern African Studies 14(4): 706-712. [13.31; 19.13]
The major problem of agriculture in Africa has been the low productivity of the traditional sector, the general aim of development strategies having been towards providing opportunities for smallholders within existing peasant production units and the approach was essentially one of "laissez-faire." This article examines certain aspects of two development strategies for smallholders. The work of the Ghana Tobacco Company (GTC) is first described. This represents a significant departure from the "laissez-faire" position and a move towards an integrated and supervised agricultural operation. Secondly, the situation of neighboring smallholders growing a variety of crops is examined, and the aim is to compare responses by the tobacco growers and the general farmers to developmental options made available by both governments and private agencies. It would seem that a managed agricultural system affects participants as a general "school" for modernization, tobacco growers being more prone to use modern technology. For all practical purposes, however, the tobacco growers were not more modern in their values than the general farmers, and they were not made more dependent by close association with the GTC. (CAB)

STECKLE, J.M. 1973. Changes in food use patterns—some aspects of household enumeration in measuring levels of living through studies in depth. Pages 49-56 *in* Factors of agricultural growth in West Africa (ed. I.M. Ofori). Legon, Ghana: University of Ghana, Institute of Statistical, Social and Economic Research. [21.20]
The hypothesis for this study concerns food, employment, and levels of living within the structure of the household. (a) When employment changes, changes occur in food consumption and use, and (b) food consumption and use is a measurement of the level of living. To study food consumption and use in depth it was considered necessary to utilize descriptive as well as empirical methods of study and to utilize dimensions of time and space to study change. Two studies were carried out: a baseline study and a 4-season study. The baseline study used spatial, ecological, and socioeconomic distinctions between two villages. The 4-season study used the distinction of time within each household. In both studies, descriptive and empirical methods were used to study patterns of change in food consumption and employment. The area chosen for the study was the southwestern section of the Volta Region. The villages of Juapong and Vane were selected. They are approximately the same size, but Juapong is a new industrial town and Vane a traditional chiefdom town. (CAB)

UNDP/FAO. 1969. Report to the government of Ghana on irrigated agriculture in the Upper and Northern Regions. Rome, Italy: UNDP/FAO. [19.20]
Among the recommendations at the conclusion of the survey were: (a) coordination of activities between irrigation and other agricultural production factors should be encouraged; (b) continual research should determine the basic water requirements of crops selected for extensive cultivation; (c) adequate supply of planting material of recommended crop varieties should be assured; (d) fertilizer requirements of the various crops grown under irrigation should be determined; (e) timely cultural operations must be made; (f) recommendations made by the Academy of Sciences for the control of pests, diseases, and weeds should be implemented. (CAB)

VERCRUIJSSE, E.V.W., and BOYD, T.A. 1970. Evaluation of an extension programme: report of a pilot study into the effects of the Focus and Concentrate Programme in the Tamale area. Research Report Series Paper no. 4. Cape Coast, Ghana: University College of Cape Coast. [13.31; 13.32]
This study is an attempt to measure the effect of the Focus and Concentrate Programme on the farm practices and attitudes of farmers in the Tamale area of Ghana. To this end, a group of 12 cooperators and a group of 12 noncooperators were extensively interviewed with a view to comparing them over such variables as farm inputs, yields, market orientation, farm income, consumption, aspirations, leadership, and readiness to adopt innovations (innovativeness). The cooperators were, as far as possible, sampled from the farmers who had already participated in

the F. and C. programme since its inception. The noncooperators were, with one exception, sampled from a population of 71, being the total number of independent farmers from the Dagomba villages in which a benchmark survey had been carried out. The farmers were questioned, inter alia, as to the crops they grew in 1969; the acreage and the total yield for each crop; what part of this was eaten and what sold; how many members of their household and how many wage laborers had worked how many days on the clearing, planting, weeding, and harvesting of each crop; whether any plowing and harrowing by tractor had been done and, if so, of how many acres, by whose tractor, and what costs had been involved; whether they had used any fertilizer and, if so, how much and for what crops; whether they had used any of the new seeds and, if so, which types; how much they had spent last year on services, industrial goods, and local foodstuffs; what other employment they had had, and what schooling; and whether they have any other sources of income and, if so, of what kind, and what it brings in. (CAB)

VERCRUIJSSE, E.V.W., and BOYD, T.A. 1973. Evaluation of an extension programme in agriculture. Pages 57-66 *in* Factors of agricultural growth in West Africa (ed. I.M. Ofori). Legon, Ghana: University of Ghana, Institute of Statistical, Social and Economic Research. [13.31; 13.32]

WOODMAN, G. 1968. The scheme of subordinate tenures of land in Ghana. American Journal of Comparative Law 15(3): 457-477. [15.10]
Ghana has today a complicated system of land tenure. In respect of any plot of land there is an allodial title, subordinate to which are (a) the usufruct title, normally held by a citizen, but able to be acquired by a stranger by express grant from the community or a citizen; (b) a customary law licence which can take a multitude of forms and (c) a common-law leasehold which is also greatly variable. Each of these, when immediately subordinate to the allodial title, is a "pure" tenure, the first two under customary law, and the last under common law. Each type of tenant may sublet his land, unless he holds a customary law licence or a common-law lease on terms that expressly prohibit this. On account of subletting the possibility exists of mixed tenures, when examples of each type may exist concurrently in the same land. These provisions derive from three types of law: Ghanaian and English statutory enactments, Ghanaian customary law, and common law. (CAB)

Mali

AGENCY FOR INTERNATIONAL DEVELOPMENT. 1976. Mali Crop Production Project. Washington, DC., USA: USAID. [13.31]
Contains the project description of Operation Mils Mopti (OMM), financed by AID in 1972. The memo describes current OMM administration and gives insights on some constraints in cereal production: policy bias against production, failure to convince farmers of the merits of improved varieties and techniques, and economic and logistical problems.

ANONYMOUS. 1975a. Aperçus sur l'agriculture malienne. Bulletin de l'Afrique Noire 820: 15986-15994. [13.31]
Four aspects of Mali's agriculture are discussed: (a) rice production (the Mopti, Segou, and Sikasso rice projects); (b) market-gardening and fruit (program for developing exports, Operation Haute Vallée du Niger and promotion of market-gardening schemes); (c) groundnuts (Operation Arachide, 5-year integrated rural development plan, industrial processing); (d) other industrial or export crops (tobacco, sugarcane, tea, etc.). (CAB)

BA, M. 1978. Report on Operation Mils for USAID. Bamako, Mali: BARA. [13.31]
Report for AID in Operation Mils Mopti. Describes physical environment, human resources (population, extension agents), some crop practices. But contains no economic analysis.

BALLON, P., LELIEVRE, D., and MANGENOT, P. 1976. Etude des structures de prix et des mécanismes de la commercialisation des mils et sorghos. 3 vols. Bamako, Mali: IER. [13.31; 21.40]

BARA. 1978. Report on Operation Mils. Bamako, Mali: BARA. [13.31; 13.32]
Recent report in draft form for USAID in Operation Mils area. Discusses credit.

BELT, H. van de. 1974. Agricultural innovation and village structure: a case study among the Bambara of Koulikoro, Mali. [14.00; 19.13]

BERTHE, M., and MEYER-RUHLE, G.O. 1977. Report on the first joint evaluation of Mils-Mopti. Bamako, Mali: USAID. [13.31; 21.40]

A report on the status of the $8 million Project, aimed at stimulating millet production in Mali's 5th region. It contains useful information on the problems of such projects, as well as on agricultural policies in the region. The report includes an interesting section on marketing problems. (CILSS)

BINGEN, J. 1976. Report of a study on agricultural manpower, training, and extension in the Republic of Mali. Bamako, Mali: USAID. [13.32]
Discusses Mali's agricultural training system, civil servants' status system, centralized structure, and extension agents' attitude viewed as constraints to the increase of agricultural production. Gives short-run and long-run projected needs in extension agents.

BOURGERIE, J. 1976. Les "systèmes de production agricole": note de réflexion sur le concept et son utilisation pour les projets, la recherche et la planification agricole. Bamako, Mali: IER. [12.00; 13.20]

BRASSEUR, G. 1961. Etude de géographie régionale: le village de Tétentou. Bulletin de l'IFAN 23B (3-4): 607-675. [22.00]
A detailed study featuring the physical environment, population, agricultural system, and produce of the village. (IDS)

BRAUD, M. 1976. Sur la méthodologie du GERDAT pour l'étude des exploitations agricoles familiales. Bamako, Mali: IER. [12.00; 13.20]

CAISSE CENTRALE DE COOPERATION ECONOMIQUE, MALI. 1977. Remarques générales sur la commercialisation et la politique des prix des céreales au Mali. Bamako, Mali: Service d'Etudes Economiques et Financières. [13.10]
This study is a "contribution of the Caisse Centrale de Cooperation Economique to the work undertaken by the Marketing, Price Policy and Storage Committee of the Club du Sahel." It argues that overproduction of rice is likely and that the cereal marketing prices are too low. It concludes that Mali should reduce its commitment to rice projects involving partial irrigation; that future rice production be concentrated on full water control (e.g., Office du Niger); that rainfed agriculture (millet and sorghum) be given higher priority; and that the government of Mali should combine a high-price policy for food grains with the development of exports of millet and sorghum to neighboring countries. (CILSS)

CENTER FOR RESEARCH ON ECONOMIC DEVELOPMENT. 1977. Le secteur agricole de la République du Mali. Rapport final, Déc. 1976. 2 vols. Ann Arbor, USA: University of Michigan, CRED. [13.10]
Analysis was made in the context of a possible glut of production and of necessary infrastructural investments projected to cope with it. Problematic is how to spread improved technology to a vast mass of peasant cultivators and yet keep prices low in order to placate urban consumers and in order to transfer financial resources out of agriculture. This study examines the agricultural sector, including returns to production, rural transport and storage, rural credit and marketing. It focuses on problems such as cereals self-sufficiency, price policy, the internal terms of trade, and State intervention. An important source. (BH)

CHANTRAN, P., and GRIMAL, R. 1971. La formation des forgerons, appui de la culture cotonnière attelée au Mali. Promotion Rurale 41: 9-13. [13.32; 20.12]
The development of mechanization in agriculture in Mali is quite remarkable. The number of plows, etc., increased from about 700 in 1961 to some 20,000 in 1970. Together with other tools these require much work for maintenance and repairs. Since the end of 1970 training of blacksmiths at the village forge and equipping new forges in this way has started. Detailed information on the organization and execution of the training program is given. (CAB)

CILSS. 1977. Huitième session du Conseil des Ministres. Résolution no. 3 CM/8, fixant les status de l'Institut du Sahel. Banjul, Gambia: CILSS. [13.10; 13.20]

COMPAGNIE MALIENNE DE DEVELOPPEMENT DES TEXTILES. 1978a. Bilan d'enquête agricole, 1973/74, 1974/75, 1975/76, 1976/77. Bamako, Mali: CMDT. [13.31]
Presentation of data collected in seven sectors of CMDT (southern Mali). Evolution over the 4-year period of the labor force, land cultivated, implements, and yields is given in index form.

COMPAGNIE MALIENNE DE DEVELOPPEMENT DES TEXTILES. 1978b. Evolution de l'action de développement de la culture cotonnière et du dah, 1960/61–1977/78. Bamako, Mali: CMDT. [13.31]

CNPER. 1973. Synthèse des travaux des groupes d'études par zones rurales. Bamako, Mali: CNPER. [11.00]

CROIX, D. de la. 1976. L'Unité d'évaluation des programmes et projets de développement rural au Mali. Bamako, Mali: IER. [13.20]

DIAWARA, B., and TRAORE, S. 1975. Population et activité économique dans la transformation du secteur rural au Mali. Forces d'inertie et facteurs de changement. Annales de l'Inford 1: 8-81. [13.10]

DICKO, A., and COULIBALY, G.O. 1978. Mesure d'incitation au développement de la production agricole: politique des prix aux producteurs. Bamako, Mali: Ministère de l'Education Nationale, Section Sciences Economiques. [13.10; 13.33]

DUBOIS, V.D. 1975a. Food supply in Mali. American University Fieldstaff Reports, West Africa Series 16(1). [13.10; 21.50]
A discussion of the devastating effects of the drought on Mali's agricultural and livestock sectors, seriously reducing the country's ability to feed its people and maintain a position of relative solvency. Mali went from food self-sufficiency in the 1960s to widespread famine in the 1970s, complicated by an extremely inadequate transport system and lack of local markets. In addition, government policies were discouraging to farmers. A series of monetary problems led to draconian austerity measures and, eventually, to the fall of the government in 1968. The author believes that only a sustained commitment from the international community for at least 10 years will help Mali revive its agricultural sector, build an adequate infrastructure, and regain food self-sufficiency. (CILSS)

DUPEYRON, G. 1959. Bintagoungou, village de Faguibine: budgets at niveaux de vie. Cahiers d'Outre-Mer, 45: 26-55. [22.00]
Seasonal variations in the water-level of this lakeside village have affected the village economy; out-migrations occur regularly during "high water" periods and only remittances enable the remaining population to survive. Data on family budgeting is, however, based on only three case studies. (IDS)

ERNST, K. 1971. The traditional crop farming areas, their spontaneous disintegration and an attempt at non-capitalist transoformation in the Republic of Mali. A report of an investigation into the problems of non-capitalistic development in Africa south of the Sahara. Leipzig, Germany: Karl-Marx University. [22.00]

ERNST, K. 1976. Tradition and progress in the African village: the non-capitalist transofrmation of rural communities in Mali. London, UK: C. Hurst. [22.00]
This study, first published in East Germany in 1971, takes the view that the backwardness of the present-day African village can be overcome only with a socialist orientation, since the capitalist road to development implies even stronger integration of African countries into the world capitalist economy. The problems and prospects of socialist development as manifested in the Mali experiment from 1960 to 1968 are examined. On the basis of field research and written material, the Mali leaders' agricultural policies, the socioeconomic structure of the African village, and its fate under colonialism, are discussed, as well as the particular problems Mali faced in trying to follow socialist policies. The book traces the evolution of village society, describing the traditional structure, the effect of colonial government, and difficulties encountered in following socialist ideas. (CAB)

ESKELIEN, R.K. 1977. Dogon agricultural systems: sociological aspects relating to development, intervention. A report to Research Foundation of State University of New York. Chapel Hill, USA: University of North Carolina. [22.00]
Describes the Dogon agricultural system: a successful combination of subsistence agriculture, livestock, and vegetables cash crops in a harsh environment. The figures show that millet-sorghum crops yield below 500 kg/ha, with no available technology package so far to increase them. New technology is likely to be more risky in the harsh environment, and under political and economic vagaries. The author states that the role of women is overlooked and that extension agents are ill trained and face a language barrier in the region.

FAO. 1973a. Rapport au gouvernement du Mali, sur le problème de la commercialisation des céréales; établi sur la base des travaux de H. Panhays. Rome, Italy: FAO. [13.33]

GALLAIS, J. No date. Le paysan Dogon: République du Mali. Cahiers d'Outre-Mer 18. [22.00]

GRANDET, D. 1957. Non-migrant peoples in the vicinity of Timbukto, Sudanese zone. Cahiers d'Outre-Mer 10(3): 234-256. [11.20]

GUGGENHEIM, H. 1977. Traditional and modern techniques in grain storage and transportation: problems and solutions for operation mils. Bamako, Mali: USAID. [21.30]
An important study of traditional methods of storage in Mali, including rare estimates of losses. (CILSS)

GUGGENHEIM, H. 1978. Of millet, mice and men: traditional and invisible technology solutions to post-harvest losses in Mali. Pages 109-162 *in* World food, pest losses, and the environment (ed. D. Pimental). AAAS Selected Symposium 13. Boulder, USA: Westview Press. [21.30]
Very good study on storage. Stresses local storage solution and deprecates central parastatal storage systems. Describes indigenous storage systems and estimates losses (2% to 4% post-harvest) in the Dogon area.

GWYNN, C.A. 1976. A preliminary study of the economic impact of the Operation Mils in the 5th region. Bamako, Mali: USAID. [13.31]
Total production of millet-sorghum has increased with the project (OMM was created in 1972). However, rainfall was better and increased production is mainly due to an increase in the area cultivated. The author states that commercialization problems seem to overshadow other issues, such as increases in production, increase in farmers' income, and getting products sold in Mali instead of abroad.

HOPKINS, N.S. 1969a. Socialism and social change in rural Mali. Journal Modern African Studies 7(3): 457-467. [13.10; 14.00]
Relations between Mali farmers and government have raised problems of communication affecting institutions and ideas, particularly over such material problems as village size, economic incentives, etc. An analysis of village institutions leads to the conclusions that: (1) the organization of production has hardly changed, and the patrilineal extended family is still the basic economic unit; (2) technology has remained unchanged; and (3) the most significant changes have been in the organization of political life. Technological innovations have been slow to gain favor. The attempt to transform the countryside, inspired by a Mali version of socialism, has achieved a measure of success in that it has brought all the disparate elements of the countryside within a single social system. Although the peasants resisted intrusion into local affairs, they do not hesitate to join in national political and socioeconomic activities. The basic framework for a new nation has thus been created. (CAB)

HOPKINS, N.S. 1972. Popular government in an African town: Kita, Mali. Chicago, USA: University of Chicago Press. [13.10; 14.00]

ICRISAT. 1977a. Annual Report on the Mali Cooperative Programme, 1976. Sorghum and millet crop improvement agronomy. Bamako, Mali: ICRISAT. [13.20]

ICRISAT. 1978a. Programme coopératif ICRISAT/Mali. Résultats de la campagne 1977. Bamako, Mali: Commission Technique des Productions Vivrières et Oléagineuses. [13.20]

IER/INSTITUT ROYAL DES REGIONS TROPICALES PAYS-BAS. 1978. Note de présentation du programme de recherche socio-économique appliquée dans la zone de production cotonnière, Région Sikasso, au Comité National de la Recherche Agronomique. 18 session, 25-28e avril, 1978. Bamako, Mali: IER. [13.20]

ILCA/CIPEA. 1978. Rapport préliminaire sur les systèmes traditionnels de production animale en zone sahélienne du Mali Central. Addis Ababa, Ethiopia: ILCA/CIPEA. [20.00]

INSTITUT D'ECONOMIE RURALE. 1974. Projet de développement agricole dans la zone sud (Mali-sud). Bamako, Mali: IER. [13.31]

INSTITUT D'ECONOMIE RURALE. 1976a. Agronomique. Points d'expérimentation permanents, IRAT-OACV. Résultats de la campagne 1975. Propositions de programme, 1976. Bamako, Mali: Commission Technique des Productions Vivrières et Oléagineuses. [13.20]
Gives information on agricultural research station experiments.

INSTITUT D'ECONOMIE RURALE. 1976b. Farming systems research in the context of Mali: a synthesis. Bamako, Mali: IER. [12.00]

INSTITUT D'ECONOMIE RURALE. 1977a. Pour un programme de recherche sur les systèmes de production agricole. Bamako, Mali: IER. [12.00; 13.20]
This is a proposal for a farming systems research program in south Mali to be undertaken by IER with possible help from IDRC, USAID, and the Ford Foundation.

INSTITUT D'ECONOMIE RURALE. 1977b. Synthèse des données techniques relatives aux systèmes de production. Bamako, Mali: IER, Division de la Recherche Agronomique. [13.20]

INSTITUT D'ECONOMIE RURALE. 1978a. Commission technique de la recherche agronomique, Mars 1978. Résultats relatifs aux systèmes de production de la campagne 1977. Bamako, Mali: IER, Division de la Recherche Agronomique. [13.20]
Gives results from work on agricultural research stations.

INSTITUT D'ECONOMIE RURALE. 1978b. Détermination des coûts moyens de production des principaux produits agricoles pour la fixation des prix aux producteurs de la campagne 1978/79. Bamako, Mali: IER. [13.33]
The object is to determine the minimum price level for agricultural products that will still act as an incentive. The analysis values labor at the state-determined minimum. Crops considered include cotton, groundnut, rice, millet, and sorghum. Official prices are below break-even on this basis for all crops. (BH)

JONES, W.I. 1970. The food economy of Ba Dugu Djoliba, Mali. Pages 265-306 *in* African food production systems: cases and theory (ed. P.F.M. McLoughlin). Baltimore, USA: Johns Hopkins University Press. [22.00]
A typical savanna village (except that much USAID assistance has been provided) is described with particular reference to the evolution of the food economy. (IDS)

JONES, W.I. 1973. The mise and demise of socialist institutions in rural Mali. Acta Africana 11(2): 19-27. [13.10; 22.00]

Between its accession to independence in 1960 and the military coup in 1968, Mali was governed by an administration that made much of its socialist character and of its determination to produce rapid economic development through integral planning. The development plan drawn up by an international Marxist group projected an annual growth rate of 8.9%, and counted heavily on Mali's agriculture, as well as animal husbandry and fisheries, for growth. The authorities wanted to restore what they felt was the socialist nature of Malian village life, and thereby encourage rural production. The great Socialist Mobilization of the Rural Masses, as it was called, was to be accomplished through institutional change, which was expected to increase rural Malians' willingness to produce by removing colonialist exploitation. The Mobilization was a failure, and over the decade marketed agricultural production decreased, exports declined, and foreign trade became further unbalanced. The experiment with rural institutions ended by liquidating it and the government that created it. This paper examines the attempt at rural institution building in terms of (1) the precolonial and colonial institutions which the government inherited, (2) the design of the government's scheme, and (3) how the village reacted, on the basis of a detailed study of a few villages. (CAB)

JONES, W.I. 1976. Planning and economic policy: socialist Mali and her neighbours. Washington, D.C., USA: Three Continents Press. [13.10; 22.00]
The main focus of this book is on Mali's Five Year Economic and Social Development Plan from 1961 to 1966. The book is divided into two parts. Part I begins with a sweeping view of Malian economic history up to 1960. It continues with a general description of the economy in 1959, the outline of the first 5-year plan and the factors which are critical during its conception, and finally compares the experiences during this period with that of Mali's West African neighbors who were emerging from a similar colonial experience. In Part II, the actual operation of the Plan is analyzed through an examination of the structural measures instituted, such as socialization of certain sectors of the economy and attempts at administrative decentralization. The author evaluates the effects of governmental actions on Mali's rural population by devoting a chapter to the study of a single village. Finally, the Plan's performance is summarized in aggregate terms not only for the period for which it was conceived but also for a number of years following, with comparisons drawn from other countries in the area.(CILSS)

KLEENE, P., TANGARA, M. et al. 1977. Compte rendu de la première période d'enquêtes du programme de recherches socio-économiques appliquées dans la zone de production cotonnière, Region Sikasso. Bamako, Mali: IER/Institut Royal des Régions Tropicales Pays Bas. [16.10]
Has some useful information on family structure.

KONE, D. 1972. L'équipement agricole au Mali 1969-72. Bamako, Mali: IER. [20.12]

LACROUTS, M. 1978. Facteurs limitants la production de l'élevage dûs à la commercialisation. Colloque sur l'Amélioration des Systèmes d'Exploitation Agricole, Bamako 20 fevrier - 1 mars 1978.

Bamako, Mali: CILSS/IER. [20.00]

LEMOIGNE, M., and CHAVATTE, M. 1972a. Etude de l'évaluation des facteurs de production mis en place pendant les 10 dernières années et de leurs effets, Mali. Paris, France: CEEMAT. [13.10]
See Niger, analogous title.

LEMOIGNE, M., and MEMNI, P. 1973. Etude de l'évolution de l'emploi et des effets des facteurs de production mis en place pendant les dix dernières années dans l'opération coton, sud Mali. Paris, France: SEAE. [13.10]

LEWIS, J.V.D. 1978. Descendants and crops: two poles of production in Malian peasant village. Ph.D. thesis, Yale University, USA. [14.00]
In the West Africa savanna area, with labor as the limiting factor, the traditional social system attempts to control the reproduction of the labour force, rather than to increase food production surplus, in order to ensure its subsistence over the long run. Because of the environment uncertainties (rainfall) and the lack of investment opportunities, there are no incentives to produce agricultural surpluses. The author states that Dukolouiba (the Bambara village studied) has kept "traditionalist" and survived the drought whereas other villages more market-oriented were destroyed.

MEILLASSOUX, C. 1970. A class analysis of the bureaucratic process in Mali. Journal of Development Studies 6: 97-110. [13.10; 14.00]

OWENS, T. 1975. Brief reflections on a quick trip to Mali, Sept. 1975. Washington, D.C., USA: USAID. [13.10]
Gives general macroeconomic recommendations on rural development based on the experienes of other developing countries.

POLLET, E., and WINTER, G. 1969. L'organisation sociale du travail agricole des Soninke. Cahiers d'Etudes Africaines 8, 4(32): 509-534. [14.00]
The ethnic group under discussion found in eastern Senegal, southern Mauritania, Upper Volta, but also in Mali, is Moslem, organized into castes and clans of freemen and slaves. The Dyahunu system of Mali is one of subsistence agriculture. A floodplain left by a tributary of the Senegal makes possible two harvests annually. There is no crop rotation; the same crop is planted on a piece of land in successive years. If a field becomes exhausted after 3 to 4 years it will be fallow for the same period, but the floodplain can be used consecutively for more than 20 years. Working conditions under the former system of slavery are described. (CAB)

SIDIBE, H. 1976. Analysis of the agricultural system in the Dogon region; technical and social aspects. [22.00]

STEEDMAN, C., DAVES, T.E., JOHNSON, M.D., and SUTTER, J.W. 1976. Mali: agriculture sector assessment. Ann Arbor, USA: University of Michigan, CRED. [13.10]
This report provides a comprehensive overview of the Mali agricultural sector. Much progress appears to have been made. It is believed that Mali has more draft animals, better tools, and wider use of modern techniques than any of its neighbours. The country is self-sufficient in cereals production. Official prices for agricultural products have not been raised since 1974 but the prices of inputs have risen, thereby giving some people the impression that the Malian farmer is supporting the rest of the population. Some recommendations for future development are made: a substantial increase in resources allocated for technical, economic, and social research is necessary; a low-cost publication program for agriculture-related documentation should be considered; rural radio should be expanded; low-cost methods of increasing the productivity of dryland farming should be investigated; improvements should be made in crop conservation, processing, storage, and transport; now that production has increased, more attention should be paid to marketing; producer prices should be increased; small-scale labor-intensive projects should be developed. Malian initiatives should be supported by USAID, and some particular projects are suggested, particularly small irrigation projects.

STRYKER, J.D. 1975a. West Africa Regional Project: Mali agriculture. Washington, D.C., USA: IBRD. [13.10]
Central government agencies, and operations, determine the decision making in the agricultural sector in Mali. In terms of comparative advantage, agricultural projects rank as follows: livestock, cash crops and rice, and millet/sorghum. Technique for millet/sorghum (fertilizers, draft animals) are profitable only with cash crops in the rotation cycle.

SYLLA, D. 1978. Amélioration des systèmes de production. Colloque de Bamako, 20 février-1 mars

1978. Bamako, Mali: CILSS/IER. (Mimeo.) [13.20]

TRAORE, K. 1977. Perspectives et possibilités d'auto-financement des opérations de développment rural (cas de l'opération mils Mopti). Katibougou, Mali: Ministère de l'Education Nationale, Institut Polytechnique Rural de Katibougou. [13.31]

TRAORE, M. 1978. Communication sur la culture attelée à l'OACV. Colloque sur l'Amélioration des Systèmes de Production au Niveau des Exploitations Agricoles dans les Pays du Sahel, 20 au 28 février 1978. Bamako, Mali: IER. [20.12]

TRAORE, N., and TOURE, M. 1978. Le machinisme agricole au Mali. Journées d'études technico-économiques sur le tracteur Swazi Tiukabi: Promotion de la construction grâce à la coopération entre les pays en développement d'Afrique. Bamako, Mali: CEPI/DMA. [20.12]
Presents Malian attempts and capabilities in adopting mechanization (animal traction and motorization) in agriculture.

UNITE D'EVALUATION. 1976. Evaluation de l'Opération Arachide et Cultures Vivrières. Résultats d'une enquête descriptive de la zone d'intervention de l'OACV en 1976. Bamako, Mali: IER. [11.30; 13.31]
Presents the data of a baseline survey of the OACV area (138,000 km^2, 1,100,100 people in 2800 villages). A proportionate stratified sample of 1066 exploitations was drawn in 139 villages. Data are given on the labor force, crops, implements, extension, and the use of credit.

UNITE D'EVALUATION. 1977a. Evaluation de l'Opération Arachide et Cultures Vivrières. Analyse des exploitations agricoles de l'OACV; effectuée à partir de l'enquête descriptive de 1976. Bamako, Mali: IER. [11.30]
Analyses data from the baseline survey of the OACV area.

UNITE D'EVALUATION. 1977b. Evaluation de l'opération arachide et cultures vivrières. Résultats d'une enquête d'opinion réalisée dans la zone de Ségou (zone V), campagne agricole 1976/77. Bamako, Mali: IER. [11.30; 13.31]
A random sample of 488 exploitations in 122 villages (taken from the baseline survey frame) is used to secure information on farmers' opinion about the OACV action and farmers' behavior (crops grown, practices, use of animal traction). Farmers view OACV as an operation mainly concerned with groundnuts. They complain about the late commercialization campaign, high prices of inputs, and low prices of groundnuts. They ask OACV assistance for oxen acquisition.

UNITE D'EVALUATION. 1977c. Résultats partiels de l'enquête suivi d'exploitation OACV, 1976/1977: Données de production. Bamako, Mali: IER. [22.00]
The complete results were published in 1978 (see next reference).

UNITE D'EVALUATION, 1978a. Evaluation de l'opération arachide et cultures vivrières: étude agro-économique de 32 exploitations agricoles en zone OACV. (Résultats définitifs de l'enquête suivi d'exploitation 1976/77.) Bamako, Mali: IER. [22.00]
A stratified random sample of 32 exploitations in four villages (taken from the baseline survey frame in 1976) is used to secure socioeconomic data at farm level in the OACV area. The document presents the data in breakdown, percentage, and graphic form with succinct interpretations and conclusions. Data are more comprehensive than those of previous surveys, including flows and stock data on labor, measurement of fields, and yields. An unusual type of study for francophone Africa.

UNITE D'EVALUATION. 1978b. Evaluation suivi de l'Opération de Développement de l'Elevage à Mopti (ODEM). Résultats d'une enquête socio-économique auprès des populations sédentaires du Seno-Mango. Bamako, Mali: IER. [13.31; 20.00]

Niger

AHAMANE, E.D. 1977. Le développement de l'emploi des engrais chimiques au Niger. Thesis, Université Nationale du Zaïre. [19.13]

AGENCY FOR INTERNATIONAL DEVELOPMENT. 1974. Sahel mid-term development paper: Niger Cereals Production Program. Washington, D.C., USA: USAID. [13.31]

ANONYMOUS, 1975b. Une expérience d'animation rurale en République du Niger. Recherche—Pédagogie et Culture 19: 17-23. [13.32]

BAIER, S.B. 1974. African merchants in the colonial period: a history of commerce in Damagaram (central Niger), 1880-1960. Ph.D. thesis, University of Wisconsin, USA. [16.23]

BAIER, S.B. 1976. Economic history and development: drought and the Sahelian economies of Niger. African Economic History 1: 1-16. [20.20]
Base recommendations on the basis that pastoralism should continue in areas unsuited for cultivation. But access to pastures in the south is necessary. Policies implemented in pasture areas do not lead to overstocking through water availability being unrelated to pasture availability.

BAIER, S., and KING, D.J. 1974. The development of Sahelian economies: a case study of Hausa-Touareg interdependence. University of Wisconsin, Land Tenure Center, Newsletter 45: 11-22. [20.11]
Examines what development policies would be relevant if the problems of desertification associated with the drought were man-made or were the consequence of a climatic change. The authors advocate the development of policies which will restore the traditional mutual interdependence between herders and agriculturists if disastrous results are to be avoided in the future.

BATTLES, R.U. 1974. Study of agricultural credit and cooperatives in Niger. ?: Agricultural Cooperative Development International. [13.32; 13.34]

BEAULIVAIN, A. 1977. Les Peul du Dallol Bosso. Etudes Nigériennes no. 42. Niamey, Niger: IRSH. [20.00]

BERNUS, E. 1974a. Les Illabakan. Une tribu touareg sahélienne et son aire de nomadisation. Atlas des Structures Agraires au Sud du Sahara no. 10. Paris, France: ORSTOM. [20.20]

BERNUS, E. 1974b. L'évolution récente des relations entre éleveurs et agriculteurs en Afrique tropicale: l'exemple du Sahel nigérien. Cahiers ORSTOM 11(2): 137-143. [20.11]
The Niger Sahel zone is a favored meeting place for farmers and shepherds. A strong demographic evolution, an expansion of cultivated lands, the development of commercial cultures, and the increase in the size of the herds have brought about the colonization of a zone which up to that time was marginal. This contact brings out the complementary character of the agricultural and pastoral economies: bringing in of manure; care of the village herds by the nomads; barter; selling and buying of cereals and animals in the camps, villages and market places (the trading terms are carried out to the detriment of the stock breeders). But tensions and conflicts arise frequently. A law was passed to attempt to preserve the rights of the two parties. The Tuareg society gives a good example of the evolution of the Sahel zone and of agropastoral colonization.

BIRNBAUM, P. 1975. Niger Cereals Production Project Paper. Niamey, Niger: USAID. [13.31]

BONTE, P. 1973. L'élevage et le commerce du bétail dans l'Ader Doutchi-Majya. Etudes Nigériennes no. 23. Niger: IRSH. [20.20]

BOURGEOT, A. 1975. Analyse des rapports de production chez les pasteurs et les agriculteurs de l'Ahaggar. Pages 263-281 *in* Pastoralism in tropical Africa (ed. T. Monod). London, UK: Oxford University Press. [20.11]

BOURGEOT, A. 1977. Rapport de mission d'étude sur les agropasteurs touareg et Buzu de la région de Maradi. Bordeaux, France: Université de Bordeaux. [20.20]

BOURRET, M.L. 1972. Agricultural innovations in the Republic of Niger. Fei Chou Yen Chiu 1: 77-87 [19.13]

CAMPBELL, D.J. 1977. Strategies for coping with drought in the Sahel: a study of recent population movements in the department of Maradi, Niger. Ph.D. thesis, Clark University, USA. [21.50]
The thesis examines the reaction of people to the 1968-74 drought. To do this involved looking at the impact of colonialism and modernization on the societies in the area. Because of these, migration became a more adaptive strategy in the latest drought. Looks at the effectiveness of various other strategies, and draws policy implications.

CENTRE D'ETUDES ET DE RECHERCHE ETHNOLOGIQUES, BORDEAUX. 1976. Rapport sur les activités de re-

cherches menees dans le Département de Maradi? Bordeaux, France: Université de Bordeaux. [13.20]

CHARLICK, R.B. 1972a. Induced participation in Nigerian modernization: the case of Matameye county. Rural Africana 18: 5-29. [14.00]
The relationship between power and economic modernization in rural Niger is illustrated with reference to Matameye county in south-central Niger, that has always been considered a pilot area for the country. Since independence it has been the test case for every major development program, and was the first county selected for the "popular participation" development strategy. By 1966 the county was considered completely covered by the rural animation network and has been frequently cited as an example of successful rural organization. Matameye is in no way a typical county in rural Niger, but should, because it is exceptional, reveal better than the average relatively neglected county how attempts to plan and manipulate change actually worked out in Niger. (CAB)

CHARLICK, R.B. 1972b. Participatory development and rural modernization in Hausa Niger. African Review 2(4): 499-524. [13.32; 14.00]
The rural development strategy known as "participation populaire au développement," adopted by the government of Niger since independence, is evaluated. The government has failed, after 10 years, to successfully implement this strategy, based on analysis of obstacles to rural economic innovation and the need to ensure the growth of state capabilities. While still officially supporting mass popular participation in development, the government has, in fact, shifted to operational development policies that have entirely different political and economic implications. The reasons for this failure are examined with particular reference to one especially progressive county in Hausa Niger. The regime was unable to provide the power necessary to create a genuine instrument of rural attitudinal change and structural organization. The first step in releasing the potential dynamism of the rural masses implied a shift in the basis of political association that was already apparent to local-level elites. When these elites resisted, the whole system collapsed. While the party remains the primary instrument of local-level elites, the bureaucracy has become the primary instrument of national power; their coexistence is a prerequisite for any successful modernization. (CAB)

CHARLICK, R.B. 1974. Power and participation in the modernisation of rural Hausa communities. Ph.D. thesis, University of California at Los Angeles. [13.32; 14.00]

CHARLICK, R.B. 1976. Background paper prepared for US-Nigerian discussions of the Niger Cereals Programme. Niamey, Niger: USAID. [13.31; 13.34]
The paper is based on interviews with farmers and "local-level cadres" in Zinder and Maradi departments during October and November, 1976. It compares three models of Nigerian extension and describes limitations of Nigerien cooperatives as an instrument for rural development. The paper considers UNCC as a supplier of farmer production credit.

CHARLICK, R.B. 1977a. L'impact du projet régional de productivité du département du Zinder sur les techniques agricoles. Washington, D.C., USA: USAID. [13.31]

CHARLICK, R.B. 1977b. Planification et évaluation des activités d'information et d'organisation rurale dans le cadre du projet de productivité du département de Niamey. Niamey, Niger: USAID. [13.31; 13.32]

CHARLICK, R.B. 1977c. Sociological factors in the national cereals production programme. Abidjan, Ivory Coast: REDSO/WA. [13.31; 14.00; 19.10]
This report deals with the design of extension services and implementation of a seed multiplication scheme under the proposed USAID Niger Cereals Project. It evaluates "auto-encadrement" and UNCC Cooperative Programmes in the Zinder Regional Productivity Project. The study was conducted from 16 July to 29 August 1974, using nonrandom interviews. Farmers spontaneously sought shorter season millet and cowpea varieties to compensate for the risk of a shortened rainy season. Farmers had a preference for manuring over inorganic fertilizer use, and the study suggests that the promotion of fertilizer use on noncommercial crops will be difficult. It found intercropping as a barrier to recommended cereal plant spacing and densities, and a sharp resistance to IRHO programs to promote pure cereal stands. The drought resulted in increased inequality. Some farmers buy land and loan millet while others become deeply indebted and nearly landless.

COLLINS, J.D. 1974. Government and groundnut marketing in rural Hausa Niger: the 1930's to the 1960's in Magaria. Ph.D. thesis, Johns Hopkins University, USA. [21.40]
This is a history of the local groundnuts markets in Magaria and the interest of the state in these markets since the 1930s. The markets provide a single context both for assessing the cumulative impact on the local socioeconomic system of state intervention and for studying the

effect on state behavior on changes in policy, resources, and institutions. (CILSS)

COLLINS, J.D. 1976. The clandestine movement of groundnuts across the Niger-Nigeria boundary. Canadian Journal of African Studies 10(2): 259-278. [13.10; 21.40]
The long frontier between Niger and Nigeria is regarded as an artificial barrier; it is therefore ignored by the local population. This article suggests that an important sector of the modern state economy in Niger faces the possibility of severe disrupting because of this boundary. This is not related to Niger's difficulties in exporting groundnuts, but rather in their acquisition. Over 90% of Niger's commercial groundnut crop is purchased in four districts (including Magaria) that have a southern border with Nigeria. In 1969-79, for example, the producer price at groundnut markets in Magaria was 20-50% higher than that offered at neighboring Nigerian markets. Producers and middlemen from Nigeria therefore crossed the border to sell in Niger, and from Niger to purchase in Nigeria and sell in Niger. The movement continued in 1974-75 in spite of the drought. Pricing policy is the single most important cause of the system. The Niger government encouraged this trade up to 1972, when the EEC took over France's role in supporting Niger's groundnut exports. Nigeria has since increased her producer prices, and is anxious to stop the smuggling, and so may dominate the border market, while Niger is dependent on agricultural exports, especially groundnuts. (CAB)

DAENEN, J. 1975. Etude socio-démographique du Niger: recensement général de la population au Niger, 1974. Niamey, Niger: UN. [11.20]

DANKOUSSOU, I., DIARRA, S., LAYA, D., and POOL, D.I. 1975. Niger. Pages 679-693 *in* Population growth and socio-economic change in West Africa (ed. J.C. Caldwell). New York, USA: Columbia University Press. [11.20]

DAVES, T., and ELTERICH, J. 1978. Several aspects of marketing and on-farm storage of cereals in Niger—survey results and recommendations. Niamey, Niger: Conseil de l'Entente, Cellule Régionale, Haute-Volta/Niger. [21.30; 21.40]

DIARRA, F.A. 1971. Femmes africaines en devenir: les femmes Zarma du Niger. Paris, France: Editions Anthropos. [16.22]

DIARRA, S. 1975. Les problèmes de contact entre les pasteurs peul et les agriculteurs dans le Niger central. *In* Pastoralism in tropical Africa (ed. T. Monod). London, UK: Oxford University Press. [20.11]

DURAND, C.L., and FERRIER, M. 1963. Les produits vivriers au Niger: production et commercialisation (étude générale). 1. Les mils et sorghos. Paris, France: SEDES. [13.10; 21.40]
Review of conditions surrounding the production and marketing of millet and sorghum in Niger. This document is an attempt to pull together prior studies by INSEE and complement them through surveys on agriculture and marketing. The agricultural survey, conducted from Oct 1960 to Oct 1961, considered production problems for food crops in Niger using stratification comparable with that used in previous INSEE studies. Nonrandom sampling was used. A table presents factors conducive to and unfavorable for the production of millet and sorghum.

ECHARD, N. 1964. Socio-economic study of the Ader Doutchi Majya valleys. Etudes Nigériennes no. 15. Niamey, Niger: IFAN. [22.00]
Data are presented on the rural economy, rural sociology, land, agriculture, labor, and demography of Niger. (CAB)

EDDY, E. 1978. Integrating crop and livestock production in Niger's southern pastoral zone: a summary of selected conclusions and policy recommendations. Ann Arbor, USA: University of Michigan, CRED. [20.11]

FAULKINGHAM, R.H. 1977. Ecological constraints and subsistence strategies; the impact of drought in a Hausa village: a case study from Niger. *In* Drought in Africa, vol. 2 (ed. D. Dalby, and R.J. Harrison Church). London, UK: International African Institute. [21.50]
The farmer has responded to famine by selling more of his labor for cash. Since a return to subsistence farming is not feasible, because of the growth in population (hardly checked during the recent drought) there is likely to be increased seasonal and permanent migration.

FAULKINGHAM, R.H., and THORBAHN, P.F. 1975. Population dynamics and drought: a village in Niger. Population Studies 29(3): 463-477. [21.50]
The objective of the study was to measure the extent of the impact of drought on the population of Tudu. Information was collected on the habitat, population, political economy, and culture. The authors express particular concern about the relationship between food supply and

population growth. The pressure of the population on the limited land resource base leads them to placing great emphasis on family planning, even if this comes at the expense of agricultural development.

FRANCE, MINISTERE DES AFFAIRES ETRANGERE. 1973. Niger 1971-72. Dossier d'information économique. Paris, France: Ministère des Affaires Etrangères, Secrétariat d'Etat aux Affaires Etrangères Chargé de la Coopération. [13.10]

GALLAIS, J. 1956-57. Caractères de la vie agricole dans la zone sud sahélienne (région des lacs Débo, Korienzé, Kavarou). Paris, France: Mission d'Etudes et d'Aménagement du Niger, Services de Niger, Services de l'Hydraulique de la FAO. [22.00]

GALLAIS, J., and MARIE, J. 1975. Pasteurs et paysans du Gourma: la condition sahélienne. Paris, France: CNRS. [20.11]

GENTIL, D. 1971a. La naissance d'un système coopératif: l'exemple du Niger. Options Méditerranéennes 6: 88-95. [13.34]
In most of the countries of Africa the cooperative movement has failed or has achieved only mediocre and limited results. This is seen to be due to the fact that, whereas in Europe cooperatives resulted from a spontaneous movement, forging their own organization and providing their own leaders, in Africa the creation of cooperatives was a governmental act requiring the presence of a body of workers exterior to the peasant world, of the official type. From its beginnings cooperation has risked remaining foreign to the cooperators, poorly adapted, simply formal and simply an instrument of the state. In this long series of failures the case of Niger is of double interest. It is the country where the government has tried to push the cooperative experience to the greatest extent, and where the results achieved have been the least negative and have even had some success. The experience to date is described and future prospects are discussed. (CAB)

GENTIL, D. 1971b. Les coopératives Nigériennes. Paris, France: Ecole pratique des Hautes Etudes. [13.34]
After various failures, a new approach was taken up in 1966, mainly based on the farmers' own desires to replace the functions of the private merchants who habitually purchased the groundnut harvest. With rather unorthodox methods, the agricultural extension service has now succeeded in creating genuine marketing cooperatives at village level. These now also handle nearly all agricultural credit and have important agricultural extension functions. (INTECH)

GENTIL, D. 1973. Méthodologie de l'implantation du nouveau système coopératif du Niger. Développement et Civilisations 52/53: 51-64. [13.34]
This study illustrates the relative success of a peasant-orientated rented cooperative marketing enterprise, when cooperative activity based on western models had failed. Failure stemmed not from peasant illiteracy or lack of ability, but from the reluctance of administrators to give cooperatives some autonomy. The new system was first tried in the two groundnut producing areas, and this paper (based on a longer doctoral dissertation) describes the history of cooperative activity in the area, and the tentative success of the new system. (CAB)

GOLDMARK, S. 1977. A brief analysis of the impact of modernization on the traditional land tenure system of the Zarma of Niger. Niamey, Niger: USAID. [15.10]

GRONOFF, J.D. 1965-66. Dioundiou, a Hausa village. Grenoble, France: Université de Grénoble, Institut de Géographie. [19.10]
A comprehensive and useful study of a riverside village focusing primarily on land-use patterns. Population pressure within the village is forcing more intensive cultivation patterns. (IDS)

GRONOFF, J.D., MASSEPORT, E., and VALANCOT, A. 1966. Douméga, Dioundiou, Kawara-Débé; villages des Dallols, Mouri et Fogha. Etudes Nigériennes no. 19. Paris, France, and Niamey, Niger: CNRS/IFAN. [22.00]

HOROWITZ, M.M. 1972. Ethnic boundary maintenance among pastoralists and farmers in the western Sudan. Journal of Asian and African Studies 7(1/2): 105-114. [20.11; 20.20]
Three main forms of economic activity are analyzed: horticulture, pastoralism, and mixed farming. Since land is freely available anyone may take up farming. However, the demands of farming during the growing season do not allow some farmers to pay adequate attention to livestock. The only alternative for many is to abandon farming in favor of pastoralism. (CAB)

INRA DU NIGER. 1976. Results on INRAN's experimental studies. Niamey, Niger: INRAN. [13.20]

INRA DU NIGER. 1977. Thèmes de vulgarisation proposés et recommendations pour 1977, Part I: Mil; Part II: Niébé. Niamey, Niger: INRAN. [13.20]

INRA DU NIGER. No date. Recherche en economie rurale. Niamey, Niger: INRAN. [13.20]

INRA DU NIGER. 1978. Note d'information sur l'INRAN. Niamey, Niger: INRAN. [13.20]

INSEE, FRANCE. 1970. Enquête agricole au Niger. Paris, France: Secrétariat d'Etat aux Affaires Etrangères. [11.30]

INTERNATIONAL MONETARY FUND. 1970. Niger. Pages 401-495 *in* Surveys of African economics. Washington, D.C., USA: International Monetary Fund. [13.10]

KEITA, M. 1975. Intervention en milieu rural et capitalisme agraire dans la région Tillabari. Pages 185-232 *in* L'agriculture africaine et le capitalisme (ed. S. Amin). Paris, France: Editions Anthropos. [13.10]

KINTZ, D. 1977. Rapport de mission d'étude sur les agropasteurs peul de la région de Maradi. Bordeaux, France: Université de Bordeaux. [20.20]

LAYA, D. 1975. Document: interviews with farmers and livestock owners in the Sahel. African Environment 1(2): 49-93. [20.11]

LEMOIGNE, M., and CHAVATTE, M. 1972b. Etude de l'évolution des facteurs de production mis en place pendant les dix dernières années, et de leurs effets, République du Niger. Paris, France: CEEMAT/SEAE. [13.32; 13.33]
Discussion of the agricultural production environment in Niger: institutions for extension, credit, and input supply as well as marketing structures. The study reviews production goals, and the use of fertilizers, pesticides, and equipment. Production of food crops is ignored.

LESTEVEN, A. 1974. Rapport au gouvernement du Niger sur l'amélioration des conditions de vie familiale. FAO Report FAO-ESH-TA-3284. Rome, Italy: FAO. [13.10]

LUC, K.K., and REID, E.F.J. 1978. Rapport sur l'enquête socio-économique de six villages dans la zone du projet. Niamey, Niger: Niamey Department Project. [11.30; 13.31]
Survey undertaken in the Niamey Department Project area.

MAINET, G., and NICOLAS, G. 1964a. La vallée du Gulbi de Maradi. Enquête socio-économique. Documents des Etudes Nigériennes no. 16. Niamey, Niger: IFAN. [22.00]
A good account of this Hausa region, with mainly aggregated data on population trends, marriage patterns, cultivation practices, and other economic activities. Separate data on a number of variables are presented for 12 villages (six on the right bank of the river and six on the left bank). The suitability of the area for a more developed irrigation system is discussed, together with the social disruptions that would ensure. (IDS)

MORTIMORE, M.J. 1972. The changing resources of sedentary communities in Air, southern Sahara. Geographical Review 62(1): 71-91. [11.20]
An account is given of the present land use and settlement pattern in the Air region in the north of the Niger Republic. Comparisons with earlier accounts of settlements in the area back to the 1850s are used to trace the changes in settlement patterns, agriculture, and trade, particularly since the mid 1950s. (CAB)

NABOS, J. 1963-65. Comptes rendus des essais sur les associations culturales. Rapport Annuel. Niamey, Niger: IRAT. [13.20]

NICOLAS, G. 1960. Un village Hausa de la République du Niger: Tussao Hausa. Cahiers d'Outre-Mer 13: 421-450. [22.00]

NICOLAS, G. 1961-62. Notes ethnographiques sur le terroir, l'agriculture et l'élevage dans la vallée de Maradi. Etudes Nigériennes no. 8. Niamey, Niger: IFAN. [22.00]

NICOLAS, G. 1962. Aspects de la vie économique dans un canton du Niger: Kantche. Cahiers de l'Institut de Science Economique Appliquée 5. [22.00]

NICOLAS, G. 1965. Circulation des richesses et participation sociale dans une société Hausa au Niger. Doctoral thesis, Université de Bordeaux, France. [22.00]

NICOLAS, G. 1969. Développement rural et comportement économique traditionnel au sein d'une société africaine. Genève Afrique 8(2): 18-35. [13.10]

NICOLAS, G. 1973. Les catégories d'ethnies et de fractions ethniques au sein du système social Hausa. Cahiers d'Etudes Africaines 15(3): 399-441. [14.00]

NICOLAS, G. 1974. La pratique traditionnelle du crédit au sein d'une société sub-saharienne. Cultures et Développement 6: 737-773. [17.00]

NICOLAS, G. 1975. Dynamique sociale et appréhension du monde au sein d'une société Hausa. Paris, France: Institut d'Ethnologie, Musée de l'Homme. [14.00]

NICOLAS, B., DOUMESCHE, H., and MOUCHE, M.D. No date. Etude socio-économique de deux villages Haousa. Enquête en vue d'un aménagement hydro-agricole, vallée de Maradi. Etudes Nigériennes no. 22. Niamey, Niger: IRSH. [14.00; 19.20]
A comparative study of two villages due to be resettled. House types, social groupings, and sociocultural requirements are given particular attention in the light of future developments and replanning for the communities. (IDS)
The problems posed by having to move because of the building of a dam are analyzed at village level. It appears that, contrary to the popular conceptions of the united African village, there are in fact strong undercurrents of disunity, and a strong feeling of individualism. Although this is evident at the village level, it is nevertheless felt that cooperative development may be possible between similar groups. Other similar enquiries draw attention to several socioeconomic factors, such as kinds of occupation and relationships between various groups. (CAB)

NIGER, MINISTERE DE L'ECONOMIE RURALE. 1971. Eléments pour une organisation du secteur coopératif et mutualiste. Niamey, Niger: Union Nigérienne de Crédit de Coopération. [13.34]

NIGER, MINISTERE DE L'ECONOMIE RURALE. 1973. Enquête agricole par sondage, 1972-73. Niamey, Niger: Direction du Service de l'Agriculture, Section Statistiques Agricoles. [11.30]
Gives some information on crop mixtures. Reports on a national survey.

NIGER, MINISTERE DE L'ECONOMIE RURALE. 1975. Enquête agricole par sondage: Département de Zinder 1974-1975. Niamey, Niger: Direction du Service de l'Agriculture. [11.30]

NIGER, MINISTERE DU DEVELOPPEMENT. 1976. Temps de travaux et rendements de l'activité agricole. Niamey, Niger: Ministère du Développement. [11.30]

NIGER, MINISTERE DU DEVELOPPEMENT. 1977. Situation des cultures: évaluation des productions et de la situation alimentaire au Niger: Campagne Agricole 1977. Niamey, Niger: Direction du Service de l'Agriculture. [13.10]

OLUWASANMI, H.A. No date. Adaptation de structures coopératives modernes au développement de l'agriculture Nigérienne. Paris, France: Archives Internationales de Sociologie de la Coopération et du Développement. [13.34]

PIAULT, C. 1965. Contribution à l'étude de la vie quotidienne de la femme Mawri. Etudes Nigériennes no. 10. Niamey, Niger: IRSH. [16.22]

PICQ, A. du. 1933. Une population africaine: les Dyerma. Paris, France. [11.20]

PONCET, Y. 1973-74. La sécheresse en Afrique sahélienne. 1. Notice des cartes. 2. Une étude micro-régionale en République du Niger. La région Dallols. Paris, France: OCED. [21.50]
The first publication is intended as background material for study of the extent of the drought situation in the Sahelian zone, and contains three maps, accompanied by detailed explanatory notes that cover: (1) population distribution, (2) water distribution and use (in a "normal" year), (3) the extent of drought effects as of May 1973, and (4) transport. The success and usefulness of this initial and more broadly-based document led to an in-depth microeconomic study of one region in Niger, so as to evaluate the situation in much more detail. The region was selected because of the uneven way it has been affected by the drought, and because it exhibits many of the social and economic characteristics which might have impact on the drought, and human adaptation to it. The conclusions reached, that could apply to the rest of the zone, are particularly concerned with the shortage of water resources following consecutive drought years, changes in population distribution, and changes in agricultural yields. The extent of the drought effect varied with latitude, the farthest north

(north of 15°) being most extensively and irrevocably impaired (death of stock, no crops, famine, and exodus). South of 12° the effects have been much less severe and less irrevocable, with hope for the future of agriculture. Even with reasonable rain over several seasons, it is still in question whether the populations of the worst-affected regions should be resettled further south, or given the resources to begin again, in agriculture or some other occupation. Whatever the choices, much care will have to be taken over the final decision. (CAB)

QUAN, C. 1976. Report of Nigerian cooperatives and credit situation. Niamey, Niger: USAID. [13.34]

RAULIN, H. No date, a. Développement agricole au Niger et au Maroc. Etude ethnologique des processus du changement technique dans les sociétés rurales. Economie Rurale 88: 103-110. [13.10; 14.00]

The efforts towards agricultural development, both in French-speaking West Africa and in the Maghreb are characterized by a concentration on European methods which makes no use of the experience of the local farmers and leads those responsible to propose only the techniques that have proved their efficiency in societies where the structures and the values are different from those of the African peoples. If, in Niger, cultivation by means of animal teams seems to be well adapted to the lands in Ader valley, its spread is still dependent on empirical use when it would have been rational to make its use more widespread within the framework of mutual aid in the villages. In general the equipment offered is not sure to pay its way in all cases: for example, water pumping stations in Niger; combine harvesters in Morocco. It is difficult to come back to the sickle, but a return to the scythe could be considered. In these two countries motor pumps, acquired more for prestige than for efficiency, could be usefully replaced by local machines, such as wells worked by teams of animals. (CAB)

RAULIN, H. No date, b. Techniques et bases socio-économiques des sociétés rurales nigériennes. Etudes Nigériennes no. 12. Niamey, Niger: IRSH. [22.00]

RAULIN, H. 1963. Cadastre et terroirs au Niger. Etudes Rurales 9: 58-77. [15.00]

RAULIN, H. 1964. Enquête socio-économique rurale, 1961-63. Etudes Nigériennes no. 14. Niamey, Niger: IRSH. Niamey: IFAN/CNRS. [22.00]

RAULIN, H. 1969. Communautés dentraide et développement agricole au Niger: l'exemple de la Majya. Etudes Rurales 33: 5-26. [14.00]

RAYNAUT, C. 1969. Quelques données de l'horticulture dans la vallée de Maradi. Etudes Nigériennes no. 26. Niamey, Niger: IRSH. [19.20]

RAYNAUT, C. 1971. Soumara. Notes on land use and economic organization. Bordeaux, France: Université de Bordeaux, Centre d'Etudes et de Recherches Ethnologiques. [22.00]

RAYNAUT, C. 1973a. La circulation marchande de céréales et les mécanismes d'inegalité économique: la cas d'une communauté villageoise haoussa. Bordeaux, France: Université de Bordeaux, Centre d'Etudes et Recherches Ethnologiques. [22.00]

RAYNAUT, C. 1973b. La circulation marchande des céréales et les mécanismes d'inégalité économique: le cas d'une communauté villageoise haoussa. Cahiers des Centres d'Etudes et de Recherches Ethnologiques no. 2. Bordeaux: Université de Bordeaux, Centre d'Etudes et Recherches Ethnologiques. [21.10; 21.40]

As the conclusion of a survey taken in a small village, this study presents concretely "the transaction networks indigenous to the village and exogenous to the markets network." Above all, it gives the socioeconomic framework of the village: the classic case of the development of a modern-type economy due to increasingly strong pressure by trade on the "traditional" sector. The consequence is that "food grain trade does not imply the existence of a surplus" but, on the contrary, the peasants' economic vulnerability (fiscal and social pressure). Therefore, the origin of increasing social inequalities can be explained, as well as the development of an agricultural wage-earning class that is still temporary but can become permanent. (CILSS)

RAYNAUT, C. 1973c. Structures normatives et relations électives: étude d'une communauté villageoise haoussa. Paris, France: Mouton. [14.00]

RAYNAUT, C. 1976. Transformation du système de production et inégalité économique: le cas d'un village haoussa. Canadian Journal of African Studies 10(2): 279-306. [21.10; 21.40]

Supported by data collected in a Hausa village in Niger, this paper analyses the changes which

affect the social organization of agricultural production. The main points outlined are: the breaking up of traditional family estates; the spread of hired farm labor. There has been a rapid spread of merchant operations, raising the question of the role of money in an economic system dominated by the groundnut trade. Strong inequality-producing mechanisms are at work; the poor are more vulnerable, and the richest are at an advantage. The gap between peasant producers and the urban "bourgeoisie" is widening, although within the villages disparities are still moderate, largely due to the fact that the surpluses from agricultural production go outside the rural sector. (CAB)

RAYNAUT, C. 1977a. Rapport de synthèse des études menées en 1977. Bordeaux, France: Université de Bordeaux. [11.30]
Review of work conducted in the Maradi department during 1977 as part of a study covering 600 villages from June 1976 to May 1977. Research centered on the historical development of villages and various sociological and agroeconomic characteristics, including the number and origin of fields cultivated, animals owned, secondary occupations, and travel during the year.

RAYNAUT, C. 1977b. Rapport sur les études socio-économiques menées dans l'un des villages témoins: Sarkin Haoussa. Bordeaux, France: Université de Bordeaux. [22.00]

ROBIN, G. 1976. Bibliographie de recherche: groupe de recherche; Etude de déséquilibre des systèmes naturels agricoles et socio-économiques dans la région de Maradi. Bordeaux, France: Université de Bordeau, Centre d'Etudes et de Recherches Ethnologiques. [23.00; 22.00]

ROBSON, P., and SMITH, J. 1971. Les problèmes de l'intégration économique du Niger et du Nigeria. 3. Trois tentatives d'intégration économique en Afrique. Appendices 1-3; bibliographie. Montreal, Centre de Recherches en Développement Economique. [13.10]

ROCHETTE, P. No date. Au Niger: Tibiri, village Maouri. Revue de Géographie Alpine 53(1): 101-129. [22.00]

ROCHETTE, R. 1965a. Kawara-Debe, a Maouri village in Niger. Revue de Géographie Alpine 53(2): 169-203. [22.00]

ROCHETTE, R. 1965b. Tiberi, a Maouri village in Niger. Revue de Géographie Alpine 53(1): 101-129. [16.23; 19.11]
Primarily a land-use study of a poor village with a great deal of seasonal out-migration. (IDS)

ROCHETTE, R., GRONOFF, J.D., MASSEPORT, E., and VALANCOT, A. 1966. Douméga, Dioundiou, Kawara-Débé, Dallol Maouri and Fogha villages. Etudes Nigériennes. no. 19, Niamey, Niger: IRSH. [22.00]
Geographical, demographic and agricultural aspects are usefully described in these three short studies. The authors have written at greater length about these villages elsewhere. (IDS)

RUPP, M.A. 1976. Report of the sociological study conducted in the districts of Tanout, Dakoro, Agadex, from March 30 to April 30, 1976. Niamey, Niger: (publisher not known). [14.00]

RYAN, C. 1974. Study of extension training and cooperatives in Niger. ?: Agricultural Cooperation Development International. [13.32; 13.34]

SARDAN, J.P.O. de. No date. Les Wogo du Niger: rapport provisoire. Etudes Nigériennes no. 20. Niamey, Niger: IRSH. [14.00]

SARDAN, J.P.O. de. (ed.). 1976. Quand nos pères étaient captifs... récits paysans du Niger. Paris, France: Nubia. [11.20]

SARGENT, M. 1975. Brief description of the animal traction activities: Niamey Productivity Project, First Phase. Niamey, Niger: USAID. [13.31; 20.12]

SARGENT, M. 1977. Rapport de mission effectuée au Niger du 11/1/77 au 11/2/77 pour l'USAID dans le cadre du Projet Productivité de Niamey: "Traction animale". Niamey, Niger: USAID. [13.31; 20.12]

SEDES, FRANCE. 1963. Les produits vivriers au Niger. 1. Les mils et sorghos. Paris, France: Société d'Etude pour le Développement Economique et Social. [19.10]

SPITTLER, G. 1977. Urban exodus, urban-rural and rural-rural migration in Gobis. Sociologia Ruralis 17(3): 223-235. [16.24]

During the colonial period the migration pattern in the Gobir province and in Niger as a whole was the atypical one of urban to rural migration. This was accompanied by considerable movements between villages. The reasons for the pattern are explored. Before the 19th century the Gobir area was in a permanent state of war, and people perferred to settle in fortified towns. Under French administration they moved back to the land, clearing new areas of bush, founding many new villages, and moving on from one to the other for political as well as economic reasons. In the 1950s and 1960s these migrations finished, and the whole territory is becoming stabilized and fully controlled by the central government. (CAB)

SUTTER, J.W. 1977. Interim progress report of the Sahel project of the African-American Scholar's Council. Washington, D.C., USA: African-American Scholar's Council. [22.00]

SWIFT, J. 1978a. The role of seasonality in a West African pastoral economy. Brighton, UK: University of Sussex, Institute of Development Studies. [20.20]

TEXAS TECHNOLOGICAL UNIVERSITY. 1974. Ranching/mixed agriculture program in Niger; a feasibility study for Africa. Lubbock, USA: Texas Technological University. [13.31]

USAID. 1975a. Niger Cereals Project Paper. Niamey, Niger: USAID. [13.31]

USAID. 1976a. Niamey Productivity Project Paper, Vols. 1 and 2. Niamey, Niger: USAID. [13.31]

USAID. 1977. International Rural Development Project. Niamey, Niger: Department of Niamey, Niamey Department Development Project. [13.31]

Senegal

ALBENQUE, D. 1974. Organisation du travail dans le carré Wolof. DA/MS République du Sénégal, Délégation Générale à la Recherche Scientifique et Technique. Bambey, Senegal: CNRA. [16.10; 16.21]

Observation analysis of labor allocation within seven households demonstrates that acquisition of cultivation equipment and use of animal traction increases yields and labor productivity for the compound head as well as for members of the household.

AMES, D.W. 1959. Wolof cooperative work groups. Pages 224-237 *in* Continuity and change in African cultures (eds. W. Bascom and M. Herskovits). Chicago, USA: University of Chicago Press. [16.21]

AMIN, S. 1970. The development mechanism of groundnut cultivation, 1885-1970. UN/IDEP Reproduction no. 207. Dakar, Senegal: IDEP. [13.10]

Amin surveys the evolution of Senegalese groundnut production as a mechanism of colonial exploitation whereby cheap Senegalese labor provided cheap groundnut oil to France. The impact of new technology on real wage rates and the relation between labor requirements and productivity in groundnut and millet production are discussed.

ANONYMOUS. 1977c. National investment strategy for increasing food production: Senegal. Washington, D.C., USA: Consultative Group on Feed Production and Investment in Developing Countries. [13.10]

BANQUE CENTRALE DES ETATS DE L'AFRIQUE DE L'OUEST. 1966. La commercialisation du mil au Sénégal. L'Economie Ouest Africaine no. 129. [13.10]

One of the goals stated in the first 4-year development plan was to reduce the food deficit in Senegal by increasing productivity and hectarage dedicated to food grain (mainly millet and rice). Another goal was the stimulation of millet marketing which would shift the economies of some areas from barter to monetary systems. Planning targets were nearly reached for both hectarage and production; the food-grains deficit (stabilized at a level of 22,000 tonnes) was not eliminated. However, planning goals were not reached for marketing, representing only a small part of the harvest. This marketed output does not represent production excess but rather indebtedness of the peasants. In fact, government (monetarization of the economy, development of credits) have encouraged the farmer to shift production toward groundnuts, which are twice as profitable. The measures thus jeoparadise the

means of subsistence during the harvest and consequently they build up debts. The objectives of the plan are conditioned by the relative positions of millet and groundnuts at the level of both prices and yield. These could certainly be doubled in the case of millet. (CILSS)

BARNETT, D. 1979. A study of farmers' goals and objectives and their effects on the cultivation of crops in Sine-Saloum, Senegal, M.Sc. thesis, Purdue University, USA. [18.20]
An adaptation of the 4-S LP model and an LP model by E. Hopkins, using paired comparison multidimensional attitude scaling to convert to a goal-programming model.

BEHRMAN, L. 1970. Muslim brotherhoods and politics in Senegal. Cambridge, USA: Harvard University Press. [14.00]

BENOIT-CATTIN, M. 1975a. Analyse des effets imputables à deux variables multiplicatives. Note méthodologique. Bambey, Senegal: CNRA. [12.00]

BENOIT-CATTIN, M. 1975b. Progrès techniques et gains de productivité. Bambey, Senegal: CNRA. [22.00]

BENOIT-CATTIN, M. 1975c. Propositions méthodologiques pour l'analyse des systèmes de production. Bambey, Senegal: CNRA. [12.00]

BENOIT-CATTIN, M. 1976. Analyse économique pluri-annuelle d'un groupe de carrés suivis—Unités Expérimentales 1969-1975. Méthodes et principaux résultats. Agronomie Tropicale (30) 4:413-425. [22.00]

BENOIT-CATTIN, M. 1977a. Effets socio-économiques du progrès technique sur des exploitations agricoles au Sénégal. Bambey, Senegal: CNRA. [19.13]

BENOIT-CATTIN, M. 1977b. La mécanisation des exploitations agricoles au Sénégal, les cas des Unités Expérimentales du Sine-Saloum. Note Préparée à l'Occasion du Premier Salon de l'Agriculture et de l'Hydraulique. Bambey, Senegal: CNRA. [20.12]

BENOIT-CATTIN, M. 1977c. Projet Terres Neuves 2. Rapport sur le suivi agro-socio-économique de la campagne 1976-77. Bambey, Senegal: CNRA. [22.00]

BENOIT-CATTIN, M. 1977d. Type d'exploitation et niveaux d'équipement dans l'Unité Expérimentale du sud Sine Saloum au Sénégal: mécanisation et agro-socio-économie. Bambey, Senegal: CNRA. [16.10; 20.12]

The author groups households into three classes; single-family units; households with several families depending upon a "chef de carré;" multi-family households in which at least one family is independent of the "chef de carré."

BENOIT-CATTIN, M. 1978. Le conseil de gestion rénové: présentation de la méthode et guide de mise en oeuvre à l'usage des conseillers. Bambey, Senegal: CNRA. [12.00]

BERGMANN, H. 1972. Modernization through cooperation: a sociological analysis of agricultural co-operatives in the Republic of Senegal. Munich, Germany: Institut für Wirtschaftsforschung. [13.34]

The results of fieldwork carried out in Senegal in 1969 are given. Approximately 50 cooperative undertakings were investigated in each of the seven regions. Both interviews and questionnaires were used to deduce opinions. The results are discussed under three main headings: social theory; data processing; and practice of the modernization process, i.e., diffusion and adoption of innovations. The connection between traditional farming and adoption of modern practices is thought to lie in the strength of opinion leadership among peasant farmers and their ability to influence others. The value of cooperatives in strengthening the development process is thought vital to the process. However, several problems need to be overcome in order to increase the power of cooperatives. Administration and financial control are key aspects. Certain areas need to be seriously controlled, especially book-keeping and accounting procedures. The quality of the personnel employed needs to be improved by training. (CAB)

BEYE, G. 1977. Projet de modélisation des exploitations dans les différentes situations agricoles du Sénégal. Bambey, Senegal: CNRA. [18.20]

BIGOT, Y. 1972. Intérêt économique d'une intensification des systèmes agricoles dans les pays

de zone tropicale sèche: l'exemple du Sénégal. Bulletin de Recherche Agronomique de Gembloux. Hors Serie (vol. 1972) 745-751. [19.13]
More intensified systems for rainfed crops, worked out from the technical results obtained by IRAT, seem advisable only for the southern half of Senegal. More towards the north, except for certain soil types, complementary measures are necessary. (CAB)

BIGOT, Y. 1974. Revenus agricoles, diffusion des innovations techniques dans les Unités Expérimentales et conséquences immédiates de gestion individuelle et de politique agricole pour le sud de Sine Saloum. Bambey, Senegal: CNRA. [13.31; 19.13]
The author used sampling of income from crop production of 60 farms in the Experimental Units during 1969-73 with the aim of determining the most important technical and economic factors influencing crop income. His major conclusions were twofold: agricultural income is first linked to area cultivated per capita, and secondly with yield. With animal traction and equipment, the advantage of large farms is increased.

BLACK-MICHAUD, A. and J. 1978. Encadrement du paysannat et vulgarisation agricole au Sénégal: éléments d'une évaluation et perspectives. Nogent-sur-Marne, France: Ecole Supérieure d'Agronomie Tropicale. [13.32]
The authors seek to understand why classical extension methods have not provided satisfactory results in Senegal. They conclude that a lack of motivation on the part of farmers, and inadequate information provided by extension agents, are important. Extension agents face generally unreceptive clients. Factor prices are not conducive to intensification. Relative producer-level crop prices are particularly encouraging to groundnut production, while extension agents urge crop diversification. When farmers are convinced to try intensification and diversification, they are unable to gain access to the credit and supplies necessary to follow extension advice. Without the integration of programs for crops and livestock, without assurances of purchase of food crops, such as maize, by the agencies holding a monopoly on markets, and without advice that takes account of the resources available to farmers, extension services face a doubting clientele. With centralized decision-making in the extension service and little chance of advancement for low level extension agents, the motivation of the extension service is limited. The authors suggest the delegation of a greater role to the farmer, and groups of farmers, in order to increase productivity and farmer autonomy.

BLANC, C. le. 1962. Etude humaine de deux villages du Damga. Bordeaux, France: Université de Bordeaux. [22.00]
Two villages are briefly compared and contransted in relation to their economic prospects. One, an isolated community is relatively prosperous as a result of its fishing industry; but the other, Amadi-Ounare, is a poor, subsistence-oriented agricultural community with considerable out-migration.

BLANC, C. le. 1964. Un village de la vallée de Sénégal: Amadi-Ounare. Cahiers d'Outre Mer 17(1): 117-148. [22.00]

BOND, M., and LAM, M. 1977. La production de semences sélectionnées d'espèces vivrières au Sénégal. Agronomie Tropicales 31(2): 170-178. [13.32]
A program for the production of selected seeds of food plants (millet, sorghum, rice, maize, cowpea), initiated in 1973, is discussed. (CAB)

BOURLIAUD, J., BOUSSARD, J.M., and LEBLANC, J. 1977. La programmation linéaire comme outil descriptif du comportement des paysans africains: une étude Pilote au Sénégal. Mondes en Développement 17: 49-74. [18.20]
Linear programming is not only an optimizing technique to be used in normative studies, but can also be used to simulate the behavior of peasant farmers, provided this is assumed to be rational. This is illustrated by the results of a study conducted in a traditional African peasant environment in central Casamance, Senegal. It was possible to analyze production efficiency and the crucial role of uncertainty in agricultural decision-making, and to assess the potential effect of introducing new technology to improve productivity. (CAB)

BOUTILLIER, J.L. 1962. La moyenne vallée du Sénégal: étude socio-économique. Paris, France: Presses Universitaires de France. [22.00]

BROCHIER, J. 1968. La diffusion du progrès technique en milieu rural Sénégalais. Paris, France: Presses Universitaires de France. [19.13]
The general characteristics of the policy for modernization of agriculture in the Thienaba district are described. The development of production techniques, and their results, are analyzed. (CAB)

BROCHIER, J. 1971. Enquête sur le mouvement coopératif dans un arrondissement Sénégalais. Civilisations, Brussels 21(1): 19-37. [13.34]
The district of Thienaba lies about 80 km from Dakar. From 1958 the cooperative movement developed very quickly; 13 societies were set up by 1960. The main objective in promoting cooperatives in Senegal was to eliminate the excessive number of middlemen from groundnut marketing—by 1962 60% of the market in Thienaba district was controlled by the cooperatives compared with a national average of 47%. Control of the market by cooperatives is in the state interest since it can exert its influence on them through the BSD (Banque Sénégalais du Développement) and OCA (Office du Commercialisation Agricole). The sale of groundnuts is also an important source of fiscal revenue. The state can also compel the cooperatives to invest in equipment by blocking part of the subsidies due to members on the tonnage marketed. The peasant benefits both from the subsidies and from low interest loans. Private traders still exist; the cooperatives are still not as efficient as the private traders, and have not broken into any other crops. Failure of cooperatives to promote the collective organization of production is due more to lack of official policy on how production structures are to develop than to inefficiency, lack of skill, or illiteracy of members. The most efficacious solution is likely to be letting the existing societies concentrate on marketing credit and to try to promote new production units based on the traditional village. (CAB)

BROTHIER, M.R. 1965. La diffusion du progrès en milieu rural Sénégalais. Dakar: (Publisher not known). [19.13]

CANTRELLE, B., 1969. Etude démographique dans la région du Sine Saloum. Travaux et Documents de l'ORSTOM no.1. Paris, France: ORSTOM. [11.20]

CANTRELLE, P., et al. 1962. La moyenne-vallée du Sénégal: étude socio-économique. Paris, France: Presses Universitaires de France. [22.00]

CANTRELLE, P. 1969. Orientations de la recherche démographique au Sénégal. Cahiers ORSTOM (Sêrie Sciences Humaines) 6(4): 3-10. [11.20]

CHARMES, J. 1975b. Théorie et pratique de la vulgarisation agricole. Cahiers ORSTOM (Série Sciences Humaines) 12(3): 249-258. [13.32]

CHARREAU, C. 1974. Soils of tropical dry and dry-wet climatic areas of West Africa and their use and management: a series of lectures at the Department of Agronomy, Cornell University. Ithaca, USA: Cornell University, Department of Agronomy. [11.10]

CHARREAU, C. 1975. Systems of cropping in the dry tropical zone of West Africa with special reference to Senegal. Pages 443-468 *in* Proceedings, International Workshop on Farming Systems, 18-21 November 1974, Hyderabad, India. Patancheru, A.P., India: International Crops Research Institute for the Semi-Arid Tropics. [13.20]
Gives a useful summary of work on improved farming systems research work in Senegal utilizing animal traction.

CHAVATTE, D., and LEMOIGNE, M. No date. Etude de l'évolution de l'emploi et des effets des facteurs de production mis en place pendant les dix dernières années, République du Sénégal. Dakar, Senegal: CEEMAT. [13.10]
Similar format as one produced by Lemoigne and Chavatte for Niger. Ignores noncash crops.

CNRA. 1973. Etude économique du travail dans les unités de production agricole. Document Interne Provisoire no.1. Bambey, Senegal: CNRA. [16.21]

CNRA. 1974. Bilan succinct d'un essai de développement expérimental: les Unités Expérimentales du Sine Saloum au Sénégal 1969-1973. Bambey, Senegal: CNRA. [13.20; 13.31]

CNRA. 1975. Première approche agro-socio-économique de l'exploitation agricole en pays Wolof Saloum-Saloum. Conséquences sur les possibilités d'intensification des systèmes de production traditionnels et post-traditionnels. Bambey. Senegal: CNRA. [23.00; 13.20; 19.13]
A bibliography.

CNRA. 1977a. Bilan et perspectives des recherches sur le développement rural menées dans les Unités Expérimentales. Sélection thématique de fiches de travail. Préparées pour les Participants aux Travaux du Séminaire ISRA/GERDAT. Bambey, Senegal: CNRA. [13.31; 22.00]
Is a useful summary of much of the work done in the Experimental Units. Contains substantial empirical data. Some of the references cited elsewhere are included.

CNRA. 1977b. Fiches techniques établies en vue de la réalisation de l'expérimentation agronomique (campagne 1977-78). Bambey, Senegal: CNRA. [13.20]

CNRA. 1977c. Projet de modélisation des exploitations dans les différentes situations agricoles du Sénégal. Bambey, Senegal: CNRA. [18.20]
A research proposal to model typical "exploitations" representing different parts of Senegal.

CNRA. 1978a. Economie des systèmes de production dans la zone Thiès-Diourbel. Notes synthétiques. Bambey, Senegal: CNRA. [22.00]

CNRA. 1978b. Projet Terres Neuves. 2. Rapport sur le suivi agro-socio-économique de la campagne 1976-77. Bambey, Senegal: CNRA. [22.00]
Gives detailed results of a survey conducted in three villages in July 1976.

CNRA/ISRA. 1976. Programme Moyen Terme Sahel (Cellule de Liaison). Résultats de l'expérimentation menée en 1975 dans les terroirs de Got, Layabe, et Ndiamsil Sessene. Bambey, Senegal:CNRA. [13.20]
Gives results of the agronomic experiments undertaken in the three Terroirs in 1975.

COPANS, J., COUTY, P., ROCH, J., and ROCHETEAU, G. 1972. Maintenance sociale et changement économique au Sénégal. Travaux et Documents de l'ORSTOM no.15. Paris, France: ORSTOM. [22.00]
Part 1 consists of two articles, one in which P. Couty shows the general differences between Serer and Wolof in the Senegalese economy, and another where J. Copans describes specific sociological aspects of the Mouride system. In Part 2 J. Roch analyzes the Wolof agricultural system in a case study, particularly the narrow constraints within which economic behavior takes place. Labor problems are examined in Part 3: P. Couty on Mouride labor philosophy; a series of monographs on hours of work in general and in agriculture; and a second series of monographs on work performed collectively considered particularly important among these people. (CAB)

COUTY, P.H. 1977. Emploi du temps et organisation du travail agricole dans un village Wolof Mouride: Darou Rahmane II. Paris, France: ORSTOM. [16.21; 16.22]
Darou Rahmane II has little socioeconomic differentiation and is entirely dependent on agriculture, primarily groundnuts. It is a Mouride Islamic village founded 33 years ago and considered to be typical of this district. The area is densely populated, despite poor soils and irregular rainfall, and no new land is available for agriculture. The food supply is inadequate, hence the area under groundnuts (three-quarters of the agricultural production) is declining at the expense of millet. Nevertheless, there has been no permanent out-migration from the village. Weeding is the most lengthy and difficult agricultural task and is often left unfinished. Women participate in agricultural activities on the cash crop (for income) . . . Data were collected on the labor supply of four representative households for a whole year from almost daily records, though less accurately for women. Women spend only 14-23% of their time on agricultural work, but a large proportion on household work, especially drawing water. Labor supply varies considerably seasonally . . . 74% of men's work is on household plots, 16% on communal work and 10% for the religious leader ("marabout"). A detailed account is given of the reciprocal obligations involved in cooperative agriculture. (INTECH)

DESCHAMPS, L. 1965. "Carré" et exploitation dans le centre de la région arachidière. Dakar, Senegal: SATEC. [16.10]

DIARASSOUBA, V.C. 1968. L'évolution des structures agricoles du Sénégal. Déstructuration et restructuration de l'économie rurale. Paris, France: Cujas. [13.30]
Part 1 describes the historical development of rural structures of a hybrid character in Senegal. This hybrid character results from: (1) the impact of the production of groundnuts as a cash crop; (2) the growing influence of Islam; (3) the increasing demographic pressure; (4) the development of a landed aristocracy; (5) the migration of impoverished peasants to the towns; (6) increasing unemployment. After independence the government realized the need for a structural renovation in order to improve the production of foodstuffs to fight unemployment, and to promote general economic development. The policy of structural change of the rural economy is described and critically analyzed in Part 2. Though the theoretical institutional organization would appear to be sound, the results are nevertheless disappointing. Productivity per ha does not show any increase, and the higher total production is the result only of expansion of the cultivated area. The expected progress has not been realized because of lack of capable personnel, defective planning, and insufficient coordination between the newly created organizations. Cooperatives and agricultural extension are the two main instruments that should bring about the required agricultural progress. Nearly all rural cooperatives are successfully engaged in the marketing of groundnuts and the provision of

agricultural implements. The credit organizations are less successful. There is an alarming expansion of loans for consumption, encouraged by the low rate of interest of only 6% compared with the traditional rate of over 100%. Though the production of millets (cultivated in association with groundnuts) shows a considerable increase, Senegal has still to import increasing quantities of food. The situation concerning meat and milk production is even worse. The introduction of mixed farming is seriously handicapped by the traditional division between agriculturists and stockraisers and by the preference of farmers for horses rather than cattle as draft animals. It is argued that cooperative organizations can contribute to the elimination of structural dualism and to the transition of traditional organizations into modern structures, and thus to economic development in general. (CAB)

DIONE, J. 1975a. Déficit céréalier au Sénégal; situation et perspectives. Bambey, Senegal: CNRA. [13.10]

DIONE, J. 1975b. Les conditions du développement des céréales sur l'Unité Expérimentale du Thysse-Kaymor de 1969 à 1975. Bambey, Senegal: CNRA. [19.12; 21.30; 21.40]
Analyses evolution of cropping patterns and yields of cereals and cash crops, 1969-75. Primary emphasis is on marketing and storage. Considers distinction in types of gifts, loans, and sales of grain.

DUBOIS, J.P. 1971. L'émigration des Serer vers la zone arachidière orientale: contribution à l'étude de la colonisation agricole des terres neuves au Sénégal. Dakar, Senegal: ORSTOM. [16.24; 22.00]
An analysis of migration and agricultural production of seven peoples in "new lands" settlements, based upon survey data from 1967 to 1968 and 1968-69.

DUBOIS, J.P. 1975. Les Serer et la question des terres neuves au Sénégal. Cahiers ORSTOM (Série Sciences Humaines) 12(1): 81-120. [16.24]
The Serer areas are the most heavily populated rural regions, and this overpopulation involves a breakdown in the traditional agricultural system. The government is therefore currently engaged in promoting resettlement schemes. An experiment is in progress involving 300 families resettled in eastern Senegal in 1972-74. This "pilot" phase is the forerunner of a plan to decongest the most heavily populated areas of the Groundnut Basin, with the emphasis being placed on the intensification and diversification of crops in the newly settled regions. (CAB)

DUMONT. R. 1951. Etude de quelques économies agraires au Sénégal et au Casamance. Agronomie Tropicale 6(5/6): 229-238. [11.00]

DUPRE, G. 1965. Aspects techniques et sociaux de l'agriculture en pays Bassau. Bulletin et Mémoires de la Société d'Anthropologie de Paris 9(1-2): 75-159. [14.00; 19.11]
The main agricultural and social organization of the village is described and a case study of the land apportionment and land use in one family is given. Collective work and the ceremonials carried out in the dry season are the two most significant aspects of social life. (IDS)

ELKAN, W. 1976. Rural migration, agricultural settlement and practice in Senegal. Working Paper no. 4. Durham, UK: Durham University, Department of Economics. [16.24]
There is widespread belief that the Groundnut Basin of Senegal, which accommodates about two-thirds of the rural population, is becoming overcrowded and has almost reached saturation point. This has often been assumed to be the major cause of migration, especially to towns, and the stimulus for government policies to divert migration to other rural areas. This analysis applies economic reasoning to a series of observations concerning the movements of people that are more commonly examined according to sociological and geographical criteria. The paper therefore examines not only the Groundnut Basin situation, but also migration from Casamance, and movement from the Fleuve region to France and back. The ethnic background of the migrating groups is first outlined and then migrating behavior of each group discussed (Mourides, Wolof, Peul, Serer, etc.). The general lesson to emerge from the discussion is that almost every government policy has a migration aspect. For example, if subsidies on farm inputs are paid out of the proceeds of the farmers' groundnut crop, then the price paid to the grower will be correspondingly lower. Arguably the fertilizer will have made the crop larger so that the farmer's total income, as distinct from the price per kg, will be higher, but this relationship is more tenuous than the farmer's subjective response to receiving a price that he knows to be well below the world market price of his crop. Since the decision to migrate, too, is an essentially subjective one, even this remote area of public policy has an impact on the decision whether or not to migrate. (CAB)

FALL, M. 1976a. Programmation linéaire: possibilités d'utilisation pour l'élaboration de modèles

d'exploitation agricole au Senegal: note méthodologique. Bambey, Senegal: CNRA. [12.00]
Explanation of linear programming and its use in modelling Senegalese farms.

FALL, M. 1976b. Rapport de stage: méthodes d'étude et de gestion technico-économiques des exploitations agricoles; budget automatisé—programmation linéaire, application aux exploitations agricoles Sénégalaises. Bambey, Senegal: CNRA. [18.20]

FALL, M. 1977a. Economie des systèmes de production dans la zone Thiès-Diorbel: notes synthétiques. Bambey, Senegal: CNRA. [19.12]
Crop production revenues on a sample of 30 farms in Thiès-Diourbel were analysed from 1975 to 1977 under a USAID-financed project.

FALL, M. 1977b. Programme de vulgarisation et de production des céréales dans la zone Thiès-Diourbel (Cellule de Liaison ISRA-SODEVA). Synthèse des résultats de la campagne agricole 1976-77 dans les villages suivis. Bamney, Senegal: CNRA. [22.00]
In the three Terroirs of Got, Ndiamsil, and Layabe, average millet yield was 595 kg/ha. Carrés with animal traction (oxen) averaged 645 kg/ha, while those without averaged 285 kg/ha. The paper gives a summary of the results derived from a survey of 30 carrés.

FALL, M. 1977c. Programme Moyen Terme Sahel: interprétation statistique des données économiques de la campagne 75-76 dans les terroirs de Got-Ndiamsil-Sessene-Layabe. Bambey, Senegal: CNRA. [22.00]
A study of 25 households in three localities in the Thiès-Diourbel region during 1975 found farms varied from 3 to 27 ha with a mean farm size being 13.58 ha or 2.18 ha per "actif." Net margins per hectare and per *actif* were found to be slightly lower for farms with animal traction (14 households) than those without. Fall found that most households were not self-sufficient in millet. The annual requirement was assumed to be 200 kg/person. As area cultivated expanded, farmers tended to be overcome with work and abandon some of the grain-producing fields in order to maintain groundnut fields.

FALL, M. 1978. Les méthodes d'analyse mathématique de systèmes et leur application au niveau des exploitations traditionnelles. Colloque sur l'Amélioration des Systèmes de Production Agricole, Bamako, 20 février-1 mars 1978. Bamako, Mali: IER. [12.00]

FAO. 1970. Institut de technologie alimentaire Sénégal. Aspects économiques du problème des cultures vivrières (perspectives à court terme). Rapport préparé pour la République du Sénégal, établi sur la base des travaux de R. diFieria. Technical Report, no.1. Rome, Italy: FAO World Food Programme. [13.10]
On the basis of available statistical information, the production and consumption trends and short-term prospects for Senegal have been evaluated with respect to millet, grain sorghum, rice, maize, cassava, and some other local food crops. Governmental measures planned to counteract food deficits, both in the production and marketing sectors, are critically considered. The size of foreign currency saving that can be achieved by import substitution, in particular for rice and wheat, is estimated. Wheat production is not taken into consideration, but partial substitution of wheat by local products for bread manufacturing is considered as a short-term item. Finally, a projection for a 5-year period is made on the basis of governmental actions. (CAB)

FAYE, J. 1976. La démarche de l'ISRA en matière de recherche sur les systèmes de production. Bamako, Mali: IER. [13.20]

FAYE, J. 1977. Problématique d'un thème technique agricole: le labour de fin de cycle avec enfouissement des pailles. Bambey, Senegal: CNRA. [19.13; 20.12]
Discusses problems of *enfouissement* of residues.

FAYE, J., and NIANG, M. 1977. An experiment in agrarian restructuration and Senegalese rural space planning. African Environment 2(4) and 3(1): 143-153. [15.10]
Discusses land consolidation work undertaken in the Unités Experimentales area.

FOURRIER, P. 1968. Un exemple de développement agricole—le village de Deur Boumi dans le nord Sénégal. Oléagineux 11: 655-660. [13.10]
Various aspects of agricultural development are discussed, with particular relevance to this village: soils; population; livestock; pasture and seeds; techniques of cultivation; improvement of farm structure; yields; agricultural revenue. (CAB)

GAGNON, G., and SAVARIA, J. 1976. Le Sénégal en coopératives d'autogestion. Montréal, Canada: Presses de l'Université de Montréal. [13.34]

The socioeconomic characteristics of Senegal are first analyzed in a historical perspective and the main stages of the country's progress towards independence are examined. Structural, economic, and institutional reform since independence in 1960 is described, with reference to agriculture, industry, and finance, and social development trends are studied in the light of African socialism and ideology. In this context the cooperative system and rural development are considered, and it is believed that this system has been used to involve the peasantry in capitalist production and ensure governmental control in rural areas. (CAB)

GARIN, M. 1966. Bilan économique de la culture attelée dans quatre villages du Laghem oriental (région de Kaolack). Oleagineux 6: 365-370. [20.12]

GASTELLU, J.M. 1969. L'organisation du travail agricole en milieu Serer 01. Vol.1, text; Vol.2, annexes. Dakar, Senegal: ORSTOM. [16.10; 16.21]
The organization of labor during one agricultural season is described for a cluster of 13 hamlets constituting one village. Cooperative and exchange labor groups are described in relation to the major agricultural activities. (IDS)

GASTELLU, J.M., and DELPECH, B. 1974. Maintenance sociale et changement économique au Sénégal. 2. Pratique du travail et reéquilibres sociaux en milieu Serer. Travaux et Documents de l'ORSTOM no. 34. Paris, France: ORSTOM. [22.00]

GONDIAM, O. 1965. Aspects du régime foncier sénégalais. Civilisations 15(1): 82-90. [15.10]

HOPKINS, E. 1972. The response of farmers to an agricultural extension scheme: cattle in Senegal. Final report to the Social Science Research Council. Brighton, UK: University of Sussex, Institute of Development Studies. [22.00]
The project was a study of farmers' responses to the current agricultural extension scheme in Senegal that involves the introduction of bullocks as draft animals. Detailed information was collected on the behavior of a number of farming households in three villages in the relevant area. This was analyzed to provide the data necessary for the specification of a linear programming model representing the situation of an individual farmer, but taking into account the complex family structure within which Wolof farmers operate. By comparing the results of this model under various assumptions about resources and activities available to the farmer, and about prices and yields, it is shown by which "types" of farmer, and in what circumstances, the various pieces of extension advice were most likely to be well received. (CAB)

HOPKINS, E. 1974. Operation groundnuts: lessons from an agricultural extension scheme. Institute of Development Studies Bulletin 5(4): 59-66. [13.32; 22.00]
This is an article based on fieldwork done in Senegal between 1968 and 1971. An extension scheme for groundnuts proved to be unsuccessful due to the gap between the organizers of the scheme and the fieldworkers, the attempt to offer universal oversimplified recommendations while at the same time not recognizing the heterogeneity of farmers and, most important, the lack of coincidence of the aims of the project (designed with macroeconomic views in mind) with those of farmers. The article emphasizes the rationality of farmers by citing their return to food production in poor years when food prices were high, and their use of oxen to extend land cultivated rather than to intensify cultivation through the incorporation of residues to maintain soil fertility. The article also mentions the increased individualization of farmers (e.g., paid instead of reciprocal labor), and the likelihood of increased inequalities developing.

HOPKINS, E. 1975. Wolof farmers in Senegal: a study of responses to an agricultural extension scheme. Ph.D. thesis, University of Sussex, UK. [22.00]
An examination of farmer responses to an agricultural extension scheme in southern Sine Saloum using linear programming analysis. The author found that failure of the extension scheme to increase the output of groundnuts and grain was not due to the unwillingness of farmers to accept new techniques but to the unsuitability of recommended techniques. She found that resource constraints prevent most types of farmer from adopting the full recommended package, and that better returns usually can be achieved using available resources to farm larger areas less intensively and expanding the range of crops grown.

HOPKINS, E. 1976. Rapport relatif à la supervision des Bureaux d'Evaluation. Projet de Développement Agricole Sine-Saloum. Dakar, Senegal: SODEVA. [16.10]
A report to the World Bank that focuses on the importance of property in defining the farm decision unit. The "chef de carré" is primarily concerned with the production of his owr fields, and other household members (*sourghas*, wives, and *ravetanes*) receive the production of their own fields.

IBRD. 1974. Agricultural sector survey: Republic of Senegal. Washington, D.C., USA:IBRD. [13.10]

ICRISAT. 1977c. Rapport de synthèse 1977: sorgho et petit mil (sélection, agronomie et pathologie). Dakar, Senegal: ICRISAT Regional Office. [13.20]

IRAT, 1971. Tropical Institute for Agronomic Research on Food Crops in Senegal and Mauritania. Bambey, Senegal: IRAT. [13.20]
An exposé on the organization and research services of IRAT in Senegal and Mauritania. For each of the existing research sections the following are described: (1) work completed; (2) reasons for research; and (3) lines of research. (CAB)

IRAT, 1974. A brief summary of an experiment in development: the Experimental Units in the Sine Saloum in Senegal 1969-1973. Bambey, Senegal: CNRA. [13.20; 13.31]

IRAT/CNRA. 1973. Unités Expérimentales du Sine Saloum. Rapport d'Activités de Recherche, 1/7/72-73. Bambey, Senegal: CNRA. [13.20; 13.31]

ISRA. 1977. Projet Unités Expérimentales du Sine-Saloum. Propositions de poursuite de l'opération pour la période cinquième Plan. Bambey, Senegal: CNRA. [13.20; 13.31]

ISRA. 1978. Liste des publications des chercheurs du CNRA de Bambey pour 1975-1977. Bambey, Senegal: CNRA. [23.00; 13.20]
Gives publications produced by research workers at Bambey for the period 1975-77.

ISRA/GERDAT. 1977a. Les Unités Expérimentales du Sénégal. Recherche et développement agricole. Bambey, Senegal: CNRA. [13.20; 13.31]
A useful summary of a conference held at CNRA, Bambey, Senegal, 16-21 May 1977.

ISRA/GERDAT. 1977b. Bilan et perspectives des recherches sur le développement rural, menées dans les Unités Expérimentales. Bambey, Senegal: CNRA. [13.20; 13.31]
Appendices to the summary of a conference held at CNRA, Bambey, Senegal, 16-21 May 1977, comprising summaries of research in the "Unités Expérimentales."

ISRA/GERDAT. 1978. Recherche et développement agricole: les Unités Expérimentales du Sénégal. Dakar, Senegal: ISRA. [13.20; 13.31]

JONGE, K. de, KLEI, J. van der, MEILINK, H., and STORM, J.R. 1976. Sénégal, projet d'une recherche multidisciplinaire sur les facteurs socio-économiques favorisant la migration en Basse Casamance et sur ses conséquences pour le lieu de départ. Leiden, Germany: Afrika Studiecentrum. [16.24]
This study deals with the macroeconomic aspects of migration and provides details of the rural society concerned. An analysis of the extra-economic factors—demographic and sociological aspects—is given. (CAB)

KANE, F. 1975. Travail salarié des femmes en milieu ouvrier agricole et en milieu ouvrier urbain. Dakar, Senegal: IDEP. [16.22]

KANE, F. and LERICOLLAIS, A. 1975. L'émigration en pays Soninke. Cahiers ORSTOM (Série Sciences Humaines) 12(2): 177-189. [16.24]

KLEENE, P. 1973. Unités Expérimentales du Sine-Saloum: rapport d'activités de recherches, 1 juillet 1972—30 juin 1973. Vol.8. Coopération agricole. Bambey, Senegal: CNRA. [13.20; 13.31]
Among other issues Kleene discusses the necessity for cereal commercialization to accompany his emphasis on recommendations of 50% food crops and 50% cash crops.

KLEENE, P. 1974a. Unités Expérimentales du Sine-Saloum: régime foncier et possibilités de restructuration agraire à N'Dakhar Karim. Bambey, Senegal: CNRA. [15.10]
Discusses land tenure in the locality of N'Dakhar Karim, Sine-Saloum, Senegal. Also discusses customary and modern land rights, historical occupation of land, and rights to succession.

KLEENE, P. 1974b. Etudes socio-économiques au Sénégal. Bambey, Senegal: ISRA. [13.20]

KLEENE, P. 1976. Notion d'exploitation agricole et modernisation en milieu Wolof Saloum. Agronomie Tropicale 31(1): 63-82. [16.10]
The objective of the paper is to derive a more precise definition of the "farm" in Wolof society. The boundaries of the "exploitation agricole" proved difficult to determine. It is an important paper in looking at the relationships within the family.

KLEENE, P., and TOURTE, R. 1973. Unités Expérimentales du Sine-Saloum: rapport d'activités de recherches, I juillet 1972–30 juin 1973. Vol.1. Projet réalisé sur convention de financement. Bambey, Senegal: CNRA. [13.20; 13.31]

LACOMBE, B. and ORLHAE, H. 1967. Contribution à l'étude de l'emploi du temps du paysan dans la zone arachidière. Dakar, Senegal: Institut de Science Economique Appliquée. [16.21]

LACOMBE, B. 1969. Mobilité et migrations–quelques résultats de l'enquête du Sine-Saloum, Sénégal. Cahiers ORSTOM (Série Sciences Humaines) 6(4): 11-42. [16.24]

LACOMBE, B. 1972a. Etude démographique des migrations et des migrants relevés de 1963 à 1965 dans l'enquête du Sine-Saloum. Cahiers ORSTOM (Série Sciences Humaines) 9(4). [16.24]

LACOMBE, B. 1972b. Note descriptive sur les groupes de migrants relevés au Sénégal dans les enquêtes rurales de Ngayorheme et Ndemene de 1968 à 1970 et dans l'enquête urbaine de Pikine (Cap Vert) en 1969. Cahiers ORSTOM (Série Sciences Humaines) 9(4). [16.24]

LACOMBE, B., VAVGELADE, J., DROVE, B., BAVIERE, M., BERTRAND, A., and DUVCHY, S. 1977. Exode rural et urbanisation au Sénégal. Travaux et Documents de l'ORSTOM no. 73. Paris, France: ORSTOM. [16.24]
Discusses the sociology of the migration of the Serer of Niahhar toward Dakar in 1972.

LAVILLE, P. 1972. Associations rurales et socialisme en Afrique occidentale. Etude de cas: le Sénégal. Paris, France: Cujas. [13.34]
The study is in two parts, the first examining aid and provident societies of the mutual aid and cooperative type before independence (1907-1960), and the second reviews the development of the cooperative movement since independence (1960-1967). (CAB)

LERICOLLAIS, A. 1970. La détérioration d'un terroir: Sob, en pays Serer. Etudes Rurales 37-39: 113-128. [13.10]

LERICOLLAIS, A. 1972. Essai d'expression cartographique régionale dans la vallée du Sénégal. Cahiers ORSTOM (Série Sciences Humaines) 9(2): 211-220. [15.10]

LERICOLLAIS, A. 1973. Sob: étude géographique du terroir Serer. Atlas des Structures Agraires au Sud du Sahara no. 7. Paris, France: Mouton. [11.00]

LERICOLLAIS, A. 1975. Peuplement et migrations dans la vallée du Sénégal. Cahiers ORSTOM (Série Sciences Humaines) 12(2): 123-197. [16.24]

LERICOLLAIS, A., and VERNIERE, M. 1975. L'émigration toucouleur: du fleuve Sénégal à Dakar. Cahiers ORSTOM (Série Sciences Humaines) 12(2): 161-177. [16.24]

LUBIN, S. 1977. Environmental impact of the Senegal River Basin Project. Kidma 3(3): 36-39. [19.20]
This article examines the history, organization, and planning efforts of the Senegal River Basin Development Project in order to shed light on the Israeli Mediterranean-Dead Sea Canal project evaluation. It was decided in 1972 by the governments of Mali, Mauritania, and Senegal, who had formed the "Organisation pour la Mise en Valeur du Fleuve Sénégal", to develop the Senegal River Basin as an integrated project for the production of hydroelectric energy, river transport, irrigated agriculture, minerals, agroindustry, and water supplies for industrial and municipal use. USAID is financing a full-scale 2-year environmental impact study, and also studies to determine the manpower and training needs for the professional staffs and the operating authority. The outcome of this study should be examined attentively by anyone interested in the feasibility of the Mediterranean-Dead Sea project. (CAB)

MAIGA, M. 1976. The policy of rice import substitution: the case of the Senegal river valley and development. Africa Development 1(2): 9-22. [13.10]
Senegal's rice import substitution policy has not only reduced its dependence on rice from abroad, but has increased its structural, economic, financial, and technological dependence on capitalist countries, and the international companies which give loans and control production and marketing of the technology required by the rice growing enterprises in the Senegal river valley and delta. The river states have become more dependent and have had to face increased imported rice costs. They are obliged to continue rice imports because national production is unpredictable and inadequate. The country cannot become self-sufficient in food by AD 2000, but needs to break away from a substitution policy financed by foreign capital. (CAB)

MAYMARD, J. 1974. Structures africaines de production et concept d'exploitation agricole. Première partie: un exemple de terroir africain: les confins Diolamanding aux bords du Sonngrongron. Cahiers ORSTOM (Série Biologie) 24: 27-64. [14.00]
This is the first part of a more ambitious work whose aim is to analyze and stress whatever originality there is in the agricultural production structure in the traditional African environment. The first part is purely descriptive and is based on a detailed investigation of a small sector of the Senegalese agriculture. It shows how deeply rooted and strong complex peasant structures can coexist with the various contributions of the modern world. A particular effort has been made to see the events from the inside and to look for, on the technical and human level, the multiple interactions that help to understand the peculiarity of the situation. (CAB)

M'BENGUE, A.B. 1965. La réforme agraire au Sénégal. Penant 707: 297-304. [15.10]
After numerous attempts at land organization since 1900, the regulation on land and estate reorganization of 20 May,1955 anticipated the confirmation of the unwritten law. However, in 1964, 99% of Senegalese land remaining under the traditional system was still in a state of complete legal confusion, despite widespread attempts to publicize the position. The need for a reform taking custom into account led to the law of 17 June 1964, combining the two schedules (i.e., registration and transcription), and establishing state-improved public land and measures of agrarian reform. Public land is divided into three zones: urban zones, classified zones (forests), and rural zones (pioneer zones and areas being regularly farmed). Under this law farmers personally occupying their land will continue to improve it; customary law allows transmission to the heirs. (CAB)

MENDY, R.M. 1976. Crédit agricole et épargne rurale: rapport de mission. Dakar, Senegal: SODEVA. [13.32]

MERLIER, H. 1972. Etudes phytosociologiques menées au centre national de recherches agronomiques de Bambey (Sénégal). Agronomie Tropicale 27(12): 1253-1265. [13.20]
The central-western part of Senegal suffers from demographic pressure. Traditional agriculture no longer replaces nutrients taken from the soil by crops. In this study, which summarizes research at the station during the period 1959 to 1969, methods of improvement are recommended, combining agriculture and animal husbandry. A traditional period of fallow, unless extended to an impossible period of at least 5 or 6 years, appears to be of no use in a system of improved agricultural rotation techniques. (CAB)

MILLEVILLE, P. 1974. Enquête sur les facteurs de la production arachidière dans trois terroirs de moyenne Casamance. Cahiers ORSTOM (Série Biologie) 24: 65-99. [22.00]

MINVIELLE, J. 1976. Migration et economies villageoises dans la vallée du Sénégal: étude de trois villages de la région de Matam. Dakar, Senegal: ORSTOM. [16.24]

MONNIER, J. 1973. Unités Expérimentales du Sine Saloum: rapport d'activités de recherches, 1 juillet 1972—30 juin 1973. Vol.7. Bambey, Senegal: CNRA. [13.20; 13.31]

MONNIER, J. 1974. La mécanisation au Sénégal: effets sur la production et l'emploi. Bambey, Senegal: CNRA. [20.12]
Gives history of mechanization in Senegal. Provides a justification for the concept of mechanization, plus an assessment of the micro- and macroeconomic effects of mechanization.

MONNIER, J. 1976a. Le démarriage précoce du mil hâtif et les techniques qui s'y rapportent. Bambey, Senegal: CNRA. [19.10]
Gives details on early millet (*souna*) using simulated farming conditions. Includes estimated labor times, plus agronomic information.

MONNIER, J. 1976b. Fichier de références concernant les techniques de cultures dites intensives proposables en pays Wolof Saloum-Saloum. Bambey, Senegal: CNRA. [19.10]
Useful reference on the methods and problems of cultivating different crops, together with a discussion on improvements.

MONNIER, J., DIAGNE, A., SOW, D., and SOW, Y. 1974. Le travail dans l'exploitation agricole Sénégalaise. Bambey, Senegal: CNRA. [16.10; 16.21]
Examines the influence of the social division of work on the combination of the factors of production and on the total productivity of work in Sine-Saloum. Monnier suggests the need simultaneously to encourage and discourage certain elements of individualism for "development." The *exploitation agricole* is defined for the unique Wolof Saloum-Saloum context, which is said to be closely related to that of other groups that have been "wolofized." This definition closely parallels that of Venema (1972).

MONNIER, J., and TALIBART, P. 1971. Premiers résultats de l'enquête socio-économique détaillée entreprise en 1971 dans le Sine-Saloum: cas d'une exploitation de la zone Nioro-Du-Rip. Bambey, Senegal: CNRA. [22.00]
Analysis of labor allocation in a single compound in Senegal indicates that a great deal of labor is performed. A 10-month study of the farm, household, and nonfarm activities of a 20-member household during 1971-72 resulted in generation of labor profiles and data on allocation of labor to various crop-related enterprises. Animal traction using horses, donkeys, and oxen were studied.

MORRIS, W., McDILL, R., and DAVIS, W. 1977. Senegal Cereals Production Project: evaluation report. West Lafayette, USA: Purdue University. [13.31]

NGUYEN VAN CHI-BONNARDEL, R. 1968. L'économie maritime et rurale de Kayar, village sénégalais: problèmes de développement. Mémoires de l'IFAN no.76. Dakar, Senegal: IFAN. [16.23]
The village is a major supplier of fish for inland markets, and attracts many seasonal fishermen to its rich fishing waters. The industry is fully described together with other secondary agricultural pursuits. (IDS)

NICOU, R. 1977. Le travail du sol, dans les terres exondées du Sénégal, motivations-contraintes. Bambey, Senegal: CNRA. [13.20]
Considers the effects of plowing on soil compaction, economy of water use, erosion, and the organic and microbial content of the sod. Agronomic consequences in terms of yield level and variability and other effects are discussed.

O'BRIEN, D.B. CRUISE. 1971. Cooperation and bureaucrats: class formation in a Senegalese peasant society. Africa 51(4): 263-278. [13.34]
The national agricultural cooperatives program in Senegal, set up after independence in 1960, foreshadowed the systematic nationalization of agricultural export crops (groundnuts). The instigators of the program saw cooperatives as an extension of the local tradition of community solidarity, but they in fact developed along the same lines as similar colonial institutions. The rural elites, who profited politically and economically from the colonial system, were partial beneficiaries of the cooperative program, but the principal gains went to local politicians. A series of bad groundnut harvests, resulting from bad weather and low prices, led to a crisis in the economy (that depends almost exclusively on groundnut exports), in the course of which farmers showed their hostility to the cooperative system. They returned to subsistence production of millet as a form of passive resistance, at the very point when the cooperative in its current form began to be envisaged by some government officials. (CAB)

ORSTOM. 1977a. Bibliographie thématique des recherches en sciences sociales effectuées par l'ORSTOM au Sénégal. Dakar, Senegal: ORSTOM. [23.00; 13.20]

PELISSIER, P. 1966. Les paysans du Sénégal. Les civilisations agraires du Cayor à la Casamance. St. Yrieix, France: Imprimerie Fabregue. [22.00]
A classic work. The peasant communities of Wolof and Serer country are models of West African peasant societies: the Wolofs are empire builders with a strong social hierarchy, attracted by territorial expansion, but mediocre cultivators; the Serers do not have this political aggressiveness, keeping to more limited territory and being concerned with equality in their organization, and as settled peasants they have more intensive and better-balanced agriculture. In central Senegal the Manding, warriors and merchants, contrast with the Dialo, good rice cultivators, but threatened by social and political collapse. The Wolofs have used outside influences, such as Islam on trade economy, to get more land, e.g., the speculative cultivation of groundnuts by a Moslem brotherhood. The "organizers" thus bring new values, undermining the cultural resistance of the "peasants" and threatening even their agricultural knowledge. (CAB)

PELISSIER, P. 1970. Les effets de l'Opération Arachide/Mil dans les régions de Thiès, Diourbel et Kaolack, République du Sénégal: rapport de synthèse. Bambey, Senegal: CNRA. [13.31]

POCTHIER, G. 1973. Unités Expérimentales du Sine Saloum: rapport d'activités de recherches, 1 juillet 1972—30 juin 1973. Vol.2. Expérimentation agronomique. Résultats, techniques et modernization. Bambey, Senegal: CNRA. [13.20; 13.31]

RAMOND, C., et al. 1971. La démarche de l'IRAT au Sénégal. Economie Rurale 88: 111-119. [13.20]
Analytical research conducted by IRAT in Senegal in various scientific disciplines has pinpointed technical innovations that can improve agricultural production. However, research was also necessary to study: (1) the economy of these innovations in farms modernized and intensified to varying degrees: (2) agro-socio-economic constraints in the rural environment opposing the spread of technical progress. This exercise was carried out by means of (a) theoretical

farm models derived from technical innovations in which interest had been confirmed during extension work; (b) experiments with these models in conditions where the human factor was controlled; (c) introduction of these models into the rural environment where they were adapted to its constraints, this stage being carried out in Experimental Units in a rural area representing a development zone, where farm types could be defined; (d) transfer of the results of (c) to the development zone. (CAB)

RAMOND, C. 1975. Programme Moyen-Terme Sahel: rapport d'activités de la Cellule de Liaison au 15 juillet 1975. Bambey, Senegal: CNRA. [13.20; 13.31]
Gives a brief review of the activities of the Liaison Cell operating in three Terroirs. Also gives a brief description of the three Terroirs and the criteria used in their selection.

RAMOND, C. 1976. Analyse des enquêtes effectuées en 1975 dans les terroirs de Got, Layabe, et Ndiamsil Sessene. Bambey, Senegal: CNRA. [13.31; 12.00]
The studies started in 1975 (year 0 of the Terroir Project) are aimed at: understanding the socioeconomic situation in the three Terroirs to understand the constraints to innovations; to provide an idea of the diffusion of the innovations and to measure their technical and economic efficiency under practical farming conditions; and to propose more intensive systems of production. A sample of 30 carrés was selected. The paper gives a format for analysis of the data.

RAMOND, C., and FALL, F. 1976. Programme Moyen Terme Sahel (Cellule de Liaison ISRA-SODEVA). Economie des exploitations des terroirs de Got, Ndiamsil and Labaye. Campagne agricole 1975. Bambey, Senegal: ISRA. [13.31; 22.00]
Survey data on 25 households studied in 1975. Data reported on equipment, farm size, inputs, and returns. Uses the following norms for cultivatable area with different power sources: 1 donkey = 3 ha; 1 horse = 4.5 ha; 1 pair cows = 6.0 ha; 1 pair oxen = 8.0 ha. Study area produced groundnuts and millet (*souna*) with the latter mainly for home consumption. Millet yields ranged from 170 to 1451 kg/ha with a mean of 398 kg/ha. Low cereal yields are attributed to low rainfall, little or no soil preparation, slight use of fertilizer or organic matter, and late or nonexistent thinning practices.

RAMOND, C., FALL, M., and DIOP, T.M. 1976a. Programme Moyen Terme Sahel (Cellule de Liaison). Taux de pénétration des techniques et incidences sur les rendements des cultures de mil et d'arachide. Bambey, Senegal: CNRA. [13.31; 22.00]

RAMOND, C., FALL, M., and DIOP, T.M. 1976b. Programme Moyen Terme Sahel; main d'oeuvre et moyens de production en terre, matériel et cheptel de traction des terroirs de Got-Ndiamsil Sessene-Labaye (Enquête 1975). Bambey, Senegal: CNRA. [13.31; 22.00]
Gives data on age, sex, household, and family makeup, secondary activities, area cultivated, cropping patterns, and equipment.

RAMOND, C., MONNIER, J., and CADOT, R. 1974. Etude de systèmes techniques de production pour le Sine-Saloum sud et est (cas du système 8-12 ha). Bambey, Senegal: CNRA. [13.20]
Gives background information and recommended practices. Also gives standard times of different operations by crop.

RAVAULT, F. 1964. Kanel: l'exode rural dans un village de la vallée du Sénégal. Cahiers d'Outre-Mer 17(65): 58080. [11.00; 16.23; 16.24]
Discusses a primarily agricultural village in the St. Louis department where much outmigration (including seasonal) has taken place. Data refers to 1961.

REBOUL, C. 1972. Structures agraires et problèmes du développement au Sénégal. Série Travaux de Recherche no. 17. Paris, France: INRA. [13.10; 13.31]
This is a review of research conducted in the Experimental Units. It is divided into two parts: (1) a panorama of Senegalese agriculture, noting particularly recent developments in production, and the Plan's guidelines for agricultural production; (2) discussion of a development project involving two groups of villages in Sine-Saloum. Analysis of structural aspects of the farms—labor force, cultivated area, materials and means of production, production and accounting results—is used to measure the extent of diffusion of extension advice among the farm population by category of farm, and to measure, for this particular case study, the adequency of the Plan objectives in terms of constraints on agricultural production. The study also reflects ways in which the market economy penetrates the traditional farm economy. (CAB)

REBOUL, C. 1976a. Causes économiques de la sécheresse au Sénégal. Systèmes de culture et calamités (naturelles). Bulletin d'Information du Département d'Economie et de Sociologie Rurales (vol. for 1976): 59-93. [21.50]

REBOUL, C. 1976b. Sénégal: le développement contre les paysans? Actuel Développement 12: 36-40. [13.10]
Attempts to achieve capital-based industrial or semi-industrial agricultural development are designed to bring about a rapid increase in exports whilst reducing imports of cereals, milk, meat, fruit, and vegetables. At the same time, this policy automatically weakens the prospects for intensification and diversification of peasant farm production and thus of progress beyond the traditional extension farming systems based on groundnuts and subsistence cereals (millet, sorghum, and rice). (CAB)

REVERDY, J.C. 1967. Une société rurale au Sénégal—les structures foncières familiales et villageoises des Serer. Aix-en-Provence, France: Centre Africain des Sciences Humaines Appliquées. [14.00; 15.10]
The relationship between land tenure and the kinship system is examined so as to be able to establish the sociopolitical hierarchy of a Serer village community, with the ultimate objective of assessing the chances of a working relationship between peasants and administrative agents of development. Ch. 1 discusses (a) the magico-religious relationship of man with the land and (b) rights of land tenure and the social hierarchy. Ch. 2 examines kinship and social intercourse. Ch. 3 analyzes the village community structure. Ch. 4 reviews the establishment of a village cooperative, suggesting reasons for its lack of success and the significance of the resistance to social change. Finally, sociological considerations necessary in determining a policy for local development are discussed. The prospect of a rapid disintegration of the Serer community being remote, local development projects must be conceived within the present social framework. Only a full understanding of the village groupings and interrelationships will reveal the weak points in the social structure. (CAB)

RICHARD, J.F. 1974. Unités Expérimentales du Sine Saloum: commercialisation des céréales, 1973-74. Bambey, Senegal: CNRA. [13.31; 13.32]
Review of a program to commercialize millet, sorghum, and maize during 1974 with the aim of maintaining a price floor and preventing usurious practices.

RICHARD, J.F. 1975a. Evolutions des principaux facteurs d'intensification dans l'Unité Expérimentale de Thysse-Kaymor-Sonkorong, de 1969 a 1975. Bambey, Senegal: CNRA. [13.20; 13.31]

RICHARD, J.F. 1975b. Les conditions d'application de l'amélioration foncière. Bambey, Senegal: CNRA. [13.31; 19.13]
Gives the "ten commandments" involved in "improving" agriculture in the Experimental Units and gives an indication of progress in fulfilling these.

RICHARD, J.F. 1975c. Un essai de développement expérimental. L'Unité Expérimentale de Thysse-Kaymor-Sonkorong au Sine-Saloum. Bambey, Senegal: IRAT. [22.00]
Gives information on changes in the Experimental Units between 1969 and 1974. An increase in the proportion of land devoted to early millet (*souna*) and maize was noted and a decrease to late millet (*sanio*). Yields of crops had increased during the period.

RICHARD, J.F., FALL, M., and ATTONATY, J.M. 1976. Le modèle 4S programme linéaire pour les exploitations agricoles du Sine Saloum sud du Sénégal et calculs de budgets automatisés. Bambey, Senegal: IRAT. [18.20]
A linear programming model based on the assumption that producers follow all IRAT recommended practices.

RICHARD, J.F., and FAYE, J. 1975. Les recherches sur la dynamique du transfert au mode rural d'une technologie de modernisation dans les Unités Expérimentales du Sine Saloum. Bambey, Senegal: IRAT. [13.30]
The authors conclude that after 5 years of operation in the Experimental Units modern techniques are strongly conditioned by political will and the prices of the support systems on both the input and output side.

ROCH, J. 1969. Emploi du temps et organisation du travail agricole dans un village Wolof Mouride: Kaossara. Dakar, Senegal: ORSTOM. [16.21]
A parallel study to the other Wolof Mouride villages. Data on labor utilization are presented for only seven households and the difficulties involved in attempting this type of survey are outlined. (IDS)

ROCH, J. 1976. Les migrations économiques de saison sèche en bassin arachidien Sénégalais. Cahiers ORSTOM (Série Science Humaines) 12(1): 55-80. [16.23]
The Senegalese economy depends very heavily on seasonal agriculture based on two main crops: commercially grown groundnuts, and subsistence millet. The vast area known as the Groundnut Basin lives on these two crops, but staple crop output is insufficient to ensure the subsis-

tence needs of the groundnut producers. The producers thus have to find additional sources of income for the dry season. This search for extra resources is expressed in the incessant seasonal movements that affect the whole of the groundnut region during all or part of the dry season, particularly from January to May. The towns, particularly Dakar and Cap Vert, find it increasingly difficult to absorb these migrants, whether in temporary or more permanent employment. Seasonal mobility reveals the gravity of the social crisis in Senegal, in both urban and rural areas. At the present stage of development, spontaneous adjustments are more and more difficult to achieve. (CAB)

ROCH, J., and ROCHETEAU, G. 1971. Economie et population: le cas du Sénégal. Cahiers ORSTOM (Série Sciences Humaines) 8(1): 63-73. [11.00]

ROCH,J., and ROCHETEAU, G. 1975. Le rôle de l'Etat dans le contrôle du crédit au Sénégal. Cahiers ORSTOM (Série Sciences Humaines) 12(3): 221-234. [13.32]

ROCHETEAU, G. 1969. Système Mouride et rapports sociaux traditionnels: le travail collectif agricole dans une communautē pionnière du Ferlo Occidental. Dakar, Senegal: ORSTOM. [14.00; 16.10; 16.21]

A brief account of the social composition and labor inputs of a particular kind of work group in Mouride village concerned with groundnut and millet production. (IDS)

ROCHETEAU, G.. 1970. Pionniers Mourides au Sénégal: changement, technique et transformation d'une économie paysanne. Dakar, Senegal: ORSTOM. [22.00]

Darou Kharim is a Mouride Islamic village growing groundnuts and millet. The study analyses agricultural change, especially in relation to duration of work and economic role, in response to technical change in the village that has only recently been established. Labor data were collected from daily visits to a sample of households for a full agricultural year. Men spend 54% of their time on work activities and women spend 73%. Women lose 6% of their time through sickness and men only 2%. Six activities are differentiated for each month of the year. More details are given in the inputs of labor into different tasks on different crops further divided for different individuals in the household. Most of these are compared with the nearby villages of Darou Rahmane and Missirah, studied independently; the major difference is that in Darou Kharim there are fewer opportunities for nonagricultural work but the inputs of time into the main crops are almost identical. It is a very useful account of seasonal labor variations. (INTECH)

ROCHETEAU, G. 1974. The modernisation of agricultural land utilization and the preference for consumption crops in the Groundnut Basin of Senegal. Pages 461-469 *in* Population in African development vol.1 (ed. P. Cantrelle). Brussels, Belgium: Ordina, Editions Dolhain.[19.11; 21.20]

ROCHETEAU, G. 1975a. Pionniers Mourides au Sénégal: colonisation des terres neuves et transformations d'une économie paysanne. Cahiers ORSTOM (Série Sciences Humaines) 12(1): 19-53. [22.00]

Mouride settlement, in its present spontaneous form, may provide the way towards a more open economy and more progressive agriculture in Senegal. This study attempts to evaluate this potential, by comparing peasant agriculture in the areas they have left, and in the areas of new settlement. (CAB)

ROCHETEAU, G. 1975b. Société Wolof et mobilitē. Cahiers ORSTOM (Série Sciences Humaines) 12(1): 3-18. [16.24]

With the aim of assessing the current determinants and economic implications of rural migrations in the groundnut basin, this study seeks to interpret the phenomenon of geographical mobility in the light of an analysis of how Wolof society works. Geographical mobility appears, from this viewpoint, as a structural characteristic of the Wolof production structure, and, on the dynamic level, as a means by which Wolof society resolves one of its internal contradictions: the conflict between the family-based structure of authority and the system of preeminence in land tenure control. (CAB)

ROSA, J.L. le, and BELMONT, M. 1962. Enquête agricole, 1960-61. Paris, France: Ministère de la Coopération. [11.30]

SANTOIR, C. No date. Les sociétés pastorales du Sénégal face à la sécheresse 1972-1973. Réactions à la crise et degrē de rétablissement 2 ans après. Le cas des Peul du Galodjina. Dakar, Senegal: ORSTOM. [20.20; 21.50]

Study of the impact of the drought on Peul herders in northern Senegal.

SANTOIR, C.J. 1975. L'émigration maure: une vocation commerciale affirmée. Cahiers ORSTOM (Série Sciences Humaines) 12(2): 137-161. [16.24]

SARGENT, M. 1974. Research on cereal production technology in Senegal and Upper Volta. Washington, D.C., USA: USAID. [13.20]
Gives a review of research work done in Senegal and Upper Volta, with specific reference to cereal production.

SENE, D., and N'DIAYE, M. 1973. L'amélioration du niébé (Vigna ungiculata) au CNRA de Bambey de 1959 à 1973: résultats obtenus entre 1970 et 1973. Bambey, Senegal: CNRA. [13.20]

SENE, I. 1978. Farmers' behavior toward new technology: the Senegalese case. East Lansing, USA: Michigan State University, Department of Agricultural Economics. (Mimeo.) [13.32; 21.10]
The introduction of oxen has accentuated inequality in income distribution. Farmers often get loans and sell oxen to butchers after 2-3 years' use. Use of hired and family labor has intensified.

SENEGAL, MINISTERE DE L'AGRICULTURE. 1969. Perspectives de développement de la production rurale du Sénégal. Bulletin de l'Afrique Noire 552: 1137-1149. [13.10]
The Senegal Ministry of Agriculture reports on prospects of field crops, groundnut oil, diversification of fruit production, specific programs for Casamance, and livestock products in rural development. (CAB)

SENEGAL, MINISTERE DE DEVELOPPEMENT RURAL. 1977. National investment strategy for increasing food production: Senegal. Washington, D.C., USA: Consultative Group on Food Production and Investment in Developing Countries. [13.10]
To diminish dependency upon imports, a strategy is to be implemented that aims at import substitution. Price policies are to be used to promote the consumption of millet, sorghum, and maize by modernizing the processing of such staples and to check the increase in domestic demand for rice and wheat. The main components of the policy of the government in the spheres of production, processing, and consumption are articulated.

SILVESTRE, P. 1961. Monographie des recherches conduites à Bambey sur l'arachide. Agronomie Tropicale 6: 623-738. [23.00; 13.20]

SILVESTRE, P., and BIGOT, Y. 1972. Les Unités Expérimentales au Sénégal. 2. Les innovations et l'évaluation. Techniques et Développement 3: 20-27. [13.31; 19.13]
A previous article discussed the two Experimental Units set up in 1969 and studies on their environment. In Part 2 the introduction of some innovations is discussed, results analyzed and conclusions drawn. Work on the farming systems uses the results obtained in the supportive "preextension and multi-local experiment sites" set up in each Unit, as part of a national network, where the latest research findings are adapted to the various ecological situations. Farm equipment is improved mainly by introducing draft cattle. Rotations are revised to introduce new crops (cotton) and make the farmers' work easier (replacing the fallow, which is difficult to plow under, by a cereal crop). Three years of experience have shown: (a) the effects produced by improved cultural techniques, early sowing, the place of groundnuts or sorghum in the rotations, the number of cultivations, the use of stock, etc.; (b) a 50% increase in income per worker on the areas under intensified crops. The lessons drawn from this experience involve a wide number of branches, formulating a yield measurement method based on samples, using factorial analysis (yields and income), a better understanding of the relationship between the diffusion of innovations and the new problems arising from this, preparing "technical production systems" or experimental models, and a classification of the types of actual production structures. By comparing these results it will be possible to formulate decision models of the "socioeconomic production systems" that reflect the various possible combinations of elementary production systems and take into account the true economic situations and the relationship between the different decision-making centers of the farms. Diffusing these decision-making models in the rural environment should be the occasion for undertaking research on diffusion techniques and the development of their results. (CAB)

SODEVA. 1976. 1er rapport du suivi P.A. Dakar, Senegal: SODEVA. [22.00]
Gives first results of a study to measure and analyse effects of the agricultural program on farms in the groundnut basin. Also gives the questionnaire used. The study involved 24,000 members of 150 cooperatives. A second study involving 3000 carrés chosen from the same 150 cooperatives was started towards the end of the period. The following SODEVA publications cited give some of the results of the two surveys.

SODEVA. 1977a. 2ème rapport du suivi P.A. Dakar, Senegal: SODEVA. [22.00]

SODEVA. 1977b. Réunion d'harmonisation des méthodes d'estimation de surfaces et de production. Dakar, Senegal: SODEVA. [12.00]
Gives a discussion of estimation methods for field size and crop yields.

SODEVA. 1978a. 3ème rapport du suivi P.A. Dakar, Senegal: SODEVA. [22.00]

SODEVA. 1978b. Typologie des exploitations agricoles du Sine-Saloum. Dakar, Senegal: SODEVA. [22.00]
The study based on surveys cited above delineates six types of exploitations based on the land and power (animal traction) they have available. The paper analyses the characteristics of each type.

SONED. 1978. Etude sur la commercialisation et le stockage des céréales. Politique des prix à la production. Dakar, Senegal: SONED. [13.33]
Explains how prices have been set for the 1978 campaign.

SOW, A. 1977. Evolution du système de production agricole dans la région du Cap Vert. Essai d'analyse de son degré d'intégration à l'économie urbaine dakaroise. African Administrative Studies 17: 59-65. [13.10]
The paper discusses two opposing views of rural-urban relations: (1) the town may be blamed for underdevelopment of the surrounding countryside; (2) the town is a necessary factor in the economic development of the surrounding countryside. It criticizes the fact that a historical parameter is never considered; the two entities—town and rural area—are closely linked in historical development. A concrete example of this is studied—the evolution of the system of agricultural production in the Cap Vert region of Senegal. It is shown that, at each stage of the evolution of Dakar, the urban sector has had specific connections with the rural sector. An integrated model is given of the relationship between the city of Dakar and the surrounding countryside at each stage of its development. (CAB)

SOW, F. 1972. Les fonctionnaires de l'administration centrale Sénégalaise. Dakar, Senegal: IFAN. [13.10]

SOW, Y. 1978. Vulgarisation agricole et types d'exploitations dans le sud Sine-Saloum. Dakar, Senegal: Centre National d'Etudes d'Agronomie Tropicale. [13.32; 22.00]
Argues for the need to vary the type of extension input according to different types of farms. Gives some empirical information on each type.

STORM, R. 1977. Government-cooperative groundnut marketing in Senegal and Gambia. Journal of Rural Cooperation 5(1): 29-42. [13.34]
The paper deals with the Senegal government's marketing organization, maintaining that the use of the word "cooperative" to describe it hardly seems justified. It describes various aspects of this state bureaucracy, occasionally comparing it with the cooperative organization in neighboring Gambia. It is concluded that in Senegal the government in fact extracted revenues from the peasantry, through the "cooperative" groundnut marketing organization. A parallel proceeding has been followed by many developing countries, as well as by the USSR and Japan. In the case of Senegal, however, the withdrawals have not been used for investment, but primarily to meet urban and mainly consumer needs. (CAB)

STRC/OAU. 1972. Joint Project 26. Cereal problems in Senegal. Liaison Document no. 4/72. Dakar, Senegal: IRAT. [13.20]

STRYKER, J.D. 1975b. West Africa Regional Project: Senegal agriculture. Washington, D.C., USA: IBRD Western Africa Projects Department. [11.00]

TOURTE, R. 1974a. Recherche agronomique et développement agricole au Sénégal; flash rétrospectif sur cinquante années de recherche en Afrique Sahélo-Soudanienne. Bambey, Senegal: CNRA. [13.20]
A short history of CNRA at Bambey since 1913.

TOURTE, R., and PLESSARD, F. 1973. Le petit tracteur en agriculture tropicale sèche. Bambey, Senegal: CNRA. [20.12]

USAID. 1975b. Senegal Cereals Production Project. Dakar, Senegal: USAID. [13.10]

VALLAEYS, G., CHABROLIN, R., and SILVESTRE, P. 1969. L'apport de la recherche agronomique aux actions de développement rural. Rôle joué par l'IRAT dans la mise en oeuvre d'importantes opérations de développement au Sénégal et à Madagascar. Agronomie Tropicale 3: 215-225. [13.20; 13.31]
Examples are given of IRAT action in Senegal and Madagascar, illustrating the contribution of research to development projects: (1) participating in initiating of rural development or improvement projects; (2) studies necessary for the planning of the project; and (3) technical support during the project's implementation. (CAB)

VENEMA, B. 1972. Les centres de décision au niveau du carré vus par les paysans. Bambey, Senegal: CNRA. [16.10]

VENEMA, L.B. 1978. The Wolof of Saloum: social structure and rural development in Senegal. Wageningen, Netherlands: Centre for Agricultural Publishing and Documentation (PUDOC). [22.00]
The study refers to the Wolof of Saloum, Senegal. Its aim was to examine which factors had induced change in rural stratification, cooperation and cohesion. Their significance for administration of rural development was studied. Views of historians and anthropologists are discussed. Literature was examined to determine the processes that had undermined the traditional Wolof states. In this manner, rural development administration was also studied since the colonial period. Fieldwork lasted 1½ years. For 1 year, a community-study was conducted; the other months were spent on completing questionnaires in the Arrondissement Medinah Sabach. The Islam reform movement had already undermined the power of the Wolof rulers before the spread of groundnut as a cash crop and the consequent establishment of French colonial rule. This movement did not alter the differences in status and in influence between free-born villagers and their slaves. In Saloum, the slaves founded independent farms after the 1st World War. Wealth, acquired by cultivating groundnuts and performing commercial side activities, has also become important to obtain influence. In the village studied, some descendents of slaves had become rich and a few were members of the councils of the village cooperative and party-branch. Agricultural cooperation was partly an expression of local stratification. Aid in labor was also given to in-laws, friends, and the poor. Although wage labor had increased, cooperation had not been decreased by incorporation in the money economy. This incorporation and the application of Islam law disintegrated the compound into households and the households into individual farms. In this process, other factors were probably important too. The government organizations concerned with the increase in agricultural production had insufficient knowledge of fragmentation of the domestic units, hierarchy in local power networks, and the aristocratic culture pattern. It is likely that the propagated innovations did not decrease indebtedness and the difference in wealth between villagers.

VERCAMBRE, M. 1974. Unités Expérimentales du Sine-Saloum: revenus et dépenses dans deux carrés Wolofs. Bambey, Senegal: CNRA. [22.00]
Two carrés resulting from the 1972-73 survey were analysed to ascertain: the movement of goods within farms (carrés) in order to understand intermember dependency; member budgets, in order to judge investment capacity; local commerce prices, in order to understand seasonal fluctuations and usury.

YACIUK, G. 1977a. Résultats de l'enquête sur la technologie: post-récolte en milieu paysan. Bambey, Senegal: CNRA. [21.30; 21.40]
Gives frequency distributions of responses to a questionnaire that was administered (see next reference).

YACIUK, G. 1977b. Méthodologie de l'enquête sur la technologie: post-récolte en milieu paysan. Bambey, Senegal: CNRA. [21.30; 21.40]
The questionnaire that was used.

YACIUK, G., and YACIUK, A.D. 1977. Discussions des résultats de l'enquête sur la technologie post-récolte en milieu paysan au Sénégal. Bambey, Senegal: CNRA. [21.30]
A survey was conducted in eight regions of Senegal during 1975-76. One hundred families in each region were interviewed and data collected on characteristics such as ethnic group, religion, age and civil status of women interviewed, number of co-wives and children, education, principal work activities of women and their spouses, dwelling, type of grain storage and acceptability, traditional storage practices, storage problems, quantity stored, responsibility for storage, individual rights to sell stored grains, frequency of sales and uses of grains, time for shelling and grinding of grains, place and time of sales, cereal consumption preferences.

Upper Volta

ANCEY, G. 1974a. Facteurs et systèmes de production dans la Société Mossi d'aujourd'hui: migrations, travail, terre et capital. Ouagadougou, Upper Volta: ORSTOM. [22.00]
Economic anthropological analysis of human resource, land, and capital in the production process. The study of human resources includes description of the makeup of the Mossi family, the impact of migration on age pyramids, analysis of the impact of social status on the level of migration of those aged 15-34 years, and the migration cycle. Land cultivated and its distribution are presented. Labor allocation, activities, and bottlenecks are discussed.

ANCEY, G. 1974b. La monnaie Mossi. Un pouvoir non-libérateur de règlement. Ouagadougou, Upper Volta: ORSTOM. [30.00]

ANONYMOUS, 1977a. Upper Volta: politics and drought. Africa 74: 36-41 [13.33; 21.50]
This article discusses the serious food shortage in Upper Volta and their political repercussions. The people of the country allege that the situation has been exacerbated by the government's policy of holding down its 1977 buying price for millet that has resulted in hoarding, speculation, and smuggling. (CAB)

AVV. 1978. Autorité des aménagements des vallées des Voltas (manuel de l'enquêteur). Ouagadougou, Upper Volta: MDR. [12.00]

BARRAL, H. 1967. Les populations d'éleveurs et les problèmes pastoraux dans le nord-est de la Haute-Volta (cercle de Dori, subdivision de l'Oudalan) 1963-1964. Cahiers ORSTOM (Série Sciences Humaines) 4(1). [20.20]

BARRAL, H. 1968. Tiogo: étude géographique d'un terroir Cela. Atlas des Structures Agraires au Sud du Sahara no.2. Paris, France: Mouton. [11.00]

BARRAL, H. 1974. Mobilité et cloisonnement chez les éleveurs du Nord de la Haute-Volta: les zones dites "d'endodromie pastorale". Cahiers ORSTOM (Série Sciences Humaines) 11(2): 127-135. [20.20]
In the Upper Volta Sahel zone, the Oudalan area is inhabited by nomads (Tuaregs and people assimilated to them, the Peuls) and by a sedentary minority (mostly Songhay). Within this area one can mark the boundaries of the so-called "endodromie pastorale" zones. These comprise an equal number of territories, cultivated according to an annual cycle from several points of continually flowing waters by sedentary or nomadic stockbreeders, having adopted the same areas and the same flock-movement calendar. In the heavily charged pastoral zones, the nomadism during the rainy seasons has been discontinued and these very pastures have been cultivated, ever since, all the year long, sometimes bringing about an irreversible dryness. In the lesser charged zones the alternate cultivation of the pastures has been maintained and the degradation of the plant covering does not appear. In the first case, the effects of the present day dryness are marked by very important losses in livestock while, in the second, they are much less heavy. A well understood nomadism within the framework of a rational cultivation of the pastures permits the preservation of the pastoral potential of a given zone. (INTECH)

BARRETT, V., GREGORY LASSITER, DESIRE MAYABOUTI, and THOMAS STICKLEY. 1978. Animal traction credit in six intensive zones of the Eastern ORD of Upper Volta. Report no. 2. Fada, Upper Volta: Eastern ORD and Michigan State University. [13.32; 20.12]
A review of the animal traction credit program as carried out in six USAID intensive zones in 1977-78. The study, based on interviews of 148 animal traction farmers and 20 extension agents, showed that 55% of the farmers had difficulty training oxen, and 41% had difficulty training donkeys, and only 10% understood the terms of loans.

BELLOT, C.B. 1976. L'aménagement des vallées des Voltas et l'exemple de Kaibo. Grenoble, France: Université Scientifique et Médicale de Grenoble, Institut de Geographie Alpine. [13.31; 14.00; 19.20]
In Upper Volta about 6 million people, 95% of whom are peasants and traditional livestock producers, are very unevenly distributed. The arid regions that are unfavorable to agriculture are densely occupied, while the Volta valleys are almost deserted despite good, fertile soil. This is largely due to the prevalence of disease (onchocerosis) in the valleys, and the social organization of the Mossi people. Rural development and the agricultural economy of the country are, therefore, faced with considerable problems, with low agricultural productivity, soil erosion, and a high rate of migration. However, an extensive project is now underway to eliminate onchocerosis. This has enabled the government to begin population resettlement and agricultural development in the Volta valleys. So far results have been successful, and, after a general study of the problems involved, a case study is made of development in Kaibo where 820 people are cultivating 618 ha with cotton and cereals. Peasant attitudes to their new situation are included, with particular reference to social aspects and village organization. (CAB)

BELLOT, J.M. 1977. Potentialités pour un aménagement du cours moyen de la Volta Noire et de la vallée du Sourou. Grenoble, France: Université Scientifique et Médicale de Grenoble, Institut de Géographie Alpine. [11.10; 11.20]
The Black Volta region comprises many different types of land and soil, and this diversity is accentuated by variations in climate and the presence of 12 separate ethnic groups. The demographic distribution is very uneven, and social problems are likely to result from large-scale migration into the area (mainly by the Mossi people). Shifting cultivation predominates, but rotation systems and crops vary according to soil type. In the south cotton production is

expanding, while in the north groundnuts and livestock production are the main activities. Development operations have been initiated by the Regional Development Organization and the Upper Volta government, with particular emphasis on education and health care; but it is thought that the greatest resource for development is the Volta river, which could have enormous benefits for agriculture. However, consideration must be given to social conflicts, different types of traditional farming, and traditional rights to land claimed by the various ethnic groups. The main aspects studied are: the natural environment; population distribution, village organization, and agricultural land use; and socioeconomic development prospects. (CAB)

BENOIT, M. 1971. Espaces agraires Mossi en pays Bwa et Nahatusyo. Premiers résultats sur la géographie d'une zone de colonisation agricole. Ouagadougou, Upper Volta: ORSTOM. [16.24]
This is analysis of the migration of Mossi people (1952 and 1965) into the Bwa area, in Upper Volta. The "colonial peace" (1916-20) was followed by more extensive land use by the Bwa people. The freed land (less fertile) encouraged Mossi settlements in the Nouva area. The document states that the Mossi quest for new lands in the Nouna area (from 1952 to 1965) was due more to the lack of social stability than to the need of fertile lands.

BENOIT, M. 1973a. Espaces agraires Mossi en pays Bwa. 2 vols. Ouagadougou, Upper Volta: ORSTOM. [16.24]

BENOIT, M. 1973b. Le champ spatial Mossi dans les pays du Voun-Hou et de la Volta Noire. Cahiers ORSTOM (Série Sciences Humaines) 10(1): 115-138. [15.00]

BENOIT, M. 1973c. Mutation agraire dans l'ouest de la Haute-Volta. Le cas de Doboura. Cahiers ORSTOM (Série Sciences Humaines) 10. [22.00]

BENOIT, M. 1974. Présentation des conclusions sur les "espaces agraires Mossi en pays Bwa". Ouagadougou, Upper Volta: ORSTOM. [15.00]

BITARD, J.P. 1961. Di: village Marka de la vallée du Sourou. Bordeaux, France: Centre d'Etudes de Géographie Tropicale. [14.00; 21.20]
Food shortage was found to be the major problem of the village in spite of rich and abundant land resources (land areas quoted are, however, probably not reliable). Millet is the major crop, and, although greater diversification of the crop pattern could be achieved, there is psychological resistance to this. Data are largely nonquantifiable, but a few case studies of family budgets over a short period are included. Marketing transactions are examined at some length and the social changes and stresses resulting from the transition to a monetized economy are briefly discussed. The survey was a joint one with the Service de l'Hydraulique de la Haute Volta, and the author suggests that the proposed plans to develop the Sourou valley should help provide the additional resources the village so badly needs. (IDS)

BOUTILLIER, J.L. 1964. Les structures foncières en Haute-Volta. Etudes Voltaïques, Centre IFAN-ORSTOM no. 5. Ouagadougou, Upper Volta: ORSTOM. [15.10]
Discusses land tenure systems in Upper Volta.

BROEKHUYSE, J.T. 1976. Subsistence economy, Upper Volta: a comprehensive survey of the development of villages. (In Dutch.) Amsterdam, Netherlands: Royal Tropical Institute. [22.00]
A survey is made of subsistence farming in the region of Samo du Sud. The study looks at the agricultural income of the farmers, different types of manpower supply by the rural community, agricultural production and consumption, farmers' investment preferences, the agricultural training program at demonstration farms, introducing the use of oxen as tractive power, agricultural mechanization, and the supply of agricultural credit. There are concluding remarks on the role of consultants in the process of innovation in the villages. (CAB)

CAPRON, J. 1973. Communautés villageoises Bwa: Mali-Haute-Volta. Mémoires de l'Institut d'Ethnologie no. 9. Paris, France: Institut d'Ethonologie. [14.00]
A scholarly and detailed ethnological study of the Bwa peoples, and of the relevance of the village community past and present, using three different though typical villages to illustrate various aspects of the social and economic organization. Origins of the villagers, social structure, land rights, and work groups are discussed in detail. Data are excellent though largely nonquantitative. (IDS)

DELGADO, C.L. 1977. Economic interactions between peasants and herders in the West African savannah: a case study from Tenhodogo, Upper Volta. USAID Contract Report no. REDSO/WA/ 77-104. Ann Arbor, USA: University of Michigan, CRED. [20.11]
Fulani are forced to grow crops "inefficiently" in comparison with the Mossi because the local terms of trade are adverse to cattle and the marketing system is increasingly uncertain. Mossi

have encroached on Fulani land. They entrust cattle to Fulani. Milk is bartered for millet and the usufruct of manure, about which there are increasing disputes. Recommends that the availability of grain be guaranteed so that the Fulani can specialize in cattle herding. (BH)

DELGADO, C.L. 1978. Livestock versus foodgrain production in southern Upper Volta, a resource allocation analysis. Ann Arbor, USA: University of Michigan, CRED. [22.00]
A farm management survey on resources use and production, and secondary data on animal traction are used to construct a linear programming model to test the profitability of mixed farming. Because of labor conflict between crop and livestock, it is found that farmers are doing better in entrusting their animals to Fulani herdsmen. It is also found that the research area is not endowed with the ideal conditions for the introduction of animal traction.

DSA, UPPER VOLTA. 1976. Rapport Annuel (1975-1976). Ouagadougou, Upper Volta: MDR. [13.10]

DUBOURG, J. 1957. Mossi peasant life: the village of Taghalla (Upper Volta). Cahiers d'Outre-Mer 10(4): 285-324. [22.00]
This village study was conducted as part of a wider survey of the Mossi by the Institut des Sciences Humaines Appliquées and other bodies. The village and its ecology are described, together with an outline of the village history, occupation, and economic activities. The social malaise resulting primarily from the population pressure and its consequences on land, migration, and village traditions are outlined. The difficulties the villagers' face are well described and remedies suggested include exploitation of new lands, better use of livestock, crop diversification, and the installation in the village of a pilot farm similar to others set up by the administration. (IDS)

EICHER, C.K., SARGENT, M., TAPSOBA, E., and WILCOCK, D. 1976. An analysis of the Eastern ORD Rural Development Project in Upper Volta: Report of the MSU Mission. African Rural Economic Working Paper no. 9. East Lansing, USA: Michigan State University. [13.10]
The study looks at the implementation and future development potential of Upper Volta's FADA Rural Development Organization. Recommendations include: (1) infrastructure development using available personnel resources to develop roads, (2) agricultural production, particularly the development of markets, (3) agricultural credit, especially for the medium term, (4) improving basic technical and socioeconomic data to support the livestock subsector, and (5) training for personnel in several sectors. (CILSS)

GOSSELIN, G. 1969. Le mouvement coopératif en Haute-Volta. Genève-Afrique 8(1): 19.33. [13.34]

This paper recalls the history of the cooperative movement in Upper Volta, presents its main organisms and agencies, reviews the legislation of the cooperatives, studies the credits granted to them, the doctrinal issues involved, the structures of the movement and, finally, its evolution and operation. Four tables are included: (1) Structure of the cooperative movement as of 31 Dec 1965; (2) Dimensions of the cooperatives according to their characteristics; (3) Evolution of the cooperative movement between 1955 and 1965; (4) Operations of the cooperative movement as of 31 Dec 1965. (CILSS)

GUISSOU, J. 1977. Etude sur les besoins des femmes dans les villages de l'AVV et proposition d'un programme d'intervention. Ouagadougou, Upper Volta: SAED/Ministère du Développement Rural. [13.31; 16.22]
Women on the project are denied their traditional independence as traders (because markets have not been planned), have been denied access to land (because land has been allocated by the AVV only to men), and have an intolerable domestic load (because monogamous, not polygamous, couples have been selected as settlers and because facilities such as wells, mills, etc., have not been properly planned). Simple reforms are suggested. (BH)

GUISSOU, J., LAMIZANA, M., and AMADOU, A. 1976. Etude sur les conditions de vie et de travail des femmes en milieu rural et proposition d'un programme d'intervention régional pour l'allègement du travail des femmes. Ouagadougou, Upper Volta: Société Africaine d'Etudes et Développement. [16.22]

HAMMOND, P.B. 1959. Economic change and Mossi acculturation. Pages 238-256 *in* Continuity and change in African cultures (ed. W.R. Bascom and M.J. Herskovits). Chicago, USA: University of Chicago Press. [14.00]

HAMMOND, P.B. 1967. Mossi technology and time allocation. *In* Conference on Competing Demands for the Time of Labour in Traditional African Societies, Holly Knoll, organized by the Joint Committee on African Studies of the American Council of Learned Societies, Social Science Research Council, and the Agricultural Development Council, Inc. [16.20]

IRAT, UPPER VOLTA. No date. Sorgho-mil-maïs-variétés sélectionnées vulgarisables (fiches descriptives—répartition géographique). Paris, France: IRAT. [13.20]

KAFANDO, T.W. 1972a. Contribution à l'étude du développement intégré du Liptako-Gourma: introduction à l'étude des systèmes agro-pastoraux. Dakar, Senegal: IDEP. [20.11]

KAFANDO, T.W. 1972b. Développement intégré du Liptako-Gourma (questionnaire sur les systèmes agro-pastoraux). Dakar, Senegal: IDEP. (Mimeo). [12.00; 20.11]

KAFANDO, T.W. 1972c. Les perspectives du développement rural de l'Est Volta. Paris, France: IEDES. [13.10; 14.00]
Describes the traditional society (a case study of one village) and the performance (agricultural production) of the Eastern region of Upper Volta. In concludes that traditional bounds as well as capitalist orientation have negative effects on the development of the region. A demolition of the traditional relationships and more government intervention are called for.

KAFANDO, W.T. 1973. L'agriculture et l'élevage dans la stratégie du développement intégré du Liptako-Gourma. Dakar, Senegal: IDEP. [20.11]

KAFANDO, W.T. 1975. Le projet de colonisation des vallées des Voltas (réunion sur les mouvements de population et les systèmes d'éducation dans les pays Sahélo-Soudaniens). Dakar, Senegal: UNESCO. (Mimeo.) [13.31; 16.24; 19.20]

KOHLER, J.M. 1967. Notes historiques et ethnographiques sur quelques commandements régionaux de l'Ouest Mossi. Paris, France: ORSTOM. [14.00]

KOHLER, J.M. 1968. Activités agricoles et transformations socio-économiques dans une région de l'ouest du Mossi. Ouagadougou, Upper Volta: ORSTOM. [15.10]
Notes increasing rural inequality reflected in changing customs with respect of land tenure. (BH)

KOHLER, J.M. 1971. Activités agricoles et changements sociaux dans l'Ouest Mossi. Mémoires de l'ORSTOM no. 46. Paris, France: ORSTOM. [22.00]
After a general description of the region and locality of Dakola (West Mossi, Upper Volta), the main features of the production system are analyzed, and the tenure arrangements described. Particular detail is given on the social organization of production and consumption, including a calendar of the agricultural year and tasks performed at various seasons, and peculiarities of Mossi labor organization (forms of reciprocal help). The research on development of the matrimonial system and of political structures, as well as the effects of migration and of the development of the cotton industry, are described in an appendix. (CAB)

KOHLER, J.M. 1972. Les migrations des Mossi de l'Ouest. Travaux et Documents de l'ORSTOM no. 18. Paris, France: ORSTOM. [16.24]

KRINGS, T. 1976. The Sahel from Upper Volta. A report on the changes in the geography of cultivation in the contact area between the hoe cultivating peasants and the pastoral livestock farmers. (In German.) Afrika Spectrum 11(2): 113-126. [20.11]
During the past 50 years social and cultural changes, such as the progressive social emancipation of the Bella, slaves of the pastoral Tuareg, and trends towards sedentarization of some Fulani herdsmen, have been evident in the Sahelian lane of Upper Volta. As a result the cultivated area has been extended northwards, and the livestock population rapidly increased. The central Oudalan, for example, is overstocked, and suffers from overgrazing and soil destruction. Abandonment of seasonal transhumant migration over the past 20 years has resulted in destruction of vegetation, and, in some cases, irreversible desertification. A reduction in the areas cultivated, and a reorganization of traditional transhumance, seems necessary. (CAB)

LAHUEC, J.P. 1961. Zaougho: étude géographique d'un village de l'Est Mossi. Ouagadougou, Upper Volta: ORSTOM. [22.00]

LAHUEC, J.P. 1970. Une communauté évolutive Mossi: Zaongho. Etudes Rurales 37-39: 150-172. [22.00]
A largely nonquantitative account of a village in an area of high population density to which the villagers have adjusted by more permanent out-migration and the production of irrigated cashcrops in exchange for millet. Lack of good market opportunities for cash crops is a real

obstacle. Control of the irrigated land is the basis of emerging socioeconomic differentiation. (IDS)

LAHUEC, J.P. No date. Les jardins de saison sèche à Zaongho (région de Koupela). Cahiers ORSTOM (Série Sciences Humaines) 5(2): 67-87. [19.20]

MARCHAL, J.Y. 1977. The evolution of agrarian systems in Yatenga. African Environment 2(4) and 3(1): 73-85. [15.10; 19.11]
Describes changes in land cultivation systems as a result of increasing population densities.

MINISTERE DU DEVELOPPEMENT RURAL, UPPER VOLTA. 1978. Calendrier de travail provisoire pour l'élaboration d'un plan alimentaire national. Ouagadougou, Upper Volta: Ministère de Développement Rural. [13.10]

MINISTERE DU PLAN, UPPER VOLTA. 1978. Investaire des études et des rapports de mission. Ouagadougou, Upper Volta: Ministère du Plan. [23.00; 11.00]

MURPHY, J., and SPREY, L. 1978. Report on the 1977 agricultural season in the villages of the Volta Valley Authority (AVV). West Layfayette, USA: Purdue University. [19.20]

NENEMA, E.K. 1969. Le village de Tindila: étude historique, économique, sociale et religieuse. Paris, France: Ecole Pratique des Hautes Etudes. [14.00; 19.11]
A general and essentially nonquantitative study of the author's home village focusing on village history, religion, agricultural practices, and labor organization. (IDS)

NEVEU, J. 1975. Sienana: une expérience de promotion villageoise en Haute-Volta. Archives Internationales de Sociologie de la Coopération et du Développement 37: 64-78. [14.00]
This article shows how, starting from the solution of a simple technical problem, all the living conditions in an African village can be changed, and real economic and social development be achieved. The village in question is on the main Ouagadougou-Abidjan tarred road, beside the river Comoe. The tribal population, the Gouin, have had a long history of initiative and enterprise, with some interesting results. It was the technical problems of welding in rural areas which gave rise to the "small village enterprises" started around a single energy source. The need to face up to these problems created favorable conditions for development of a spirit of enterprise, and awareness and absorption of such concepts as profitability,productivity, and the need for the will to put them into operation oneself, using existing resources. (CAB)

ORSTOM. 1975. Enquête sur les mouvements de population à partir du pays Mossi. Tome 1: les migrations internes Mossi. Vol.2. Les migrations de travail Mossi. Vol.3. Milieux ruraux Mossi: aspects économiques. Paris, France: ORSTOM. [16.24]
The study describes the migratory flow of the Mossi inside (resettlements) and outside Upper Volta. Reasons given for migration are high population density coupled with low-productivity agriculture, the social structure (strong hierarchy), and the money motive. The study found that remittances from migration are low and that they are not invested in productive assets.

PHILIPPE, J. 1975. Etude socio-géographique pour l'implantation d'un ranch d'embouche dans la région de Leo (1-rapport). Ouagadougou, Upper Volta: CVRS. [20.11]

PRADEAU, C. 1970. Kokolibu: ou le pays Dagari à travers un terroir. Etudes Rurales 37-39: 85-112. [14.00; 19.11]
Summarizes the land use and social structure of a village in a densely-settled area. (IDS)

PRADEAU, C. 1975. Adaptabilité d'une agriculture tropicale traditionnelle: le pays Dagari. Etudes Rurales 58: 7-28. [19.11]
In studying the agricultural developments and the farming system of the Upper Volta Dagari, a paleonegritic population, it was found that through numerous though very limited means, traditional farming methods are being adapted to new conditions. The Dagari are constantly worrying about problems of water control, soil exhaustion, and agricultural techniques. The carrying capacity of their territory reaches, in this specific Sudan climate, 50 people per km^2. To achieve this result, they resort to all the farming methods known to preindustrial and precapitalist people: terraced cultivation, draining and irrigation networks, crop rotation, and shifting cultivation. To help solve remaining problems, new techniques obviously should be introduced. But they should take into account the original capacity for adjustment, as revealed by the study of Dagari agriculture, and that has not been the case so far. (CAB)

REMY, G. No date. Une étude de terroir en Afrique Noire: méthodes et techniques. Cahiers d'Etudes Africaines 6(2):121-129. [22.00]

A geographical study with some excellent maps, concerned primarily with land use. Historical, demographic, and labor utilization data are included, and the survey methods are dealt with at some length separately. (IDS)

REMY, G. 1967. Yobri, étude géographique d'un village Gourmantche de Haute-Volta. Atlas des Structures Agraires au Sud du Sahara no. 1. Paris, France: Mouton. [22.00]

REMY, G. 1968. Les migrations de travail dans la région de Nobéré, Cercle de Manga. Cahiers ORSTOM (Série Sciences Humaines) 5(4). [16.23]

REMY, G. 1970a. L'étude d'un terroir en zone soudanienne: l'exemple de Donsin. Etudes Rurales 37-39: 480-500. [14.00]
The director of the ORSTOM research program at Ouagadougou describes in some depth the principal components of village agrarian structure and the relationship to the social structure. Survey methods are discussed separately. (IDS)

REMY, G. 1970b. Une carte de l'occupation du sol en Haute-Volta, note méthodologique et descriptive. Cahiers ORSTOM (Série Sciences Humaines) 7(2). [15.20]

REMY, G. 1972. Donsin: les structures agraires d'un village Mossi de la région de Nobéré. Recherches Voltaïques no. 15. Paris, France: ORSTOM. [22.00]
This study on the agrarian structure of Donsin, a village situated in Nobéré district in Upper Volta, was based on data collected during field surveys conducted in 1966 and 1967. The first part describes the environmental and demographic structure of Nobéré. The second part presents an analysis of the agricultural use of land, the farm units, the land tenure system, and the utilization of the rural labor force. (CAB)

REMY,G. 1973a. Les migrations de travail et les mouvements de colonisation Mossi. Travaux et Documents de l'ORSTOM no. 20. Paris, France: ORSTOM. [16.24]

REMY, G. 1973b. Les migrations de travail et les mouvements de colonisation Mossi. Recueil bibliographique. Paris, France: ORSTOM. [23.00; 16.24]
Consists of a bibliography of Mossi migration.

REMY, G. 1977. Enquête sur les mouvements de population à partir du pays Mossi. Rapport de Synthèse. 2 vols. Ouagadougou, Upper Volta: ORSTOM. [16.24]

ROUAMBA, T.B. No date. Terroirs en pays Mossi: à propos de Yaoghin. Etudes Rurales 37-39: 129-149. [22.00]
The traditional and isolated agricultural system of the Mossi is described at length, illustrating its vulnerability when under pressure from population pressures, land shortage, and exhaustion. Because the social organization is inextricably linked with the physical arrangement of the *terroir*, agricultural development will depend on achieving also profound social change. (IDS)

SAED. 1978. Etude socio-économique de l'aménagement de la Plaine de Niema-Dionkele. Ouagadougou, Upper Volta: Société Africaine d'Etudes et Développement. [22.00]

SATEC, FRANCE. 1973. Projet de mise en valeur des terroirs dans les ORD de Ouagadougou, Koudougou et Kaya. Vol.2. Le projet. Paris, France: SATEC. [13.31]

SAVONNET, G. 1970. Pina: étude d'un terroir de front pionnier en pays Dagari. Atlas des structures Agraires au Sud du Sahara no. 4. Paris, France: Mouton. [14.00; 15.00]
The primary focus is on land utilization and the study takes the form of a commentary on several excellent maps. Additional background information is given on the region and its geology, and on the history of the Dagari and Sissola peoples, their migrations and social structure. However, there are few socioeconomic data on the village itself. (IDS)

SAWADOGO, P. et al. 1975. Enquête socio-économique par entretien non-dirigé avec les exploitants dans parcelles de Tiebele (PO). Ouagadougou, Upper Volta: AVV. [13.31; 19.20]
Report of a study carried out on 16-19 Sep 1975 using open-ended interviews of 22 people in the AVV. The aim was to find out about their living conditions, their level of information about the AVV, their "ecological niches," and causes for certain people leaving the project.

SCHULZ, M., and HILBRINK, A. 1977. Rural broadcasting and extension in the context of agricultural development. Zeitschrift für Auslandische Landwirtschaft 16(2): 160-179. [13.32]
In recent years both Indonesia and Upper Volta have encouraged their rural radio and agricultural extension services to cooperate in promoting rural development. Programs have been

launched to speed up innovation processes among the large unorganized audience, rural radio clubs, and para-cooperative associations. The most promising results have been obtained with para-cooperative groups. For radio and the extension services make sense: they can accelerate already started diffusion processes, particularly for those innovations that are easy to accept (e.g., improved seeds). There are basic doubts that rural radio clubs can be kept alive over a longer period, even by the integrated support of several institutions. Reasons for this assessment are the steady and rapid spread of individually owned transistor sets, problems of achieving organizational efficiency among the program fostering agencies, and lack of clarity with respect to the functions the radio club really can fulfil in various development phases. (CAB)

SEDES, FRANCE. No date. Etude de l'évolution de l'emploi et des effets de facteurs de production mis en place pendant les dix dernières années en République de Haute-Volta. Paris, France: SEDES. [11.30]

SMITH, J. 1977. Economy and demography in a Mossi village. Ph.D. thesis, University of Michigan, USA. [22.00]

STICKLEY, T. 1977. Preliminary inquiry into the agricultural credit situation in the Eastern ORD of Upper Volta. Report no. 1. Fada, Upper Volta: Eastern ORD and Michigan State University. [13.32; 20.12]

Field technicians in eight sectors of the ORD were interviewed. The minimum farm size needed for a productive loan for a family of ten persons is thought to be 3 ha's of millet and sorghum for home consumption and 2 ha's of cash crops. Because of financial and management ability it is thought that credit should not be extended for the purchase of traction animals.

SWANSON, R.A. 1978. Gourmautche Agriculture. Ouagadougou, Upper Volta: USAID. [14.00; 15.10; 19.11]

An anthropological view of Gourmautche agriculture in the Eastern ORD. The focus is on Gourmautche agricultural practices seen through the perspective of the farmer himself. The author describes the social relationships, the land tenure system, and the changes brought about by external forces.

WILDE, J.C. de. 1967a. Upper Volta: the agricultural extension programme of SATEC in the Mossi country. Pages 369-388 *in* Experiences with agricultural development in tropical Africa, Vol.2. The Case Studies (ed. J.C. de Wilde). Baltimore, USA: Johns Hopkins University Press. [13.32]

An analysis of the performance of the extension program of SATEC (from 1954 to 1967) with reference to the extended area under cultivation, the increased productivity, and the cash income of crops. SATEC aimed at increasing food production through an intensive and costly extension service that emphasized pilot and demonstration farms, introductions of draft animals (donkeys and oxen), use of fertilizers, and cooperative organizations. The efforts failed mainly because there was no effective prior research that produced a feasible technology economically attractive to the farmers. By the end of the period, to cope with the high cost of extension, SATEC was emphasizing cash crops instead of food crops.

WILHELM, L. 1976. Rapport socio-économique de la région de Kombassiri: Nam Yui et Doulougon. Enquête Nutritionnelle. Ouagadougou, Upper Volta: INSERM-GRAINS, Centre Voltaïque de Recherche Scientifique. [21.40]

Surplus production is bought by urban merchants, rendering deficit a self-sufficient region. The purchase of cereals by cultivators increases the smaller the farm. Chronicles, from a case study, the incapacity of the parastatal, OFNACER, to influence parallel market prices of foodgrains. (BH)

ZALLA, T. 1976. A proposed structure for the medium-term credit programme in the Eastern ORD of Upper Volta. African Rural Economy, Working Paper no. 10. East Lansing, USA: Michigan State University. [13.32; 20.12]

Nigeria

ABALU, G.O. 1974. Supply response to producer prices: a case study of groundnut supply in northern Nigeria. Nigerian Journal of Economic and Social Studies 16(3): 419-427. [13.33; 21.40]

This paper reports an attempt to assess the direction in which groundnut farmers in northern Nigeria respond to the various uncertainties they face, and the manner in which price changes are likely to produce the intended effect on the rate of growth of output or farm value. A

selected number of supply response models are applied. The results suggest that farmers are price-responsive and that groundnut growers' responses are consistent with economic theory. The results also imply that, although groundnut farmers are price-responsive, the incentive effects on groundnuts vis à vis other crops competing for the same productive resources is not very strong. If producer prices are to be set, they should be set with the view that farmers respond to some form of price expectation, and in such a way that farmers are induced to use their available resources more intensively. (CAB)

ABALU, G.O. 1975a. Supply response to producer prices: a case study of groundnut deliveries to the Northern States Marketing Board. Savanna 4(2): 33-40. [13.33; 21.40]
An adjustment model, a deviation from normal trend model, and a mixed strategy model were used to examine how farmers determine what quantity of groundnuts to supply to the Marketing Board at various prices. The results suggest that groundnut farmers are price-responsive and that their responses are more a function of expected price than of the prevailing price in the previous buying season. (CAB)

ABALU, G.O. 1975b. The role of land tenure in the use of land resources in Nigeria. Econo Journal 2(1): 64-75. [15.10]

ABALU, G.O. 1976. A note on crop mixtures under indigenous conditions in northern Nigeria. Journal of Development Studies 12(3): 212-220. [19.12]
This note contends that crop mixtures are employed by farmers primarily as risk precautions, and that the immediate objective of farmers is not only one of profit maximization but also of stability of income. The results of an income stability model employed to verify this hypothesis seem to agree relatively well with existing information. (CILSS)

ABALU, G.O. 1977. Estimates of rates of technological change for some technologies developed at the Institute for Agricultural Research, Zaria, Nigeria. Samaru Agricultural Newsletter 19(2): 54-59. [19.13]
Owners of small farms located in high-risk, low-potential areas mostly have little experience with improved technology, few financial resources, and are constrained by inadequate infrastructural support systems. Relevant technology, manufactured locally, can increase their farm output and income. To achieve this, four examples of such technologies are described here. They include improved maize, sorghum, cotton, and groundnut technologies. (CAB)

ABALU, G.O. 1978. The food situation in Nigeria: an economic analysis of sorghum and millet. Samaru Miscellaneous Paper no. 80. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.10]
The paper assesses the production of sorghum and millet and also demand prospects together with recommendations for the future.

ADEOYE, K.B. 1976. A note on the reliability of rainfall at Samaru and Kano. Samaru Miscellaneous Paper no. 54. Zaria, Nigeria: Ahmadu Bello University, IAR. [11.10]

ADESIMI, A.A. 1973. The prospects and potentials of groundnut cultivation as a means of enhancing economic opportunities in the rural economy of northern Nigeria. Ph.D. thesis, University of Wisconsin, USA. [13.10; 13.30]
This study attempts to examine the problems of the groundnut economy of northern Nigeria with a view to identifying the potentials and prospects of using the groundnut industry to enhance the income of rural people in the area. Most of the relevant institutional arrangements relating to groundnut cultivation and marketing, together with the various government policies and programs are analyzed. The range of economic opportunities open to the rural people is briefly analyzed along with an evaluation of the world market prospects for the crop. (CILSS)

AGBONIFO, P.O. 1974. Agro-industrialism in the Greater Zaria area: the introduction of dry season tomato growing along the Kubanni and Shika river valley. (Unpublished Master's thesis). Master's thesis, Ahmadu Bello University, Nigeria. [13.31; 14.00; 19.13]
Looks at the problems of introducing tomato production to farmers on the limited amounts of land that can be cultivated during the dry season. Cadbury supplied the inputs, extension, etc., and provided a market for their produce. Discusses the problems that sometimes arise because of the power groups in villages obtaining control of the land suitable for tomato production.

AGBONIFO, P.O. 1976. The introduction and impact of the tomato processing project in Zaria. Samaru Agricultural Newsletter 18(1): 3-16. [13.31; 14.00; 19.13]
Data collected by means of questionnaires and personal interviews of 20 tomato farmers and 20 nontomato growers indicated the existence of general dissatisfaction with the local level organization of the tomato processing project. Plots and supplies from the change agents

(groups or individuals trying to effect change) were not shared equitably and, in some cases farmers, were compelled by their group leaders to pay extra for project supplies. There was also a strong dissatisfaction with the change agents with regard to the supply of inputs, collections of fruits, and the inefficiency of the responsible officials. The ultimate result was low yield per hectare delivered to the factory. This is mainly because of selling on the fresh food market for higher prices. It is indicated that there appears to be a good prospect for an agroindustrial project of the tomato type in Zaria, provided the project is properly managed.

AGBONIFO, P.O., and COHEN, R. 1976. The peasant connection: a case study of the bureaucracy of agri-industry. Human Organisations 35(4): 367-379. [13.31; 14.00]

ALKALI, M. 1970. Mixed farming: need and potential. Pages 36-41 *in* Livestock development in the dry and intermediate savanna zones (ed. Institute for Agricultural Research). Zaria, Nigeria: Ahmadu Bello University. [20.11]

ANDREWS, D.J. 1972. Intercropping with sorghum in Nigeria. Experimental Agriculture 8: 139-150. [13.20]

ANDREWS, D.J. 1974. Responses of sorghum varieties to intercropping. Experimental Agriculture 10:57-63. [13.20]

ANONYMOUS. 1977b. Nigeria arms for the Green Revolution. Africa 76: 79-80. [13.10]
Over 75% of Nigeria's population are engaged in agriculture, yet only half the arable land is being cultivated and food has to be imported. This article describes the Federal Government's plans for a Green Revolution to ensure food self-sufficiency and guarantee a more buoyant economy. ₦20.5 million has been allocated to agriculture in the 1977-78 budget, import duty on livestock feed and agricultural machinery has been removed, and an agricultural credit guarantee scheme fund has been set up. Nucleus large-scale farms of about 4,000 ha are being set up by the government, ranches and grazing reserves for livestock are being developed, large tracts of fertile land are being conserved from floods, and massive irrigation schemes have been undertaken. Agricultural research and education are also being developed. (CAB)

ASUAMAH, K.Y. 1975. Significance of the nomadic pastoral calendar. Samaru Agricultural Newsletter 17(3): 115-119. [20.20]
Discusses the various components of the calendar followed by nomads.

AWOLOLA, M.D., and BUNTJER, B.J. 1976. The introduction of new crop growing technology: opinions and reactions. Samaru Agricultural Newsletter 18(3): 123-130. [19.13]
During 1971-74 farmers in the Daudawa settlement scheme had the opportunity to test out recommendations for the crops sorghum, maize, and cotton as developed by the Institute for Agricultural Research at Zaria. These ranged from the use of seeds of new varieties and close spacing, to the second application of fertilizer some weeks after planting, and the regular spraying of cotton. Farmers were strongly urged to apply the recommendations, but were ultimately free to adopt them. In the summer of 1973, 24 project farmers were interviewed with the help of two questionnaires. The coefficient of concordance calculated for 19 farmers and these three crops, on the calculated yield/ha for each crop, has a value of 0.63. This means that those farmers who obtained high yields in one crop are also obtaining high yields on other crops. Maize stood out as the most profitable crop, both as calculated and in the opinion of farmers. (CAB)

AXINN, G.H., and AXINN, N. 1969. An African village in transition: research into behavior patterns. Journal of Modern African Studies 7(3): 527-534. [16.21; 16.22]
Rapid change, even in remote and isolated African villages, is illustrated by a detailed record of human activity enabling comparisons to be made of different groups and of one group at different times. The hourly, daily, and yearly behavior patterns of rural people living in the Nsukka division of the Eastern Region of Nigeria are briefly described, based on fieldwork carried out in 1966 in eight cluster compound villages. For the total year men averaged 7.87 half-hours per day and women averaged 10.09 half-hours per day of work, men reaching a peak in the planting season. Behavioral patterns were shown to vary significantly according to season, day of the week, time of day, age, sex, and location. Rest and work patterns fluctuated among males, and talk, mainly at markets, seems to be the major channel for communication within and without the village. This research may be useful in designing communication campaigns and guidance in program development. (CAB)

AYIDA, A.A., and ONITIRI, H.M.A. (eds.). 1971. Reconstruction and development in Nigeria. Ibadan,

Nigeria: Oxford University Press. [13.10]
Consists of a series of papers concerning various aspects of postwar reconstruction.

BABA, J.M. 1975. Induced agricultural change in a densely populated district: a study of the existing agricultural system in Kura district and the projected impact of the Kano River Irrigation Project, Kano, Nigeria. Ph.D. thesis, Ahmadu Bello University, Nigeria. [19.20]

BAKER, E.F.I. 1975. Research on mixed cropping with cereals in Nigerian farming systems—a system for improvement. Pages 287-302 *in* International Workshop on Farming Systems, ICRISAT, 18-21 November 1974, Hyderabad, India. Patancheru, A.P., India: International Crops Research Institute for the Semi-Arid Tropics. [13.20]
Gives summary of research work on mixtures involving various combinations of millet, sorghum, maize, and cowpeas. Also stresses desirability of working on the *gici* system (i.e., groundnut and cereal mixtures).

BAKER, E.F.I. 1979. Mixed cropping in northern Nigeria. 3. Mixtures of cereals. Experimental Agriculture 15(1): 41-48. [13.20]
Experiments with alternate row mixtures of millet, maize, and sorghum, and comparisons of yields with equivalent areas of sole crops are described. Reduction in yield of components of mixtures was rarely found, whilst gain in yield was obtained when components differed by a certain margin in height or age at maturity, or both. Approximately 75% of variation in yield gain from mixing was attributable to these two factors. Subsistence farmers, who mix a fast-growing, early-maturing cereal with a slower-growing, late-maturing cereal are thus reducing interference between neighboring plants during the reproductive phase of growth, and not only obtain grain harvests spread in time but also yields higher than from equivalent areas of the component sole crops.

BAKER, E.F.I., and NORMAN, D.W. 1975. Cropping systems in northern Nigeria. Pages 334-367 *in* Proceedings of the Cropping Systems Workshop, IRRI, 1975. Los Baños; Philippines: International Rice Research Institute. [13.20; 19.12]

BALDWIN, K.D.S. 1957. Niger Agricultural Project; an experiment in African development. Cambridge, USA: Harvard University Press. [13.31]
Is a valuable commentary on a development project that failed due largely to using a "top-down" approach and, therefore, not understanding the local environment. There was also the assumption that relevant improved technology was available.

BARKER, D., OGUNTOYINBO, J., and RICHARDS, P. 1977. The utility of the Nigerian peasant farmer's knowledge in the monitoring of agricultural resources. MARC Report no. 4. London, UK: London University, Chelsea College. [19.11]
This report investigates the scope, content, and structure of farmers' knowledge concerning local environments, in terms of its accuracy, how it is passed on, and to what extent the distribution of useful knowledge within peasant societies is correlated with variations in material and social circumstances. The nature and quality of this knowledge is assessed on the basis of two surveys: (1) an analysis of peasant response to a general set of questions relating to farming problems, farm management practices, and agricultural innovations in the Ikale area of Okitipupa Division of Ondo State (Nigeria); (2) a more detailed survey of a particular problem identified in (1)—the crop damage caused by the grasshopper *Zonocerus variegatus*. The farmers are found to be capable of observing their environment with care and precision. The extension services with which the farmer is in regular contact could provide the focal point for a sensitive resource monitoring information exchange system. (CAB)

BARKOW, J.H. 1972. Ambivalent identity: Muslims and Maguzawa in North Central State, Nigeria. *In* Issues in African development (ed. Division of Environmental Studies). Waterloo: Division of Environmental Studies, Department of Geography. [14.00]
Relationships between two subcultures of the Hausa civilization in North Central State, Nigeria, are discussed, particularly some of the social interactional processes which help to maintain the distinction between the Muslim Hausa villager (at the top of the social scale) and the Maguzawa (the lowest level). The distinction is relatively minor, from the viewpoint of Hausa urban elite, but is significant at the village level. (CAB)

BAWDEN, M.G., CARROLL, D.M., and TULEY, P. 1972. The land resources of north-east Nigeria. Tolworth Towers, surbilon, UK: Land Resources Development Centre. [11.10]
This volume describes the geology, landform, soil, vegetation, land use, land capability, climate, tsetse status, and agricultural potential of the 123 land systems into which the project has been divided. The land facets within each land system are described and areal measurements of the systems and facets are given. The systems are grouped into five land

provinces associated with the major geological formations of the project area: the Basement Complex, Cretaceous deposits, Kerri Kerri Sandstones, Chad deposits, and basalt. These provinces are themselves subdivided on a physiographic basis into land regions. (CAB)

BEEDEN, P., HAYWARD, J.A., and NORMAN, D.W. 1976. A comparative evaluation of ultra-low-volume insecticide application on cotton farms in the North Central State of Nigeria. Nigerian Journal of Plant Protection 2: 23-29. [19.13]
Consists of the results of farmers' testing of ULV spraying systems.

BEEDEN, P., NORMAN, D.W., PRYOR, D.H., KROEKER, W.J., HAYS, H.M., and HUIZINGA, B. 1976. The feasibility of improved sole crop cotton technology for the small-scale farmer in the Northern Guinea Savanna Zone of Nigeria. Samary Miscellaneous Paper no. 61. Zaria, Nigeria: Ahmadu Bello University, IAR. [19.13]
The study involved testing the recommendations for cotton with farmers. The results indicated that the technology was superior when evaluated in per acre terms, but questions arise when it is evaluated in terms of the whole farming system.

BOOTH, S.A. 1976. Cowpea storage. Samaru Conference Paper no. 8. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.20]

BOYD, J.E.L., and AYOK, E.A. 1973. Report on farm equipment development project, Daudawa, N.C.S., Nigeria, November-December 1973. London, UK: Intermediate Technology Development Group Ltd. [20.12]
Information already available was coordinated to provide an outline of the pattern of agriculture in the project area. Weeding was identified as a labor bottleneck limiting crop production on farms employing animal draft for land preparation. Improvement in methods of weed control was made the primary objective of the project. Implements were developed for applying liquid and granular herbicides, for mechanical weeding, for harvesting groundnuts, and for processing kenaf. Single ox harness for light draft work was introduced into the area. The more promising machines were demonstrated and tried out by local farmers. Four mechanical weeders, a groundnut lifter, and single ox harness were found to be suitable for use in the northern states of Nigeria at the present time. All items were designed for local construction from easily available materials, using simple equipment. Prototypes were built at the project workshop, but additional machines for farmer testing were commissioned from local entrepreneurs as a step towards initiating local manufacture. Manufacturing instructions for the successful machines were drawn up in a form suitable for publication in different languages and for interpretation by nonengineers. (CAB)

BUNGUDU, L.M. 1970. The storage of farm products by farmers in my village. Samaru Agricultural Newsletter 12(1): 2-10. [21.30]

BUNTJER, B.J. 1970a. Aspects of change in rural Zaria. Samaru Agricultural Newsletter 12(2): 26-29. [14.00]

BUNTJER, B.J. 1970b. The changing structure of *gandu*. Pages 157-169 *in* Zaria and its region: a West African savannah city and its environs (ed. M.J. Mortimore). Department of Geography Occasional Paper no. 4. Zaria, Nigeria: Ahmadu Bello University. [16.10]
Discussion is confined to an institution in Hausaland, the *gandu*, which seems to be under stress owing to the impact of modernization. The *gandu* is an economic work unit in which two or more male adults, usually married, cooperate to secure an income, usually from a farm. The consequence for the individual of being part of an authority structure in which the decisions made by others have to be accepted, is examined. An attempt is made to derive from data the direction into which the structure of the *gandu* may develop.

BUNTJER, B.J. 1970c. The dissemination of new cotton prices in some agricultural communities in Zaria Province. Nigerian Agricultural Journal 7(1): 81-90. [13.32]
A survey was organized into: (1) the methodological problems of communication studies; (2) the actual news flow through three agricultural communities; and (3) the actual knowledge of new cotton prices. Radios placed in public places appear to have a beneficial effect in bringing knowledge to a community. Interest and intensities of contact are, however, important in the actual stage of dissemination of the news within the community. Interest and intensities of contact are partly determined by the structure of social life. Therefore, the introduction of new knowledge into a community has to be viewed in combination with the social structure and social activities. (CAB)

BUNTJER, B.J. 1971. Aspects of the Hausa system of cultivation around Zaria. Samaru Agricultural Newsletter 13(2): 18-20. [19.11]
Describes system of splitting ridges.

BUNTJER, B.J. 1972. Whom to blame, the farmer or the extension worker? Samaru Agricultural Newsletter 14(1): 8-13. [13.32]

BYERLEE, D. 1973. Indirect employment and income distribution effects of agricultural development strategies: a simulation approach applied to Nigeria. African Rural Employment Paper no. 9. East Lansing, USA: Michigan State University. [13.10]
The paper proposes a simulation approach to exploring agricultural/nonagricultural interactions in general, and evaluating the indirect effects of agricultural development strategies on output, employment and income distribution in the nonagricultural sectors, in particular. A simulation model is developed to analyze the indirect effects of alternative food and export promotion strategies in the Nigerian economy. The core of the model is a dynamic 10-sector macroeconomic model built on an input-output framework. This is linked to an employment/income model to provide detail on the nonagricultural labor market, migration out of agriculture, and income distribution between various groups of the population. An agricultural sector model is used to simulate variables of the agricultural sector including policy instruments. When applied to Nigeria, the model projects a favorable growth of GNP for the 1970s but increased unemployment and wider income disparities if current policies are continued. The evaluation of various agricultural development strategies indicates that a balanced strategy of food and export promotion increases value added in both small-scale and large-scale nonagricultural sectors, significantly reduces migration out of agriculture, produces the largest increase in earnings in nonagricultural small-scale sectors, and results in the most equitable income distribution. Overall, the model suggests little conflict between the multiple-development objectives of growth, employment, and income distribution in the Nigerian economy. Finally, various limitations of the model are discussed and several areas for microlevel research are proposed. (CAB)

CASWELL, G.H. 1975. Grain storage problems in Nigeria. Samaru Agricultural Newsletter 17(1). [21.30]
The author argues that traditional methods of grain storage are inadequate for meeting contemporary food needs. He suggests a framework for meeting these needs to the greater benefit of the Nigerians. (CILSS)

CLOUGH, P. 1977a. Rural exchange relationships and the structure of the grain trade. Oxford, UK: Oxford University Press. [21.10; 21.40]
Is a proposal for further research based on the results of a study reported in Clough (1977b). The hypothesis to be tested is "that a whole series of post-harvest expenses force the small and even the successful farmer to market their grain when prices are low; this later creates a grain shortage for small farmers and a 'money shortage' for median farmers which forces them into debt with traders." The extent to which this occurs will depend to some extent on other factors, e.g., off-farm occupations, cash crop production, etc.

CLOUGH, P. 1977b. The relationship between rural poverty and the structure of trade. Oxford, UK: Oxford University Press. [21.10; 21.40]
The study has as its objective the aim of understanding the sociopolitical structure of rural-urban trade and in doing so to see how the structure of trade contributes to rural poverty on the one hand and to capital accumulation in the urban areas on the other. Because of this a hierarchical trading system financed by individual in urban areas contributes to increasing inequalities at the village level.

COPPOCK, J.T. 1966. Agricultural development in Nigeria. Journal of Tropical Geography 23: 1-28. [13.10]

DAVIES, H.R.J. 1974. Rural settlements in the Zaria area of northern Nigeria. Nigerian geographical Journal 17: 43-56. [11.20]

EJIGA, N.O.O. 1977. Economic analyses of storage, distribution and consumption of cowpeas in northern Nigeria. Ph.D. thesis, Cornell University, USA. [21.30; 21.40]
This thesis describes the cowpea distribution system to identify significant losses and gross inefficiency, to identify the locations of storage, and the changes in demand for cowpea resulting from increased urbanization. Data were taken from farmers and traders in rural areas and traders and householders in urban areas in two main ecological zones of Northern Nigeria. The thesis concludes that cowpea marketing is highly organized with specialized middlemen. Storage capacity is adequate, even if quality is deficient. Measures of price performance such as correlation coefficients, gross marketing margins, and spatial price differences show no evidence of gross imperfections. Demand for cowpea will be influenced not by income but by preference. (BH)

ELIAS, T. 1962. Nigerian land law. London, UK: Routledge and Kegan Paul. [15.10]

ENGELHARD, R. 1978. Groundnut seed multiplication by farmers: experiences in the Guided Change project. *In* National Seminar on Groundnut Production, Kano, 13-14 February 1978. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.32]
This paper shows that improved groundnut seed of good quality can be multiplied on farmers' fields. Such multiplication works best if it is integrated with the extension program. Efficiency is greatest when the farmers who multiply the seed also use it.

FALUSI, A.O. 1973. Economics of fertiliser distribution and use in Nigeria. Ph.D. thesis, Cornell University, USA. [13.32]
Specific objectives were to identify and describe the trends and factors affecting fertilizer use, to describe and evaluate the performance of the existing distribution channels, and to project future use of fertilizer. Major findings were: (1) government and plantations are the major purchasers; (2) most of the fertilizer has been used on groundnut in the savanna zones of N. Nigeria, while in the forest zone fertilizer is used mostly by plantations and on the export (nonfood) commercial crops; (3) experimental and demonstration trials indicate that fertilizer application to staple food crops would be profitable; (4) increased future use is likely to be mainly on the export crops; (5) major obstacles to increased use among local farmers are lack of adequate knowledge about fertilizers, lack of supply, and lack of adequate working capital; (6) availability of fertilizers at the local farm level is hindered by transport problems, inadequate retail outlets, and delays in payments to retailers? (CAB)

FALUSI, B. 1976. Application of multi-variate probit to fertilizer use decisions: sample survey of farmers in three states in Nigeria. Journal of Rural Economics and Development 9(1): 49-66. [19.13]
The threshold concept is developed through the multivariate probit model and applied to the fertilizer adoption decision of samples of farmers in three states of Nigeria. Statistical properties, theoretical relationships, and the empirical application described in this paper demonstrate the appropriateness of the multivariate probit model for problems where the dependent variable is dichotomous and where the decision process involves a threshold effect. The probit technique permits the quantification of the relationship between a threshold decision and the explanatory variables. The results of the probit analysis imply that the stimulus index of fertilizer adoption is influenced more by institutional and education considerations, than by economic factors. The stimulus level associated with variables such as frequency of extension contact, attendance at farmers' meetings, membership in cooperative societies and/or farmers' associations, and credit/capital supply are much larger than those associated with such factors as farm size, labor input, and crop prices. Profitability undoubtedly is a necessary but clearly not a sufficient condition for adoption. (CAB)

FAMORIYO, S. 1978. Food production policies in Nigeria. Food Policy B 1: 50-58. [13.10]

FINE, J.C. 1968. A reappraisal of some assumptions made about agricultural development in Nigeria. Samaru Agricultural Newsletter 10(5): 89-91. [13.10]

FORREST, T.C. 1978. Agricultural policies in Nigeria 1910-1978. Zaria, Nigeria: Ahmadu Bello University. [13.10]
A useful summary of agricultural policies in Nigeria over the last 70 years or so. The author is concerned about the inequalities that are developing.

FRICKE, W. 1965a. Agro-geographical study of the Gombe division, Bauchi province, northern Nigeria. Erdkunde 19(3): 233-248. [14.00; 19.10]

FRICKE, W. 1965b. Report on agro-geographical investigations in the Gombe Division, Bauchi Province. Erkunde 19(3): 233-248. [14.00; 19.10]
The agrogeographic structure of the Gombe Division, situated between the damp savanna and the dry savanna, and its economic reorganization are surveyed. In this region population groups meet. They differ from each other in their social and economic forms of organization, such as the Islamic Arabic farmers of the plain, the pagan terrace farmers of the mountains, and the nomadic livestock breeders. By a comparison of the two groups of arable farmers it can be seen plainly that the socially-conditioned forms of economy influence the agricultural landscape. The Islamic farmers have changed from the cultivation of groundnuts to a crop rotation based on cotton and sorghum for export, while the agricultural landscape of the pagan cultivators reveals a state of stagnation and the principle of self-sufficiency with the predominant cultivation of cassava. However, cotton intended for the world market is gradually spreading over the borders of the black earth region of the Benue plain and is becoming established in the recently cleared outer fields that are cultivated by the male terrace

farmers, while the inner fields nearer to the settlements are still used for the domestic supply of the family. Even when the terrace farmers move to the fertile plain there still remain divisive structural elements between the lowland and mountain farmers, although with the increasing economic ties of both with the production of cotton the differences are tending to disappear. (CAB)

GILBERT, E.H. 1969. Marketing of staple foods in northern Nigeria; a study of the staple food marketing systems serving Kano City. Thesis, Stanford University, USA. [21.40]
The structure and performance of the marketing systems supplying Kano with four staple foods—sorghum, millet, cowpeas, and rice—is examined. The extent to which these systems have helped in the transition from a subsistence economy is analyzed. A series of field surveys of production, consumers, and marketing personnel provided information for: (1) a general description of the marketing systems; (2) a detailed discussion of the various types of marketing personnel; and (3) and examination of price relationships, to determine the extent to which prices at any one point correctly reflect knowledge of supply and demand conditions throughout the system. (CAB)

GILES, P.H. 1965. The storage of cereals by farmers in northern Nigeria. Samaru Research Bulletin no. 42. Zaria, Nigeria: Ahmadu Bello University, IAR. [21.30]
This study finds that there is considerable variation in farmers' methods of harvesting, prestorage treatment, and storage of the main cereal crops in northern Nigeria. The major governing factors are climate, tradition, and adaptation to environment. Most crops are stored unthreshed and removed for food. It is estimated that 4% of the total sorghum and millet crops is lost to insects every year. It was found that granary temperatures are not high enough to prevent insect infestation. The possibility of long-term storage without insect damage decreases with increased rainfall. (CILSS)

GILL, D.S. 1966. Socio-economic survey of peasant agriculture in northern Nigeria. Rome, Italy: FAO. [22.00]

GLEAVE, M.B. 1965. The changing frontiers of settlement in the uplands of northern Nigeria. Nigerian Geographical Journal 8(2): 127-141. [16.24]

GODDARD, A.D. 1969. Are Hausa-Fulani families breaking up? Samaru Agricultural Newsletter 11(3): 34-38. [16.10]
Investigates the breakup of the *gandu* family structure in the Sokoto area. Ownership of cattle slows down the disintegration process.

GODDARD, A.D. 1970. Land tenure and agricultural development in Hausaland. Samaru Agricultural Newsletter 12(2): 30-39. [15.10]
A survey was conducted in three villages of the central Sokoto area of Nigeria to examine the existing communal land tenure system. It is concluded that the land tenure system allows the farmer a great degree of security. Land has become a transferable economic commodity, and the tenurial rights held by the farmers approach those of freeholders in practice if not in law. However, land tenure and inheritance laws restrict the prospect of agricultural development in two ways: (1) land cannot be used as collateral for a loan except through a pledge, in which case use of the land is lost; (2) the shortage of land and small size of holdings of most farmers preclude the introduction of such innovations as animal plowing that enable farmers to work larger hectarages. (CAB)

GODDARD, A.D. 1972. Land tenure, land holding and agricultural development in the central Sokoto closed-settled zone. Savanna 1(1): 29-41. [15.10]
A survey of land tenure in three villages in this zone has shown that communal land tenure has given way under population pressure and the influence of Muslim land law to individual landholding. This allows farmers considerable security of title, encouraging land improvement, but does not allow land to be used as collateral for loans. Subdivision of holdings is encouraged by land law, and leads under conditions of land shortage to diminishing the size of holdings. With capital a farmer may increase the size of his holding by purchase, or consolidate a fragmented holding. A relatively equitable distribution of land among the farming population could encourage the adoption of innovations.

GODDARD, A.D. 1973a. Changing family structures amongst the rural Hausa. Africa 43(3): 207-218. [16.10]
This paper discusses those aspects of Hausa family structure that are directly related to the organization of rural production, particularly the family farming unit. This is defined as those members of a kinship group who combine their farming operations under a common leadership and organization, to form the basis for a common unit of domestic economy. Large family

groups appear traditionally to have been accorded high prestige throughout Hausaland, but evidence is accumulating to suggest that both their size and functions have declined. This tendency has been accompanied by a more widely recognized trend towards the individualization of land tenure rights. Together, these trends suggest a revolution in the social fabric of rural Hausaland. Peasant farmers remain the main vehicle of agricultural development in the northern states, and changes in family organization, and land tenure are clearly important in shaping the pattern of development. A review of the literature illustrates some of the ways the family farming unit has changed. Evidence is also presented from a case study in Sokoto to suggest that the decline of large family groups has been accelerated in densely populated rural areas where individual effort has been increasingly substituted for communal organization in rural production. (CAB)

GODDARD, A.D. 1973b. Population movements and land shortages in the Sokoto close-settled zone, Nigeria. African Population Mobility Project Working Paper no. 2. Liverpool, UK: University of Liverpool, Department of Geography. [15.00; 16.00]

Detailed information is given on demography, domestic organization, labor, land use, size and composition of holdings, land tenure, and land/labor relationships in three villages in northern Nigeria, viz Takatuku, Kaura Kimba, and Gidan Karma. Some of the conclusions are: (1) over 80% of the upland is under annual cultivation; (2) bush fallowing has been virtually eliminated from the farming system; (3) land has become a transferable economic commodity, and the farmer's tenurial rights approach those of freeholders in practice if not in law; and (4) off-farm occupation and permanent emigration are substantial. (INTECH)

An attempt is made in this paper to place labor circulation within a general framework of alternative strategies evolved by farmers in response to land shortages. This leads to a fuller appreciation of the relationship between labor circulation and farming in the study area, and the likely changes that may result from the spread of improved productivity in agriculture foreseen in the Green Revolution. It was concluded from this detailed study of three villages in the Sokoto close-settled zone of northern Nigeria that rising population densities and land shortages in themselves are not sufficient to explain differences in rates of labor circulation. Traditional farming systems may be successfully adapted to these conditions through intensification by altering the ratios of existing factors of production. The farmer adopts a security-oriented strategy by giving priority to his subsistence production, but is then prepared to organize his remaining resources to maximize his cash income. The greatest rates of labor circulation are found in those areas where there are least opportunities for earning an equivalent income in ways other than farming. (CAB)

GODDARD, A.D., FINE, J.C., and NORMAN, D.W. 1971a. A socio-economic study of three villages in the Sokoto close-settled zone. Part 1. Land and people. Samaru Miscellaneous Paper no. 33. Zaria, Nigeria: Ahmadu Bello University, IAR. [15.00; 16.10]

Studies land and labor relationships based on a sample of 100 farming families in three villages in the Sokoto area.

GODDARD, A.D., FINE, J.C., and NORMAN, D.W. 1971b. A socio-economic study of three villages in the Sokoto close-settled zone. Part 2. Maps. Samaru Miscellaneous Paper no. 34. Zaria, Nigeria: Ahmadu Bello University, IAR. [15.20]

Gives maps of the villages included in the Sokoto study (see Goddard, Fine, and Norman, 1971a).

GODDARD, A.D., MORTIMORE, M.J., and NORMAN, D.W. 1975. Some social and economic implications of population growth in rural Hausaland. Pages 321-339 *in* Population growth and socio-economic change in West Africa (eds. J.C. Caldwell et al.). New York, USA: Columbia University Press. [13.10]

HAYS, H.M. 1973. The organization of the staple food grain marketing system in Northern Nigeria: a study of efficiency of the rural-urban link. Ph.D. thesis, Kansas State University, USA. [21.40]

This study is (1) a description of the traditional market organization for millet and sorghum in northern Nigeria, and (2) an evaluation of market structure, including an examination of the types and forms of market conduct of sellers and buyers, and measurement of market performance with a view to formulating suggestions for improving operational and pricing efficiency. Imperfections in the system from producer to consumer were traced. A study of the rural-urban marketing link in one area of north Nigeria indicated a competitive market organization in terms of structure and price of formation, with reasonable marketing margins. However, an investigation of spatial price differentials among 15 selected markets in the four northern states indicated weak interrelationships among markets with price differentials exceeding transfer costs in many cases. Suggestions for improvement in the millet and sorghum marketing system include: (1) emphasis on roads to reach into isolated rural areas; (2) more collection and better dissemination of market price information; (3) introduction of a standard grain

measure; (4) improved input distribution systems; (5) creation of marketing divisions in government departments to collect and analyze facts for policy formation. (CAB)

HAYS, H.M. 1975a. The marketing and storage of foodgrains in northern Nigeria. Samaru Miscellaneous Paper no. 50. Zaria, Nigeria: Ahmadu Bello University, IAR. [21.40]
It was the purpose of this study to conduct a detailed investigation into the extent and nature of imperfections in the traditional marketing system for millet and sorghum at each stage of the distributive process as produce moves from the farmer to the final consumers. Emphasis is on defining the traditional marketing system, evaluating its performance and examining ways of implementing changes to improve the system. The general objectives of this study are to describe the traditional market organization for millet and sorghum and to examine the pattern of market structure, the types and forms of market conduct of sellers and buyers, and some measures of actual performance with a view toward formulating suggestions and recommendations for improving operational and pricing efficiency. The study examines in detail the marketing link in one area of northern Nigeria. The pricing efficiency of the marketing system is examined by studying prices in 15 selected locations in the four northern states of Nigeria. (CILSS)

HAYS, H.M. 1975b. The storage of cereal grains in 3 villages of Zaria Province, Northern Nigeria. Savanna 4(2): 117-123. [21.40]
This study on the storage of Nigeria's two most important food grains examines the storage practices of 54 farmers in three villages of Zaria Privince in North Central State. The types of storage structures in use are described with a view to providing some insights as to their adequacy and efficiency. Given the present storage practices for millet and sorghum, the scope for improvement through the use of better structures appears to be limited because of the effectiveness and the present low-cost storage using the *rumbana*. There is some scope for reducing storage losses through wider adoption and proper use of insecticides. (CILSS)

HAYS, H.M. 1976. Agricultural marketing in Northern Nigeria. Savanna 5(2): 139-148. [21.40]
This paper describes the organizational structure and marketing processes of the traditional agricultural marketing system with emphasis on the links between the village producer and the urban consumer. Some performance aspects are examined with reference to millet and sorghum. Findings indicate that there is considerable organization in the marketing process and that intermediaries generally provide productive marketing services at reasonable costs given their technical environment. Some reasons are given for the apparent intermarket and seasonal price increases along with some suggestions for their improvement. (CAB)

HAYS, H.M., and RAHEJA, A.K. 1977. Economics of sole-crop cowpea production in Nigeria at the farmer's level, using improved practices. Experimental Agriculture 13(2): 149-154. [19.13]
This paper reports results of a study to investigate the problem of introducing an improved technological package into the farming system in one area of northern Nigeria. It examines the economic and technical feasibility, as well as the social acceptability to the farmer, of growing sole cowpea given his environment and constraints. The study provides insight into the problems farmers experience with improved technologies, and thus a means of determining how to narrow the gap between farmers' and research station yields. (CAB)

HELLEINER, G.K. 1966. Peasant agriculture, government and economic growth in Nigeria. Homewood, Illinois, USA: Richard Irwin. [13.20]
Now a bit dated, but the publication provides substantial information about agricultural development in Nigeria.

HILL, P. 1968. The myth of the amorphous peasantry: a northern Nigerian case study. Nigerian Journal of Economic and Social Studies 10(2): 239-260. [21.10]
A Hausa village in northern Nigeria is used to refuse the frequent assertion of uniform poverty between farmers in poor countries. On the basis of various indicators, such as hectarage per farm, employment of farm labor, ownership of cattle and of farm equipment, percentage of farm area bought, it is shown that four distinct levels of economic wellbeing can be distinguished. (CAB)

HILL, P. 1969. Aspects of socio-economic life in a Hausa village in northern Nigeria. Rural Africana 8: 25-36. [22.00]
The village of Batagarawa is selected for detailed socioeconomic study. Farming is the main occupation, grains and groundnuts (for export) the main crops; other crops are grown mainly for local consumption. Domestic life is based on Muslim family compounds; the "farming unit" is the significant economic group, and consists of those men who work together on a set of farms, and their dependents. Farm ownership, inheritance, and employment of labor are described; livestock are the most important form of property. Various aspects of socioeconomic

life are discussed in greater detail: (1) farmers' preference for a system of permanent, or continuous, cultivation, involving manuring, no fallow, and no rotation; (2) financial transactions are a basic factor in economic life; property and produce is bought and sold, and equipment hired even within the same family; (3) markets as such are uncommon; much trading in grain and other produce was done through farmer-traders. The remainder of the study considers the area in terms of rural inequality, classifying the farming units into four groups, to estimate the proportion of the population which was "hungry" just before the early millet harvest. Inequalities cannot be analyzed as stemming primarily from historical causes; inequalities in human capabilities are far more significant. (CAB)

HILL, P. 1972. Rural Hausa: a village and a setting. London, UK: Cambridge University Press. [22.00]

The two separate but related sections of this book consist of: (1) 14 chapters analyzing the socioeconomic affairs of a single village in Nigerian Hausaland (Batagarawa): and (2) a commentary to provide the general setting of rural Hausaland, and a survey of published and unpublished literature, some very scarce, on this relatively unknown area. The dominant theme is one of economic inequality, and further chapters pursue farm-selling, migration, and farm-laboring. Village price fluctuations are discussed, and summarized case material emphasizes the contrasting situations of poorer and richer individual farmers. A final chapter examines the causes of general poverty. (CAB)

HILL, P. 1977. Rural Hausa. Population, prosperity and poverty. London, UK: Cambridge University Press. [22.00]

A comparison is set up between inequality and poverty in a village in an exceedingly densely populated zone, and one less so. Hill also interprets the current stagnation of the overcrowded community in terms of socioeconomic conditions in Kano Emirate in early colonial times, using archival material. Extramarket and long-distance grain trading is described. (BH)

This book reports on fieldwork done in an exceedingly densely populated locality of rural Hausaland (Dorayi) in 1971-72. Dorayi is compared with the much less densely populated village of the previous study, with special reference to the consequences of high and persistent population density. It also interprets the present-day stability of this stagnating, impoverished, overcrowded community in terms of socioeconomic conditions in rural Kano Emirate generally in very early colonial times. The historical analysis covers the economic relationship between Kano city and countryside in early colonial times, the colonial policy of "indirect rule," seen here as "rural nonrule," the history of farm slavery, and the transition to a free society. Rural inequality is a central theme of the book. (CAB)

HOGENDORN, J.S. 1966. The origins of the groundnut trade in northern Nigeria. Ph.D. thesis, London School of Economics, UK. [13.10]

Examines the reasons behind the expansion of groundnut production and trade in northern Nigeira.

HOGENDORN, J.S. 1976. The vent for surplus model and African cash agriculture to 1914. Savanna 5(1): 15-28. [13.10]

Myint's model is tested against historical data. Five different products, including cotton in Nigeria and groundnuts in Senegambia and northern Nigeria, are considered. The Myint model accurately identifies demand increases, a land constraint, the role of imported incentive goods, and improvement in transport as important in most (through not all) cases. The model does not, however, place sufficient emphasis on indigenous capital formation and the appearance of indigenous economic initiative in explaining the very large expansion of African cash agriculture before 1914. (BH)

HUIZINGA, B. 1978. Some thoughts on information systems for small farmer development. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.31]

This publication describes the Guided Change Project which is being undertaken in 12 project villages: 4 cash, where packages were available for purchase; 4 credit, where there is also a a distribution system and a credit/savings program; and 4 extension villages where there are distribution of inputs and credit/savings programs plus the possibility for farmers to participate in the project's extension program. In 1977, 4000 farmers participated in the programs, farmers bought 600 tonnes of fertilizer and, at the end of 1976, slightly fewer than 3000 farmers had a total outstanding credit of around ₦16,500 of which 95.4% was repaid. The program was self-supporting since farmers were charged all costs of credit recovery, and in addition paid a 10% surcharge as the project's protection against default. The project is compared with the nearby Integrated Agricultural Development Project that IBRD are involved with. The need is advocated for an information system to aid individuals responsible for implementation in reaching the objectives or goals of such development projects.

HUIZINGA, B., REAWARUW, I.P., ENGELHARD, R.J., WIT, T.J. de, and ETUK, E.G. 1978a. A technical note on the Guided Change Project. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.31]

The paper concludes that a highly individualized approach to input distribution and agricultural credit, made operational through an individual identification system of farmers, and the use of savings cards and stamps for the repayment loans, result in high participation rates (65% of male adults) and high repayment rates (95%) and large increases in gross value of production (75%). Manpower problems for administering it were solved by the employment of farmer representatives. The paper also looks at the extension methodology based on the cultivation of fairly large demonstration fields by groups of farmers. Finally, it discusses the feasibility of implementing the mentioned methodologies on a large scale.

HUIZINGA, B., REAWARUW, I.P., ENGELHARD, R.J., WIT, T.J. de, and ETUK, E.G. 1978b. The Guided Change Project: an approach to agricultural development in northern Nigeria, first lessons and experiences. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.31]

The underlying theme of the project is that the majority of the farmers must participate in the developmental process if long-run problems are to be avoided in terms of inequities. Therefore, the developmebtal agency needs to render services to which the majority of farmers have access, and this needs to be done in an efficient manner. The paper describes the credit, savings, and supply programs run by the project and the extension program that includes a radio component. The radio component has proved to be a very valuable tool. Question marks surround the idea of forming "peer groups." The impact of the project appears positive, with much higher use of fertilizer and gross value of production per farmer going up by 75% (i.e., ₦120 to ₦140). The results obtained by the small- and medium-level farmers prove them to be highly efficient users of the inputs that have been put at their disposal. Therefore, growth in agricultural production with equity does not seem to slow down increases in agricultural production.

IDUSOGIE, E.O., OLAYIDE, S.O., and OLATUNBOSUN, D. 1973. Implications of agricultural wastes on Nigerian nutrition and economy. Bulletin of Rural Economics and Sociology 8(2): 255-279. [21.30; 21.40]

This paper attempts to shed light on the considerable annual crop losses sustained in Nigeria. These losses and/or crop wastages are known to result from the primitive structure, conduct, and performance of the Nigerian peasant agriculture. The land-use and ownership systems, the systemps of production, the expenditure of energy in cultivation, the methods of harvesting, the inadequate storage and primitive processing methods, and the inefficient marketing and distribution systems are the major causes of these annual crop losses/waste. Based on seed rates per acre, crop wastage as percentages of annual harvests, man-days of labor required per acre or per ton of production, the required acreages based on yield per acre, and the input-output prices, estimates of the significance and magnitude of the wastage have been made. Their implications on the Nigerian economy and nutrition are discussed. A number of recommendations are made that will be useful in eliminating and/or minimizing these significant annual losses.

IJERE, M.O. 1975. The lessons of state credit institutions in developing countries—the Nigerian experience. Agricultural Administration 2(2): 129-145. [13.32]

The drive for improved agriculture in the former Eastern Nigeria necessitated the establishment of suitable agricultural credit institutions. In its agrarian revolution program the government relied heavily on the existing institutions, notably the Cooperative Bank, cooperatives, the Small Credit Scheme of the Eastern Nigeria Development Corporation, the Supervised Credit Division of the Ministry of Agriculture, and indigenous credit societies. Unfortunately, these were inadequate in financing the level of agricultural production in the region. In 1963, a new body, the Fund for Agricultural and Industrial Development (FAID) was established. This was expected to remedy the deficiencies of past and existing institutions. It had well articulated guidelines and safeguards from different ministries, but failed to meet expectations, largely because of administrative bottlenecks. In view of these handicaps, a lasting solution to the perennial problem is suggested in the establishment of an agricultural credit bank, with autonomy and competence to finance the agricultural sector, Central to its work is the responsibility of its staff and those of the Ministry of Agriculture and departments of agricultural sciences in universities to extend to farmers the knowledge of farm management as the prerequisite to credit advancement. Thus, the difficulties of the credit agency in granting loans, and of farmers in obtaining them, will be considerably minimized if credit is integrated with extension and farm management. (CAB)

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE. 1973. Consumer food utilization in the semi-arid tropics of Africa. Report of an interdisciplinary workshop, Zaria, Nigeria, 30 April - 4 May 1973. Ottawa, Canada: IDRC. [21.20]

A workshop was held in Zaria, Nigeria, on consumer food utilization in the semi-arid tropics

of Africa. Papers were presented by participating countries on problems associated with aridity, crop production, marketing, processing, and consumption, with a view to developing a systematic approach to food utilization. Research has been focused on increasing the production and utilization of crops grown in the semi-arid regions to achieve self-sufficiency and improve the nutritional status of the population. Education and production planning are necessary to modify food consumption patterns. Much of the food production, marketing, and processing in Africa is done by women on a small scale. Modernization of these systems is desirable and inevitable, but consideration must be given to the social and nutritional implications of these changes. Additional agricultural and credit facilities should be extended to women to encourage their enterprises. Participants called for the preparation of a catalogue on the use of various crops for the benefit of the research on problems of food processing, and the development of a methodology to identify consumer food preferences. (CAB)

IYOHA, M.A. 1972. Agricultural productivity and economic growth in Nigeria, 1950-1964. Discussion Paper. New York, USA: State University of New York, Department of Economics, Economic Research Group. [13.10]
Nigeria's economic record 1950-64 shows that output greatly increased despite a slowly rising or stagnant agricultural productivity. If output is measured by GDP, agricultural productivity by labor productivity, and technical progress by land productivity, it is found that while output rose at 7.7% per annum, productivity increased at 1.4% per annum, while technological progress in agriculture declined at a rate of 6.1% per annum. Lack of technical advance was most noticeable in food production. The 2.9% annual rise in food output occurred only because millions of new hectares were brought under cultivation. Productivity in Nigerian agriculture could be raised enormously by modernizing farming methods and practices, accompanied or preceded by social or institutional reforms. These should include a workable land reform program, credit facilities, improvements in storage and marketing facilities infrastructure, and extension services. (CAB)

KASSAM, A.H. 1973. In search of higher yields with mixed cropping in northern Nigeria—a report on agronomic work. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.20]
A summary of the work done on mixed cropping at the IAR.

KASSAM, A.H., and ANDREWS, D.J. 1975. Effects of sowing date on growth, development and yield on photosensitive sorghum at Samaru, northern Nigeria. Experimental Agriculture 11: 227-240.[13.20]

KASSAM, A.H., DAGG, M., KOWAL, J.M., and KHADR, F. 1976. Improving food crop production in the Sudan savanna zone of northern Nigeria. Outlook on Agriculture 8: 341-347. [13.10]
Provides an overview of the technologies for improving food production in northern Nigeria, together with a discussion of the problems.

KASSAM, A.H. KOWAL, J.M. DAGG, M., and HARRISON, M.N. 1975. Maize in West Africa: its potential in savanna areas. World Crops 17: 75-78 [13.20]
The authors analyze the environmental suitability of maize in West Africa in terms of climate and growing season. They conclude that the highest potential for the intensive production of maize for grain lies in the savanna areas and predict that the Guinea savanna areas may one day become the corn belt of West Africa. (CILSS)

KING, R. 1975. Experiences in the administration of co-operative credit and marketing societies in Northern Nigeria. Agricultural Administration 2(3): 195-208. [13.34]
This paper is concerned with the experience of introducing cooperation into different social conditions of the peasant farming communities of northern Nigeria. The first part of the paper looks at cooperatives in the general terms of a government policy to promote institutional change. Next the blueprint on which northern Nigerian farmers' cooperatives are based is described, followed by a description of how cooperatives have evolved in practice. Comparison of the blueprint on which cooperative development has been based, and the very different existing reality, holds some lessons on the administration of change in the village society, and is the subject of the final section. A greater emphasis on government involvement than anticipated was needed. The village unit, on the other hand, provides the mutual knowledge and trust necessary for the success of credit operations. (In this paper there is no attempt to quantify the benefits accruing from the governments' cooperative policy, only to describe the experience of its administration).

KING, R. 1976a. Capital, credit and savings in Northern Nigeria agriculture: questioning conventional wisdom. Samaru Agricultural Newsletter 18(1): 17-21. [13.32; 13.34]
It is concluded from this study that government-backed credit schemes do not necessarily promote agricultural development. In many cases the farmer's environment of social obligations and nonfarm investment opportunities induces him to use available money for purposes other than

investment in agricultural capital. While this situation exists, agricultural development is best promoted not by giving the farmer access to subsidized credit, but by creating conditions that make agricultural investment more profitable, less risky, and more socially acceptable. These conditions are better created through supporting new village savings institutions than by injecting finance from outside the community in credit schemes. A rational policy requires a fuller understanding of the existing environment in which farmers make savings, credit, and investment decisions, and identification of the type of intervention where government effort will be most effective. (CAB)

KING, R. 1976b. Farmers' cooperatives in northern Nigeria. Zaria, Nigeria, and Reading, UK: Ahmadu Bello University, IAR, and University of Reading, Department of Agricultural Economics. [13.34]
A case study used to illustrate the relationship between economic development and institutional change. (BH)

KING, R. 1978. Village variety and state uniformity. Reading, UK: University of Reading.[13.34]
Argues that cooperatives have a standard format but villages are heterogeneous. Therefore, they rarely fit the village setting, need cooperative personnel to run them, and are often allied with the village elite.

KOHLHATKAR, V.Y., 1965. FAO socio-economic survey of peasant agriculture in Makarfi, Ako, Mallam Madari and Ibeto districts in northern Nigeria. Kaduna, Nigeria: Ministry of Agriculture.[22.00]

KOLAWOLE, M.I. 1974. Economic aspects of private tractor operations in the savanna zone of western Nigeria. Savanna 3(2): 175-184. [20.12]

KONAN, M. 1975. Occupations and family patterns among the Hausa in northern Nigeria. Samaru Miscellaneous Paper no. 52. Zaria, Nigeria: Ahmadu Bello University, IAR. [16.22; 16.23]

KOWAL, J.M., and KASSAM, A.H. 1973. An appraisal of drought in 1973 affecting groundnut production in the Guinea and Sudan savanna areas of Nigeria. Savanna 2(2): 159-164. [21.50]

KOWAL, J.M., and KNABE, D.T. 1972. An agroclimatological atlas of the northern states of Nigeria. Zaria, Nigeria: Ahmadu Bello University Press. [11.10]
Provides meteorological information on northern Nigeria.

LAURENT, C.K. 1968. The use of bullocks for power on farms in northern Nigeria. Bulletin of Rural Economic Sociology 3(2): 235-262. [20.12]

Between 1956 and 1965 the number of mixed farms (i.e., with bullocks) increased from 15,000 to 36,000 in tsetse-free areas of northern Nigeria. There are reliably estimated to be at least 50,000 teams of bullocks in the area, and the use of bullock power is increasing. Even under the most disadvantageous conditions, the cost per acre plow is less than the cost of doing it by hand or by tractor, except perhaps in the case of tractors in large irrigated areas. As the area of tsetsefly infestation is reduced, large areas will be opened up for bullock cultivation. (CAB)

LAURENT, C.K. 1969. Problems facing the fertiliser distribution program in the six Northern States. CSNRD/NISER Report no. 27. East Lansing, USA: Michigan State University. [13.32]

LEEUW, P. de, LESSLIE, A., and TULEY, P. 1972. The land resources of north east Nigeria. Present and potential land use. Tolworth Tower, Surbiton, UK: Land Resources Development Centre. [11.10]
An account is given of the major aspects of present and potential land use in North East Nigeria, primarily covering arable and irrigated farming, the grassland communities, rangeland types, and forestry aspects. A land capability classification is presented with ten categories of land-use potential. Recommendations for the future use of the area are also given. (CAB)

LUNING, H.A. 1963a. An agro-economic survey in Katsina province. Kaduna, Nigeria: Government Printer. [22.00]
An agroeconomic survey was conducted in three village areas of northern Nigeria to study the rural problems caused by overpopulation and overstocking. General information on the region is followed by a description of the land-use pattern and farming methods. Trees, particularly *Acacia albida*, are highly valued by the farmers because crops such as pearl millet, sorghum, and groundnuts do extremely well beneath them. Problems of mixed farming are discussed. The size of holdings is determined by the size of the family, the population pressure on the land, the carrying capacity of the land, social stratification, and farming systems. There are many indications of a breakdown of the customary laws on land tenure, and a tendency to consider the right of usufruct of land as a right of freehold. (CAB)

LUNING, H.A. 1963b. An agro-economic investigation in the Marumaru-Kasarawa catchment area (Nigeria). Gusau, Nigeria: Ministry of Agriculture. [22.00]

LUNING, H.A. 1963c. The rural economy of the upper catchment area of the Sokoto-Rima valley. Gusau, Nigeria: Ministry of Agriculture. [22.00]

LUNING, H.A. 1964. The measurement of labour productivity: a case study (Nigeria). Netherlands Journal of Agricultural Science 12(4): 281-290. [16.21]

A case study is presented on labor productivity of 30 farmers living in a village in northern Nigeria, a region with a relatively high population density of 500-600 people per square mile. An adult male worker can provide the labor needs of about 4-5 acres of farm land during the growing season, but in this village only 1.5 acres per worker was available. An initial estimation of labor productivity, based on a general survey, led to the conclusion that marginal productivity approached zero. However, this conclusion appears to be erroneous, as a consequence of the incorrect assessment of time spent on actual crop production by farmers. According to a detailed investigation on five farms, the number of man-days per acre spent on crop production was remarkably uniform--about 19 man-days/acre regardless of size of holding. This, in connection with other evidence, suggests that the marginal productivity of labor in this village is not zero and does not even approach zero. However, the availability of non-farm employment in the region may be of influence in this respect. (CAB)

LUNING, H.A. 1965. The impact of socio-economic factors on the land tenure pattern in northern Nigeria. Journal of Administration Overseas 4(3): 173-182. [15.20]

The results of a field survey conducted in ten areas in the Katsina and Sokoto provinces in northern Nigeria in 1960 and 1962 show that the traditional concept of communal or tribal tenure is no longer fully valid. The increasing demand for land owing to population growth, the introduction of cash crops, and infrastructural developments have been accompanied by a rapid increase of land prices. Buying and selling of land has occurred in most areas for at least 30 years. It is doubtful whether present legislation could effectively cope with the fast-changing land tenure pattern in northern Nigeria. (CAB)

LUNING, H.A. 1967a. Economic aspects of low labour-income farming. Agricultural Research Report. Wageningen, Netherlands: Centre for Agricultural Publications and Documentation (PUDOC). [13.10; 16.21]

The study examines whether labor productivity is a determinant in wage formation and whether labor remuneration can be treated as an economic variable. Ch. 2 reviews wage theories as they bear on the concept of peasant farming in a static framework. Ch. 3 presents a theoretical structure of the borderline case of underemployment and its impact on the level of remuneration in low-income farming. A Ricardian macromodel does not give a satisfactory approximation, and a micromodel is developed to explain the phenomenon of disguised unemployment. Ch. 4 discusses the basic problems of measurement; relevant hypotheses are then worked out. Ch. 5 describes studies on labor productivity in a sample of peasant farms in a poor and heavily populated area in northern Nigeria, and (Ch. 6) among smallholders in the coastal plains of Surinam. Ch. 7 concludes that, in the early stages of economic development, a steadily increasing number of low-income earners must be absorbed into the agricultural sector. The absorption of labor into the agricultural economy thus forms a crucial part of development strategy. A strategy is designed, using estimated production functions, for northern Nigeria and Surinam; specific measures to increase labor productivity are suggested. (CAB)

LUNING, H.A. 1967b. Patterns of choice of behaviour on peasant farms in northern Nigeria. Netherlands Journal of Agricultural Science 15(3): 161-169. [18.10; 18.20]

A budget analysis was made of 28 peasant farms in a region of northern Nigeria to determine motives underlying farm organization. The agricultural system is traditional and static; farmers are aware of the necessity of applying organic manure but use no fertilizer; some hired labor supplements family labor. It was found that the proportion of cash crops (groundnuts) and subsistence crops (mainly sorghum and pearl millet) was mainly determined by maximum cash income expectation; however, self-sufficiency in food had to be assured first of all. Thus, all land not allocated to groundnuts was planted to cereals in view of the risks of low yields in unfavorable years, and no land was left fallow. The absence of fallow land, however, may endanger the maintenance of soil fertility in the long run. (CAB)

MacDOWELL, C.M. 1966. An introduction to the problems of land ownership in Northern Nigeria. Zaria, Nigeria: Ahmadu Bello University, Institute of Administration. [15.10]

The Land Tenure Law of 1962 is shown to have historical coherence, being based on: (1) customary and Islamic law in force prior to the British conquest; (2) the rights which the British government acquired either by conquest or treaty; and (3) the necessity to protect the interests

of the native occupiers against acquisition of their land by aliens. No justification is made of its present efficacy. It seems that the tight control exercised by the government of northern Nigeria in respect of land matters is a significant factor in promoting the further development of a planned economy. However, the absence of any secure form of tenure may tend to restrict development in the private enterprise sector as individual businessmen are certainly unwilling to take part in agricultural or other development on a large scale where profits are on a long-term basis. The peasant farmers still need to be protected from exploitation, but in the urban areas it should be feasible to create a more secure form of tenure. (CAB)

MANN, W.S. 1967. Farm management report of Makarfi District. Kaduna, Nigeria: Ministry of Agriculture. [22.00]

MATLON, P.J. 1976. A note on the production and marketing of groundnuts in three villages of Kano State, 1974-75. Samaru Agricultural Newsletter 17(3): 111-114. [22.00]

MATLON, P.J. 1977. The size distribution, structure and determinants of personal income among farmers in the north of Nigeria. Ph.D. thesis, Cornell University, USA. [22.00]
A detailed profile is provided of incomes for a sample of farmers in the north of Nigeria and the determinants of income differentials are identified, using data collected during a 12-month period in 1974-75 from a sample of 140 farming households in three villages of Kano State. Among the sampled villages the distribution of income is equitable relative to international standards and compared to Nigeria as a whole. The high degree of equity is attributed primarily to: available surplus land, an egalitarian land tenure system, inheritance practices which limit the accumulation of land and other fixed assets between generations, and the limited profitability of the generally traditional farming systems of the area. Despite the narrow range of incomes, an econometric analysis identifies differences in the efficiency of land and labor utilization in farm production as the most important determinants of income variation. Differences in management underlying these efficiency differentials are examined through budgeting and production function analysis. Low use of fertilizer combined with generally low levels of management skills account for the inefficient use of land and labor resources among poor farmers. Evidence is presented, however, which indicates that the adoption of new technologies is likely to widen income disparities. To forestall this, modifications in observed extension programs are suggested. Emphasis on the development of low-cost food-grain production technologies is urged as an approach providing important improvement in the welfare of the poorest, grain-deficit households, and the specific targeting of poor households in fertilizer and instructional campaigns is identified as a strategy that satisfies both production and equity objectives.

MATLON, P. 1978. The size distribution and structure of incomes among northern Nigerian farmers: empirical results. East Lansing, USA: Michigan State University. (Mimeo.) [22.00]
Pays more emphasis to *gandu* versus *iyali* family structures than was the case in his dissertation. (Matlon 1977).

MATLON, P., and NEWMAN, M. 1978. Production efficiency and income distribution among farmers in the north of Nigeria. East Lansing, USA: Michigan State University, Department of Agricultural Economics. [22.00]
Looks at differences in allocative and technical efficiency among different groups of farmers. Poorer farmers had lower levels of technical efficiency but this cannot necessarily be attributed to differences in managerial ability. Instead, their low levels of living and reserves necessitate them planting late, working on fields of other families to provide food, etc.

MEEK, G.K. 1925. The northern tribes of Nigeria. London, UK: Oxford University Press. [19.11]
Cited by Raulin for references on use of the *iler* for weeding.

MIJINDADI, N. 1976. Staff organization for agricultural planning: the case of Nigeria. Agricultural Administration 3(4): 239-247. [13.10]
The problems of agricultural planning in developing countries have, in most discussions, been attributed to the paucity of data, unavailability of qualified staff and insufficient funds, However, consultations at appropriate levels, adequate staff organization, and assignment of responsibilities among planning office staff can lessen these constraints. This paper reviews staff organization for agricultural planning in three states in Nigeria (Oyo, Bendel, and Sokoto, as at January 1974), gives suggestions for rationalizing plan proposals, and finally advances guidelines for setting up states' agricultural planning offices. (CAB)

MILLER, R. 1952. Cultivation terraces in Nigeria. Geographical Journal 118: 110-111. [19.11]

MORTIMORE, M.J. 1967. Land use and population pressure in Kano close-settled zone, Northern

Nigeria. Advancement of Science 23: 677-686. [15.10]

MORTIMORE, M.J. 1970. Zaria and its region. Occasional Paper no. 4. Zaria, Nigeria: Ahmadu Bello University, Department of Geography. [11.10; 11.20]
A series of papers describing various physical and human features in the region of Zaria.

MORTIMORE, M.J. 1971. Population densities and systems of agricultural land use in Northern Nigeria. Nigerian Geographical Journal 14(1): 3-15. [15.10; 19.11]
The land tenure and cropping pattern in the close-settled zone (population more than 135/km^2) of Kano State, Nigeria, is described and recommended as a dynamic model for other northern Nigerian urban zones. It is suggested that the permanent intensive cultivation sustained by adequate organic manuring (at least 5 tonnes/ha) as practiced on Kano farms could partly absorb the increased population pressure in such areas as Sokoto and the Jos Plateau. (CAB)

MORTIMORE, M.J. 1973. Famine in Hausaland. Savanna 2(2): 103-107. [21.10; 21.50]

MORTIMORE, M.J. 1974. The demographic variable in regional planning in Kano State, Nigeria. Pages 129-145 *in* Spatial aspects of development. New York, USA: Wiley. [13.10]
Kano state in Nigeria contains one of the larger concentrations of population in tropical Africa. About 5.6 million people live within the state, but the greatest rural densities are found in the Kano close-settled zone, an area about 160 km long and 80 km wide surrounding the city of Kano. This zone had 2.4 million inhabitants in 1962, living at more than 132/km^2 and rising to over 264/km^2 in the center. The city or urban area of Kano had an additional 250,000 at that time and its present population exceeds 400,000. The significance of the close-settled zone may be measured against the fact that, unlike many better-favored areas of high density in tropical Africa, this region lies in the Sudan savanna zone and has a mean annual rainfall of only 750-900 mm, available during a rainy season lasting 5 months or less. Standards of living are threatened by a continued growth of the rural population, at an annual rate that presently exceeds 2.5%, because nearly all land that can be utilized with traditional techniques is fully occupied. Rising expectations flowing from the rapid extension of the money economy set the problem of development in bold relief. This paper surveys the nature of the problem confronting regional planning in Kano state, the development strategies available, and the role of research into the spatial aspects of the situation. (CAB)

MORTIMORE, M.J., and WILSON, J. 1965. Land and people in the Kano close-settled zone. Occasional Paper no. 1. Zaria, Nigeria: Ahmadu Bello University, Department of Geography. [22.00]
A study done by geographers on villages in the Kano area. Looks at a number of factors concerning life in the villages. Describes the unique permanent cropping system in the area sustained through transporting substantial amounts of manure to the farms from the Kano area.

NETTING, R. 1965. Household organization and intensive agriculture: the Kofyar case. Africa 35(4): 422-429. [16.10]
The relation between the indigenous farming system and household organization is illustrated by the Kofyar, a tribe inhabiting the Jos plateau in northern Nigeria. Traditionally each family has a well-terraced field adjoining the homestead which is farmed intensively, with subsistence crops receiving compost and dung from the stall-fed goat herd. This system demands only a small labor force but constant attention; consequently, households were kept small, an increase in the number of adults leading to household fission rather than to expansion of the farm. Recently, however, many Kofyar have started practicing shifting cultivation in the plains to grow cash food crops in addition to their subsistence farming. This system requires more labor, that is sometimes hired but usually provided by polygamy and/or by extending the household, i.e., retaining adult sons with their families within it. (CAB)

NETTING, R. 1968. Hill farmers of Nigeria: cultural ecology of the Kofyar of the Jos Plateau. Seattle, USA: University of Washington Press. [22.00]
The Kofyar are a tribe of over 70,000 members occupying an area of some 500 km^2 on the southern escarpment of the Jos Plateau in northern Nigeria. They are almost unique in Africa in practicing a system of intensive mixed farming on fields terraced with stone walls, applying large amounts of dung from penned animals, house-hold refuse, and ashes to the soil. The main theme is the development of economic and social organization of the tribe adapted to environmental conditions in a wide sense including the fairly recent pacification of the rather inaccessible region. The Kofyar are characterized as "hardboiled hillbillies," depending wholly on agriculture for their subsistence. Chapters are devoted to an outline of the environment and description of crops and methods used in the system of intensive hill farming; the settlement pattern; the organization of labor with the household as a unit; land tenure and inhertiance; attitudes towards work and differences in wealth; and the recent development of cash cropping production as a result of pacification and improved communications. Farm productivity and the

farmers' budget are analyzed. (CAB)

NORMAN, D.W. 1967a. An economic study of three Zaria Province villages. Part 1. Land and labour relationships. Samaru Miscellaneous Paper no. 19. Zaria, Nigeria: Ahmadu Bello University, IAR. [15.00; 16.10]
Analyses land and labor relationships of all the families who were located in three villages, differing in ease of communication with Zaria city.

NORMAN, D.W. 1967b. An economic study of three Zaria Province villages. Part 3. Maps. Samaru Miscellaneous Paper no. 23. Zaria, Nigeria: Ahmadu Bello University, IAR. [15.20]
Consists of field maps of all the fields located in three villages in the Zaria area (see Norman 1967a).

NORMAN, D.W. 1967c. Land and labour in three Zaria villages, Samaru Agricultural Newsletter 9(3): 28-35. [15.00; 16.20]
Land use and land tenure were studied in three villages of northern Nigeria situated on the outskirts of Zaria city, 40 km from the town on a main road, and 32 km from the town on a bad road. Increasing distance from the town (in time of travelling) was associated with a decrease in nonfarming occupations of land-holders, with an increase in average farm size and, consequently, of mean distances from the village to the fields, with an increase in fallowing, with an increase of the area farmed per family, with an increase of the proportion of land inherited and a decrease in that of land acquired on other ways, and with a decrease of the frequency of transfers of land. Size of fields increased with the distance from the village. There were considerable differences between farm sizes within each village, 50% of the farmers holding less than 25% of the land. (CAB)

NORMAN, D.W. 1968. How hard do Nigerian farmers work? Samaru Agricultural Newsletter 10(2): 18-27. [16.21; 16.23]
A quantitative investigation is made of the time worked by farmers in Nigeria, and a detailed analysis of the results of a survey in three villages in the northern part of Zaria province is given. Indications are that farmers work approximately 5 hours per working day, or a total of 1200 hours or 230 days per annum. Attention is paid to climate, soil quality, location, and off-farm employment. (CAB)

NORMAN, D.W. 1969a. Economic and non-economic variables in village surveys. Rural Africana 8: 18-24. [12.00]
It is argued that only through the incorporation of noneconomic variables through a multidisciplinary approach into village level studies is it possible to ensure that attitudes and underlying motivations will receive sufficient consideration. One of the main reasons for the failure of economists and their plans to bring about rural progress has thus been their reluctance to take sufficient cognizance of noneconomic factors. (CAB)

NORMAN, D.W. 1969b. Labour inputs of farmers: a case study of the Zaria Province of the North Central State of Nigeria. Nigerian Journal of Economic and Social Studies 11(1): 1-14. [16.21; 16.23]
A sample study of farm labor inputs was conducted in three Nigerian villages. A present agricultural workload per adult male of about 5 hours per working day and 230 days per year was found. Any plan that deviates far from the present working and behavior pattern of farmers should be examined carefully to determine its practicability. When costing labor in enterprises, rates should be put somewhat higher during peak periods. (CAB)

NORMAN, D.W. 1970a. Comment on mixed farming. Pages 42-48 *in* Livestock development in the dry and intermediate savanna zones (ed. IAR). Zaria, Nigeria: Ahmadu Bello University. [20.12]
Discusses a paper by Alkali (1970) in the same publication.

NORMAN, D.W. 1970b. Initiating change in traditional agriculture. Proceedings of the Agricultural Society of Nigeria 7: 6-14. [13.10; 19.13]
See Norman (1971)

NORMAN, D.W. 1971. Initiating change in traditional agriculture. Agricultural Economics Bulletin for Africa 13: 31-52. [13.10; 19.13]
Linear programming was utilized to determine the possible changes in farmers' incomes resulting from different strategies. Some of these strategies work within the existing traditional setting, with varying labor inputs. Other strategies implied various specified changes in prices, technology, and labor use. The best possibilities for income increase result from more labor inputs under traditional conditions, and from increases in the prices of cash-crops, e.g., groundnuts and cotton. Currently available improved technology has little potential for

increasing incomes, when both land and labor restrictions are considered. (CAB)

NORMAN, D.W. 1972a. An economic study of three Zaria Province villages. Part 2. Input-output study. Volume i. Text. Samaru Miscellaneous Paper no. 37. Zaria, Nigeria: Ahmadu Bello University, IAR. [22.00]
Gives detailed results of a study involving interviewing a random sample of 124 farming families located in three villages twice weekly throughout 1 year (see Norman 1967a).

NORMAN, D.W. 1972b. An economic study of three Zaria Province villages. Part 2. Volume ii. Basic data and survey forms. Samaru Miscellaneous Paper no. 38. Zaria, Nigeria: Ahmadu Bello University, IAR. [22.00]
Gives some of the basic data collected in the survey mentioned under Norman (1972a).

NORMAN, D.W. 1973a. Crop mixtures under indigenous conditions in the northern part of Nigeria. Pages 130-144 *in* Factors of agricultural growth in West Africa (ed. I.M. Ofori). Accra, Ghana: ISSER/Presbyterian Press. [19.12]
The main objective is to challenge the conventional wisdom which still prevails in some areas that sole cropping is inherently superior to growing crops in mixtures. In order to do this the two systems under indigenous conditions are compared in terms of their significance and magnitude and variability in the returns per unit input. Reasons for and against the practice of growing crops in mixtures are examined from both the scientific and farmer's point of view. Finally, a few implications are drawn concerning the possible future of intercropping and the possible impact of improved practices under practical farming conditions. (CAB)

NORMAN, D.W. 1973b. Economic analysis of agricultural production and labour utilization among the Hausa in the north of Nigeria. African Rural Employment/Economy Paper no. 4. East Lansing, USA: Michigan State University, Department of Agricultural Economics, African Rural Economy Program. [22.00]
The central premise of this paper is that an understanding of the present production process and decision behavior in traditional agriculture can be of paramount importance in determining the relevance, practicability, and potential success of a change or innovation. This case study (1) describes present-day traditional farming in the Zaria area both in terms of inputs and outputs; (2) interprets the empirical data and tests various hypotheses regarding the present situation, i.e., the influence of external factors such as the goals underlying the farmers' actions, particularly profit maximization and security; and (3) derives from the description and analyses some implications for introducing change. (CAB)

NORMAN, D.W. 1973c. Interdisciplinary research on rural development: the RERU experience. OLC Paper no. 4. Washington, D.C., USA: American Council on Education, Overseas Liaison Committee. [13.20]
The results of the work of the Rural Economy Research Unit at the village level provide a solid underpinning for policy prescriptions for small farmers in northern Nigeria. They also helped to redirect the priorities of technical agricultural researchers. (CAB)

NORMAN, D.W. 1973d. Methodology and problems of farm management investigations: the experience of RERU in Northern Nigeria. African Rural Employment Paper no. 8. East Lansing, USA: Michigan State University. [12.00]
The experiences of the Rural Economy Research Unit at Ahmadu Bello University in carrying out village studies in Nigeria since 1965 are described. The RERU studies had fairly broad objectives: (1) to determine the quantity of and the utilization of the factors of production available to farmers; (2) to determine the products produced by farmers and to estimate their income; (3) to investigate factor-factor, factor-product, and product-product relationships; and (4) to develop a suitable methodology for undertaking farm management surveys in northern states. A wide range of problems encountered when collecting and analyzing data for farm management surveys is discussed, to which there is no perfect solution, particularly in developing countries. In the end, researchers usually have to accept an approach that falls short of the ideal. Since no well-defined pragmatic guideline has been established, the methods used tend to differ widely, reflecting to some extent the biases of the researcher and to a great extent the financial and supervisory resources available. The approach advocated in the RERU studies involves working with small numbers of farmers and maintaining frequent interviews over a full crop year. Although this approach is relatively costly per farm interview, measurement errors are reduced and knowledge is acquired in depth on the socioeconomic variables influencing family decision-making. (CAB)

NORMAN, D.W. 1973e. Modern technology: its relationship to risk, managerial ability and level of extension input. Samaru Agricultural Newsletter 15(1): 11-19. [18.20; 18.30]
Argues for more than one level of recommendation in order to improve their relevancy to a

wider range of support systems, and farmers.

NORMAN, D.W. 1973f. Rural economy in the Zaria area, with special reference to agriculture. Samaru Research Bulletin no. 178. Zaria, Nigeria: Ahmadu Bello University, IAR. [22.00]
The Bulletin's purpose is to give a brief description of the economy of the rural area surrounding Zaria, using results from a survey in 1966-67 of three villages differing in distance from and ease of communication with Zaria. (CAB) (For fuller treatment of these three villages, with full results of the survey, see Samaru Miscellaneous Papers 19, 23, 37, and 38; Norman 1967a and b, and 1972a and b.)

NORMAN, D.W. 1974. Rationalising mixed cropping under indigenous conditions: the example of Northern Nigeria. Journal of Development Studies 11(1): 3-21. [19.12]
In spite of the prevalence of mixed cropping throughout the developing world, little effort has been expended on its investigation, particularly under indigenous conditions. This paper attempts to partially rectify this with empirical data collected at the farmer level in part of northern Nigeria. Mixed cropping in this area of limited rainfall is shown to be, under indigenous technological conditions, a rational strategy in terms of both profit maximization and risk minimization. Indeed, when improved technology, at present available on sole crops, is considered in a programming framework, mixed cropping under indigenous conditions is still dominant. This is an important reason why extension agents have great difficulty convincing farmers to change to a sole-crop strategy that in fact may not be justified. It also supports the desirability of research into mixed cropping under improved technological conditions.(CAB)

NORMAN, D.W. 1976. The organisational consequences of social and economic constraints and policies in dry-land areas. Pages 168-186 *in* Policy and Practice in rural development (eds. G. Hunter, A.H. Bunting, and A. Bottrall). London, UK: Croom-Helm. [13.32; 19.13]
The paper stresses the importance of designing improved technologies that are compatible with the support systems (e.g., extension, input distribution system, etc.) available. In the light of this the paper argues for also developing technologies that require lower levels of support systems more typical of the area.

NORMAN, D.W. 1977a. Economic rationality of traditional Hausa dryland farmers in the North of Nigeria. Pages 63-91 *in* Tradition and dynamics in small-farm agriculture (ed. R.D. Stevens). Ames, USA: Iowa State University Press. [22.00]
The same paper as was first published in Norman 1973b.

NORMAN, D.W. 1977b. The rationalisation of intercropping. African Environment 2,3(4,1): 97-109. [19.12]
This article (an excerpt from Samaru Research Bulletin no. 191) examines the economic and social nature of the practice of intercropping. If any attempts are to be made to move dryland Nigerian farmers from traditional land cultivation based on intercropping methods towards more technologically advanced cultivation, it is necessary to understand both economic relationships facing an individual farmer and his perception of these relationships. (CAB)

NORMAN, D.W. 1978a. Farming systems and problems of improving them. Pages 318-347 *in* Agricultural ecology of savanna (ed. J.M. Kowal and A.H. Kassam). Oxford, UK: Clarendon Press. [22.00]
Gives an overview of farming in northern Nigeria and, after identifying some of the main constraints, gives suggestions concerning the types of technology that might be relevant to farmers.

NORMAN, D.W. 1978b. Thoughts on village studies in Northern Nigeria. Pages 81-95 *in* Village studies in the Third World (ed. B. Dasgupta). New Delhi, India; Hindustan Publishing Corporation. [13.20]
Discusses some of the limitations of village studies undertaken in anglophone Africa.

NORMAN, D.W., BEEDEN, P., KROEKER, W.J., PRYOR, D.H., HUIZINGA, B. and HAYS, H.M. 1976a. The production feasibility of improved sole crop maize production technology for the small-scale farmer in the Northern Guinea Savanna Zone of Nigeria. Samaru Miscellaneous Paper no. 59. Zaria, Nigeria: Ahmadu Bello University, IAR. [19.13]
The results of this study confirmed that the physical environment of the savanna areas is well suited to maize production. Farmers using ox-drawn equipment and applying improved maize technology obtained an average yield of nearly 3000 kg/ha, with some farmers obtaining more than 5000 kg/ha. Maize produced under these conditions is highly profitable as a yield of only 1022 kg/ha is required to cover all production costs. Furthermore, even under the adverse rainfall conditions of 1973, the maize crop performed well. This indicates the high stability of the recommended technology both under favorable and under adverse conditions. Although the improved maize technology tended to accentuate the peak labor demand within the

hand-farming system during the June-July postplanting cultivations, its high profitability should provide sufficient incentive for hiring additional labor when necessary. Average net returns of maize and its potential market are discussed. (CAB)

NORMAN, D.W., BEEDEN, P., KROEKER, W.J., PRYOR, D.H., HUIZINGA, B., and HAYS, H.M. 1976b. The feasibility of improved sole crop sorghum production technology for the small-scale farmer in the Northern Guinea Savanna Zone of Nigeria. Samaru Miscellaneous Paper no. 60 Zaria, Nigeria: Ahmadu Bello University, IAR. [19.13]

This study showed that the returns from improved sorghum production were reasonable in a favorable growing season and only slightly reduced in an unfavorable growing season. Net returns for improved sorghum production were higher than those for the traditionally-produced crop whether costs of all labor, only hired labor, or family labor were considered. The technology is therefore of value to both the traditional farmer using only family labor and the agricultural entrepreneur who hires most of the labor input. The new production techniques are of considerable importance for increasing sorghum production, especially in areas with a growing season exceeding 185 days, without interfering with other farm enterprises. Increase in labor requirement occurs during the harvest period when labor shortage is unlikely to be a major constraint to crop production.

NORMAN, D.W., BUNTJER, B.J., and GODDARD, A.D. 1970. Intercropping observation plots at the farmer's level. Samaru Agricultural Newsletter 12(6): 97-101. [19.13]

Investigates at the farmers level the returns for growing millet/sorghum and millet/sorghum/groundnuts mixtures incorporating improved technology.

NORMAN, D.W., FINE, J.C., GODDARD, A.D., KROEKER, W.J., and PRYOR, D.M. 1976b. A socio-economic survey of three villages in the Sokoto close-settled zone. Part 3. Input-output study. Volume ii. Basic data. Samaru Miscellaneous Paper no. 65. Zaria, Nigeria: Ahmadu Bello University, IAR. [22.00]

Provides some of the basic data used in Norman, Fine, Goddard, Pryor, and Kroeker 1976a.

NORMAN, D.W., FINE, J.C., GODDARD, A.D., PRYOR, D.H., and KROEKER, W.J. 1976a. A socio-economic survey of three villages in the Sokoto close-settled zone. Part 3. Input-output study. Volume i. Text. Samaru Miscellaneous Paper no. 64. Zaria, Nigeria: Ahmadu Bello University, IAR. [22.00]

This study forms part of socioeconomic investigations among Hausa communities in three areas of northern Nigeria. The report gives a quantitative description of the input relationships of 100 farming households in three Sokoto province villages from April 1967 to March 1968. (CAB)

NORMAN, D.W., HAYWARD, J.A., and HALLAM, H.R. 1974. An assessment of the cotton growing recommendations as applied by Nigerian farmers. Cotton Growing Review 51(4): 266-280. [19.13]

A number of farmers in four villages in the Zaria area grew field-sized plots of cotton according to recommendations. Detailed input-output data were collected and the results compared with cotton grown according to traditional practices. Problems of adopting the improved practices were identified.

NORMAN, D.W., HAYWARD, J.A., and HALLAM, H.R. 1975. Factors affecting cotton yields obtained by Nigerian farmers. Cotton Growing Review 52(1): 30-37. [19.13]

When applied on research farms the recommended practices for growing cotton in the northern states of Nigeria regularly produce yields in excess of 1500 kg/ha of seed cotton. These recommendations have not, however, been accepted by local farmers whose yields average about 200 kg/ha. This article reports an investigation carried out in 1971 on farms in Nigeria where yields varied greatly. It attempts to determine which factors have had the greatest influence on cotton yields. (CAB)

NORMAN, D.W., and KRISHNASWAMY, M.S. 1976. The adoption of improved technology by the small farmer. Pages 417-438 *in* Food enough or starvation for millions (eds. D. Ensminger, and Y.N. Arjuna). New Delhi, India: Tata-McGraw-Hill. [19.13]

Argues for the development of technology relevant to the needs of the small farmer.

NORMAN, D.W., PRYOR, D.H., and GIBBS, C.J.N. 1978 and 1979. The small farmer in Hausaland of Northern Nigeria. Zaria, Nigeria, and Manhattan, USA: Ahmadu Bello University and Kansas State University. (Mimeo.) Also: Technical change and the small farmer in Hausaland, northern Nigeria. African Rural Economy Paper no. 21. East Lansing, USA: Michigan State University. [22.00]

Pulls together in a comparative analysis the results of the studies done in nine villages in three areas of northern Nigeria. Also analyses the relevance of three improved technologies (i.e., for cotton, sorghum, and maize) and argues for a farming systems approach to developing

improved technology.

NORMAN, D.W., and SIMMONS, E.B. 1973. Determination of relevant research priorities for farm development in West Africa. Pages 42-48 *in* Factors of agricultural growth in West Africa (ed. I.M. Ofori). Accra, Ghana: ISSER/Presbyterian Press. [13.20]
The determination of relevant research priorities and the subsequent programs and projects, as well as the formulation of research projects in a way that should provide maximally useful results, are two essential stages in the construction of a rational research framework. The criteria of relevance can be applied at both stages. In the priority-selection stage, government policy and the sociocultural and ecological situations provide criteria for assessing overall relevance to alternative priorities. In the project-planning and conduct stage, relevance to the farmer, to the government (both financial and manpower situation), and to the research organization itself are the determinants of usefulness and the applicability of results. It is difficult to generalize as to what relevant research priorities for farm development in West Africa should be, when each country and each region has special problems of its own, and what is highly relevant in one country may be less so in another. Some information is presented, however, on the northern Nigeria situation. (CAB)

OGBORN, J.E.A., and MANSFIELD, R.M. 1978. GR7, a potent new germination stimulant for "Striga hermonthica" control in cereal. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.20]
The experimental results using preplanting applications of GR7, a synthetic derivative of strigol, to maize and sorghum, showed that striga was germinated faster than the natural crop exudate. The authors conclude it is a promising method of controlling striga.

OGUNFOWORA, O. 1972a. Conceptualizing increased resource demand and product supply inducing policies in peasant agriculture. Nigerian Journal of Economic and Social Studies 14(2): 191-201. [13.33; 21.40]
A simplified algebraic formulation of resource demand and product supply functions is presented. This is then used to develop models of output-inducing policies applicable to many developing countries. The price policy of the Nigerian Produce Marketing Board and possible implications are then appraised within the framework of the policy models. (CAB)

OGUNFOWORA, O. 1972b. Derived resource demand, product supply and farm policy in the North Central State of Nigeria. Ph.D. thesis, Iowa State University, USA. [18.20]
In order to improve knowledge of the Nigerian food-and fiber-producing sectors, this study aimed to contribute to the understanding of: (1) the economic organization of peasant farms; (2) the potential contribution that increased levels of resource supply and improved technology could make to peasant production and income; and (3) the pattern of farmers' response to different farm policy programs. The study was confined to the North Central State where the input-output data and resource quantities of 124 randomly selected farm families were collected in 1966-67. (CAB) (See Norman 1972a.)

OGUNFOWORA, O. 1973. Income and employment potential of credit and technology in peasant farming. Rural Development Paper, Nigerian Rural Development Study no. 9. Ibadan, Nigeria: University of Ibadan, Department of Agricultural Economics and Extension. [13.32; 19.13]
The income and farm equipment generating potential of increased supply of a credit and improved technology in an area characterized by a preponderance of small-scale farms are investigated. The data for the analysis were obtained from an extensive agroeconomic study of 124 randomly selected farm families in the Zaria province of North Central State of Nigeria during the period 1966-67. The results seem to support the hypothesis that increased capital and improved technology could result in a higher level of farm income and labor absorption, but there are some qualifications that need to be examined before the results could form part of a package of policy recommendations on rural-urban migration problems. (CAB)

OGUNFOWORA, O., ESSANG, S.M., and OLAYIDE, S.O. 1974-75. Resource productivity in traditional agriculture: a case study of four agricultural divisions in Kwara State of Nigeria. Journal of Rural Economics and Development 9(2): 119-131. [19.12]
This is one of a series of papers dealing with resource allocation and resource use efficiency in Kwara state. It was designed to measure and compare certain aspects of crop production efficiency in selected divisions of the state. The investigation dealt with only the tangible measures of resource productivity. The yardstick of resource productivity was the marginal value products (MVPs) of resources, which were calculated from production functions fitted to 1973-74 input-output data from four villages of Kwara state. Judging from the regression coefficiencts, land plays a major role in explaining the variation in crop output in Omukpo and lowest in Agevba. Since no rental values for land are available in these villages, the figures show only the potential acquisition value of land. All the MVPs of labor were negative, except in Agevba, revealing excessive use of labor on the cultivated hectarage. The

MVPs of seeds were also positive, except in Agevba, but were much below the acquisition prices of seeds, except in Omukpo. (CAB)

OGUNFOWORA, O., and NORMAN, D.W. 1973a. Farm-firm normative fertiliser demand response in the North Central State of Nigeria. Journal of Agricultural Economics 24(2): 301-311. [19.13]
Fertilizer application is one of the most important factors of increased agricultural production in developing countries. However, the demand for fertilizer depends, among other factors, on the profitability of using it and the availability of funds to purchase fertilizer. This paper uses a combination of parametric programming and multiple regression models to estimate the farm-firm elasticities of demand for fertilizer in an environment where no time-series data exist and where the system of inter-cropping is the norm. The results lend support to the popular belief that capital supply has the highest potential for inducing a demand for fertilizer, followed by fertilizer and output price changes. (CAB)

OGUNFOWORA, O., and NORMAN, D.W. 1973b. An optimization model for evaluating the stability of sole cropping and intercropping systems under changing resource and technological levels. Bulletin of Rural Economics and Sociology 8(1): 77-96. [19.12; 19.13]
An analytical model is presented for maximizing farm revenue from a combination of sole-crop and crop-mixture enterprises. The paper then examines the stability of sole-cropping and mixed-cropping systems under different levels of resources and technology. The data for the analysis were obtained from an extensive agroeconomic study of 124 randomly selected farm families in the Zaria area of North Central State during the period 1966 to 1967. The results seem to confirm that, in addition to technical and socioeconomic reasons, the scarcity of resources on traditional farms tend to encourage mixed cropping. If more resources were readily available, this might encourage the adoption of sole cropping for which modern technology requires financial resources greater than the amount generally available to the average farmer, that implies an efficient credit system which could extend loans to farmers at reasonable rates of interest. To a great extent, capital can be regarded as the only effective constraint since an increased supply of capital automatically allows for labor hiring, increased purchases of fertilizer, and other input resources. In all the programs tested the land resource was not a constraint. Within the framework of an optimum cropping programs and at all tested levels of resource availability, crop mixtures produced under improved technology were in a weaker competitive position than those produced under indigenous technology. The sole-cropping system becomes economically feasible only when the resource availability is increased and modern technology is introduced, but the problem of dependability of the returns from sole cropping remains. (CAB)

OJO, F. 1977. Facing the challenge of high level manpower mobility: a review of the Nigerian situation. Manpower and Unemployment Research 10(1): 5-24. [13.10]

OKURUME, G.E. 1973. Foreign trade and the subsistence sector in Nigeria: the impact of agricultural exports on domestic food supplies in a peasant economy. New York, USA, and London, UK: Praeger and Pall Mall Press. [13.10]
The book aims to develop a consistent framework for effective economic policies for rural and agricultural development in a peasant economy, particularly the relative emphasis that Nigeria should place on expansion of export crops and food crops. This includes an analysis of the impact of export crop expansion on domestic food production, in an attempt to explain Nigeria's apparent self-sufficiency in food in spite of the rapid expansion of competing nonfood crops in the period before the Civil War. The case study was the Western State, the world's second largest cocoa producer. It is hypothesized that continuing substitution of export crops for food crops in production might lead to negative substitution effects for food production, and this in turn could be a factor in the growth of demand for food imports. It is not clear whether this is, or will be, true of Nigeria. Chapters 2 and 3 state the theory of how the various interrelationships in the peasant or traditional agricultural sector might operate to produce the hypothesized effects. A number of complicating factors that in the setting of peasant agriculture might intervene to weaken or nullify completely the farmer responses implied by the model are then discussed. In Chapters 4 and 5 the results of a field survey in 1968 are analyzed. Chapter 4 shows the continuing dualistic nature of peasant export agriculture, and discusses the question of constraints on production. Chapter 5 gives farmers' views on dynamic adjustments that appear to have taken place and continue to take place in the agricultural sector. The most significant constraint on food production in Nigeria appears to be the small size of the domestic food market; the urban population is still only a small part of the total population, and farmers are generally self-sufficient in food. (CAB)

OLATUNBOSUN, D., and OLAYEMI, J.K. 1973. A review of problem areas of Nigeria's food economy. Eastern Africa Journal of Rural Development 6(1,2): 79-96 [13.10)
Traditionally Nigeria took much pride in being self-sufficient in food production, and, except

for seasonal scarcities, had not experienced any famine for several decades. Confidence in the ready adjustment of supply to demand may have been responsible for the relative neglect by policy-makers of the food sub-sector. Serious food problems have emerged in recent years. Various factors are suggested as being responsible for this change: (1) production may have become less responsive to change in demand, largely because of the stagnant and traditional level of production technology and the generally low returns to producers; (2) inefficient marketing and distribution; (3) government fiscal and monetary policies. These are probably all contributing factors, the net result of which has been demand in excess of supply and inflationary price increases. This paper makes a critical examination of some of these factors. The problems of food production, supply, and demand are broadly examined with data from secondary sources. The issue of government financial policy is not discussed, since this cannot be satisfactorily tackled within the realm of agricultural policy alone. The basic approach to improving the performance of the food subsector involves taking measures to raise productivity, increase the resource base, improve marketing efficiency and minimize food waste. Several measures appropriate to achieve these aims are outlined. (CAB)

OLAYIDE, S.O., OGUNFOWORA, O., and ESSANG, S.M. 1974. Effects of marketing board pricing policies on the Nigerian economy: a systems simulation experiment. Journal of Agricultural Economics 25(3): 289-309. [13.33]

After reviewing the literature on various aspects of marketing board's operations, this paper analyses, with the aid of a simulation model, the effects of the board's pricing policies on the Nigerian economy. The results indicate that these policies, which depress producer prices by withholding from the farmers a substantial proportion of export revenues as "surpluses," have reduced the growth potential of the Nigerian economy. On the other hand, a policy which raises producer prices, by increasing producer's incomes and incentives, is likely to foster the rapid growth and modernization of the country. Accordingly, a number of measures aimed at raising producer prices are suggested in the paper. These include, among others, the abandonment of a pricing strategy, geared towards the accumulation of "surpluses," the elimination of licenced buying agents and their substitution with marketing cooperatives, the abolition of export and sales taxes on agricultural products, and the centralizing of the producer price-fixing authority in the federal government. (CAB)

OLAYIDE, S.O., OLATUNBOSUN, D., IDUSOGIE, E.O., and ABIAGOM, J.D. 1972. A quantitative analysis of food requirements supplies and demands in Nigeria, 1968-85. Lagos, Nigeria: Federal Department of Agriculture. [13.10]

Institutional requirements of the Nigerian population, and food availability, show that the average Nigerian is undernourished in terms of both calories and proteins. Projections show that supplies will be incapable of meeting demand in future on present growth rates. Ecological and economic potential for increasing production is discussed and recommendations are made for changes in policy at the federal and state level. Nigerian agriculture needs far greater resources than hitherto allocated if it is to act in a way other than as a hindrance on the national economy. (BH)

OLUKOSI, J.O. 1976a. Decisions of farmers under risk and uncertainty—the case of Ipetu and Odo-Ore farmers in Kwara state. Samaru Agricultural Newsletter 18(3): 108-122. [18.30]

Farmers were asked to rank in order of importance the various crops they grow, given various adverse rainfall conditions. The ranking obtained by assigning equal probability to the various conditions of rainfall was compared with the rankings of actual acreages devoted to each crop by the farmers in 1969 and 1973. These rankings were also tested against the crop rankings indicated by the farmers as giving the most plentiful supply of food, most steady yield, and highest profit. The consistencies existing between the rankings under the actual situations in 1969 and 1973 respectively, the equal probability ranking, the most steady yield, and the most plentiful rankings are statistically significant. It is concluded that farmers have a security objective, and, to achieve this objective each year, farmers adopt the strategy of assigning equal probability to the various weather conditions which they cannot forecast beforehand. (CAB)

OLUKOSI, J.O. 1976b. Kwara State Farm Institute programme. Samaru Miscellaneous Paper no. 57. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.32]

The study looks at the Farm Institute training program and makes recommendations for its improvement.

OLUWASANMI, H.A. 1966. Agriculture and Nigerian economic development. Ibadan, Niger: Oxford University Press. [13.10]

OLUWASANMI, H.A., and ALAO, J.A. 1964. The role of credit in the transformation of traditional agricultures: the Nigerian experience. Bulletin of Rural Economics and Sociology 1(1): 58-74. [13.32]

The nature of the capital and credit in peasant agriculture is examined together with factors operating to change the pattern of rural investment and the different sources of farm credit, the demand and sources of credit, and the forms of rural credit organization most conducive to a rational allocation of available credit resources. The partial change from subsistence to commercial production did not involve radical changes in the capital structure of peasant agriculture. Only in the late 1950s could a real demand for credit be observed in Nigeria, brought about by nontraditional farming techniques (animal-drawn plows, chemical spraying, oil-extraction machines etc.). Interviews with 500 farmers in Abeokuta, Ibadan, Oyo, and Ondo Provinces revealed that only 200 farmers had received loans in the past 5 years and that many of these borrowed for purposes not directly connected with agriculture but which were socially necessary. The three potential sources of farm credit are given as: (1) farmers' savings; (2) individual and private lending agencies (moneylenders, middlemen, merchants, insurance companies, and banks); and (3) public credit institutions. Because of the low level of farm incomes (1) is a negligible source. Little reliable information is available on moneylenders' activity. Merchant firms often make small cash advances through middlemen. The lending activities of commercial banks and insurance companies are limited to commercial and industrial enterprises. Their reluctance towards granting agricultural credit lies in the difficulties of the farmer in asserting his creditworthiness and in providing securities (communal land tenure system). A case study is then made of the West Regional Finance Corporation which falls under type (3) and was established in 1955 to make loans for agricultural, industrial, and commercial projects. Small loans up to £140 were administered by 209 Local Loan Boards (loans during 1959-63: £1,757,203 to 90,185 farmers), while the Corporation handled 45 major loans, valued at £71,570. Less than 4% of the farmers in that region benefited from the Corporation's loan scheme. This is due to the inadequate resources of short- or medium-term credit for small farmers. The problem of collateral security, which the bank requires but the peasant producers cannot provide, can be solved by state-sponsored credit corporations guaranteeing bank loans to approved farmers or larger loans to cooperative banks or societies that specialize in small-scale farm loans. However, traditional agriculture is in dire need of planning and reorganization before it can usefully absorb additional doses of capital and credit. (CAB)

ONI, S.A., and OLATUNBOSUN, D. 1973. The major determinants of groundnut production in Nigeria. Bulletin of Rural Economics and Sociology 8(1): 111-123. [13.33]
Two general hypotheses are tested: (1) there is a positive price response among the groundnut growers; (2) emerges from the "a priori" reasoning that the producer price of groundnuts is the major determinant of its aggregate production—i.e., the price variable alone should be able to account for over 50% of the variability in aggregate production of this commodity. The producer price is a crucial variable that policy makers should utilize in controlling and expanding the Nigerian groundnut industry. An increase in the producer price of groundnut could be the greatest incentive for the farmers to increase their production. At present the prices received by the farmers are usually less than 50% of their prospective market prices. The bulk of the differences between the two prices arises not from transport and storage expenses associated with the groundnut but from direct taxes on groundnut producers. The various governments concerned should consider a gradual reduction, if not a gradual elimination, of all direct taxes on groundnut. The empirical analysis indicates that groundnut has an inelastic supply relation. The payment of higher prices to the producers would therefore not flood the market to the point of reducing the aggregate earnings from this commodity. (CAB)

OYENUGA, V.A. 1967. Agriculture in Nigeria: an introduction. Rome, Italy: FAO. [11.00]

PALMER-JONES, R.W. 1978a. Field research methods used in farm management studies. Zaria, Nigeria: Ahmadu Bello University, IAR. [12.00]
The paper is a critique of the deficiencies inherent in using the usual standard farm management survey approach to studying societies in northern Nigeria.

PALMER-JONES, R.W. 1978b. Peasant differentiation in rural Hausaland. Zaria, Nigeria: Ahmadu Bello University, IAR. [12.00; 21.10]
The paper stresses the significance of a more holistic approach to looking at the problems of farmers and the potential dangers of a narrow discipline orientation. The paper basically criticizes the "conventional approach" usually used by agricultural economists as not being able to definitively articulate the causes of inequalities that are developing at the village level. The author advocates a mode of production stratification procedure to help in this determination.

PALMER-JONES, R.W., and NORMAN, D.W. 1977. Economic methodology for assessing cropping systems. Pages 241-259 *in* Cropping systems research and development for the Asian rice farmer (ed. IRRI). Los Banos, Philippines: The International Rice Research Institute. [12.00]

PROTHERO, R.M. 1957. Land use at Soba, Zaria Province, Northern Nigeria. Economic Geography 33(1): 72-86. [19.11]

RAAY, H.G.T, van. 1969. Some suggestions for the future of cattle husbandry in Northern Nigeira. Samaru Agricultural Newsletter 11(6): 66-70. [20.20]

RAAY, H.G.T, van. 1974. Fulani pastoralists and cattle. Occasional Paper no. 44. The Hague, Netherlands: Institute of Social Studies. [20.20]

RAAY, H.G.T, van. 1975. Rural planning in a savanna region. Rotterdam, Netherlands: Rotterdam University Press. [20.11; 20.20]
The problems in integrating a pastoral population into national and regional rural development planning are discussed with particular reference to the Fulani in Nigeria's North Central State. The integration of livestock keeping and cropping is advocated as an answer to present problems, needs, and social interests. The necessary operational unit would have these characteristics: (1) members to be Fulani belonging to one corporate group; (2) an inalienable, cultivable area exceeding the manual labor capacity of the corporate unit; (3) communalized or individualized grazing grounds incapable of providing the herd with full perennial support under traditional systems; (4) dairying to be the primary aim, other products being crops, meats, and hides; (5) integrated animal husbandry and cropping. This transitional type of unit would establish a group of stockowners that was more responsive to innovations and better able to improve crop and animal farming. Direct shifts to ranches and small-scale beef farms may prove practicable in certain areas if the necessary land, people, expertise, capital, and staff can be found. In many instances minimal improvements at the grassroots level will be needed first to provide a rural base capable of modernization. Hierarchial interrelations between settlements and central place functions are not discussed, on the grounds that rural development strategies involving new or improved rural centers have sometimes hindered rather than improved rural development, by increasing urban dominance and urban-rural disparities. (CAB)

RAAY, H.G.T. van, and LEEUW, P.N. de. 1970. The importance of crop residues as fodder. Tijdschrift voor Economische en Sociale Geografie 61: 137-147. [20.11]

RAAY, H.G.T. van, and LEEUW, P.N. de. 1974. Fodder resources and grazing management in a savanna environment: an ecosystems approach. Occasional Paper no. 45. The Hague, Netherlands: Institute of Social Studies. [20.11]

RAKE, A. 1975. Where is Nigeria's Agriculture heading? African Development 9: 21-29. [13.10]
Nigeria's agriculture has been steadily declining, but now the Federal Government plans to inject massive sums into the industry. This article examines how far additional finance can go towards solving the problems. Production reached a all-time low in the 1973-74 season, with the index of agricultural export commodities at only 52.8 in the first half of 1974 (1960=100). The drought was the culmination of several disastrous years, and groundnut, cotton, and food production were drastically affected. The new government plans to give the farmer an improved status, with higher producer prices. The oil palm is to be revived, since cash crops are easier to stimulate than food crops. The Mid-West State has embarked on a small farmers' scheme. New seed varieties are being introduced, farmers being given "minikits" of seed, fertilizer, and insecticide in one package. Massive development of the extension services is needed before the results of excellent research can be diffused to farmers. Some idea of the sort of effort required to really reverse the situation is shown by the fact that the next development plan demands growth rates in most crops of between 5% and 10% and yet the actual growth achieved was less than 2% between 1968 and 1971, according to the Department of Agriculture. This means that production has to be doubled or tripled within 5 years. In addition to this discussion of the general problems, the article also has useful inset information on the major cash crops (sugarcane, groundnuts, palm kernels, cocoa) and statistics on production, projected food supply and demand, and growth rates of demand and production. (CAB)

REAWARUW, I.P. 1978. Action research to develop the credit/savings system of the Guided Change Project. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.32]
Presents a case study concerning some of the developments in the Guided Change Project's credit/savings program. In implementing the program the existing power structure was avoided by dealing directly with the farmers individually.

RERU (ed.). 1967. Proceedings of a seminar on methods and problems of data collection and use for rural economic and social research. Samaru Miscellaneous Paper no. 16. Zaria, Nigeria: Ahmadu Bello University, IAR. [12.00]
The paper gives the results of a seminar designed to consider the problems of data collection

in the social science area. The seminar was held at the beginning of RERU's activities.

RERU. 1972. Farm income levels in the northern states of Nigeria. Samaru Miscellaneous Paper no. 35. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.10]
This paper was produced at the request of the Salaries and Wages Review Commission of 1970.

SCOTT, E.P. 1974. Indigenous systems of exchange and decision making among smallholders in rural Hausaland. Ph.D. thesis, University of Michigan, USA. [22.00]

SIMMONS, E.B. 1971. Planning for agricultural development. Nigerian Journal of Public Affairs 1(2): 88-102. [13.10]
The process of planning for agricultural development occurs on many levels: national, regional, divisional, village, and even on the level of the farmer himself. Each planner on each level pursues certain development goals that in agriculture are likely to be based on one or more of the following: increase in total output, increase in productivity per unit of resource input, increase in the welfare of the agricultural population, and increasing adoption of more technologically advanced implements and techniques of cultivation than currently employed. This paper defines agricultural development in terms of these goals, and discussses the planning for such development that may occur at the regional level, or what in Nigeria would correspond to the state level. (CAB)

SIMMONS, E.B. 1973. The economics of consumer-oriented food processing technology in northern Nigeria. Samaru Agricultural Newsletter 15(2): 56-72. [21.20]
Consumption of prepared foods (including milk and milk products) in northern Nigeria accounts for 23% of the daily expenditure on food by the average household. Rural processing on a local, specialized, small-scale, low-technology basis is compared with the economics of large-scale, high-technology food production with wide sales and trade areas. The manufacture of groundnut oil and groundnut presscake is used as an example. A glossary of some Hausa food names is included. (CAB)

SIMMONS, E.B. 1975. The small-scale rural food-processing industry in northern Nigeria. Food Research Institute Studies 14(2): 147-161. [16.22; 16.23]
Every day, in the hundreds of villages, hamlets, towns, and cities of northern Nigeria, many tonnes of grains, grain legumes, and starchy roots are processed for sale as convenient ready-to-eat foods. The "industry" which accomplishes this daily food-processing task is characterized by its small scale, simple technology, and orientation toward its consumers. In most cases, the final product is produced from raw materials by only one person, perhaps with the assistance of a young child, using only ordinary household equipment, and it is sold at the place where the consumer finds it most convenient to eat. Gainful employment for thousands of rural people, primarily women, and a substantial amount of locally-generated income result from the functioning of this processing industry. The paper explores two aspects of this industry: the economic viability of the average firm, and its characteristic self-employment pattern. The paper concludes with a brief essay on the probable future of the rural small-scale food processor in northern Nigeria. (CAB)

SIMMONS, E.B. 1976a. Calorie and protein intakes in three villages of northern Zaria Province, May 1970 - July 1971. Samaru Miscellaneous Paper no. 55. Zaria, Nigeria: Ahmadu Bello University, IAR. [21.20]
See Simmons 1976c for survey details. Average daily per capita diet included 2264 calories, varying seasonally between 1949 (December) and 2458 (April). Cereals provided 70% of calories consumed. Half the cereals were purchased. Protein intake varied from 55 to 65 g/day; 70% of the protein was derived from staple grains. Accessibility to urban markets was highly correlated with animal protein intake. (BH)

SIMMONS, E.B. 1976b. Economic research on women in rural development in northern Nigeria. OLC Paper no. 10. Washington, D.C., USA: American Council on Education, Overseas Liaison Committee. [16.22; 21.10]
West African women play significant roles as farmers, traders, and entrepreneurs in their own right, and these roles are of central importance to the women, their families, and the economies of West African countries. Both national governments and donor organizations have begun to emphasize the economic roles of women in their development policies, but more current documentation on the activities of women is essential if planners and donors are to implement effective programs to facilitate the active participation of women in the development process. Microlevel research provides useful insights into the motivations, prejudices, goals, and behavior of women; only at this level can differences critical to the participation of women in development be distinguished. This paper describes a microlevel research project among rural women in the Zaria province of northern Nigeria. It presents the results of the study

from both the researcher's and planner's viewpoints. The project explored systematically and quantitatively the economics of women's money-earning enterprises in three villages in Zaria province in northern Nigeria—Dan Mahawayi, Hanwa, and Doka—so as to quantify the extent of female participation in the domestic economy. (CAB)

SIMMONS, E.B. 1976c. Rural household expenditures in three villages of northern Zaria Province. Samaru Miscellaneous Paper no. 56. Zaria, Nigeria: Ahmadu Bello University, IAR. [21.20]
One hundred and twenty households in three villages of Zaria Province were interviewed daily for two randomly-selected weeks between May 1970 and July 1971. Expenditure on food was 45%, of which a further 45% was home-produced food. Cereals are economically inferior. There is no difference in demand per capita with changes in household size, or with different accessibility to markets. Expenditure does relate to the number of married adult men working, and to cattle ownership. Large seasonal variations in expenditure are evident. (BH)

SIMMONS, E.B. 1978. A case study of seasonal variation in food and agriculture. Paper presented at the Conference on Seasonal Dimensions to Rural Poverty, 1978. Brighton, UK: University of Sussex, Institute of Development Studies. [21.20]
The paper, based on an earlier consumption study in the Zaria area shows that cattle owners were better able to avoid the problems of seasonal hunger than those who did not own cattle. The author concludes that while seasonal factors do exert a major influence on production, employment, food consumption, and expenditure patterns, such factors do not seem to pose major constraints on farmers' capacities to improve their economic situation.

SMIRL, C.A., and ZOAKA, L. 1974. Consumer preference for cowpeas in Maiduguri? Maiduguri, Nigeria: Ministry of Natural Resources. [21.20]

SMITH, M.G. 1952. A study of Hausa domestic economy in northern Zaria. Africa 22(4): 333-347. [22.00]

SMITH, M.G. 1955. The economy of Hausa communities of Zaria. London, UK: HMSO. [22.00]
A classic largely nonquantitative study of farming families in the Zaria area.

STUBBINGS, A.D.M. 1978. Provisional data on crop enterprises yields, total production and gross output for season 1977-78. Funtua, Nigeria: IBRD Funtua Agricultural Development Project, Evaluation Unit. [13.31; 11.30]
Along with some details on crop enterprises the paper suggests a trend to sole cropping as a result of the project.

TIFFEN, M. 1971. Changing patterns of farming in Gombe Emirate, North Eastern State, Nigeria. Samaru Miscellaneous Paper no. 32. Zaria, Nigeria: Ahmadu Bello University, IAR. [19.13]
Looks at the development of cotton in the Gombe area. Using a sample the study looks at the changes that have taken place as a result of the area being opened up, and the expansion of the market for cotton.

TIFFEN, M. 1973. Relationships between age, family size, and progressive farming in Moslem areas of northern Nigeria. Savanna 2(2): 165-172. [16.10; 20.12]
The author argues that the *gandu* system of family structure is more compatible with the introduction of mixed farming with animal traction.

TIFFEN, M. 1974a. Economic and administrative influences on successful agricultural developments: a Nigerian case study. Journal of Administration Overseas 13: 449-461. [13.31]

TIFFEN, M. 1974b. Timing as a factor in the success of extension programmes: a Nigerian case study. Agricultural Administration 1(2): 125-139. [13.32]

TIFFEN, M. 1976. The enterprising peasant: economic development in Gombe Emirate, Northeastern State, Nigeria, 1900-68. London, UK: HMSO. [13.31; 19.13]
An expanded version of Tiffen 1971.

UPTON, M. 1967. Agriculture in South Western Nigeria. Development Studies no. 3. Reading, UK: University of Reading, Department of Agricultural Economics. [22.00]
This study, carried out in six villages in four widely spaced districts in South Western Nigeria between 1963 and 1965, aims (1) to describe patterns of agriculture, levels of productivity and consumption, and (2) to investigate relationships between social characteristics and agricultural production. Results under (1) show subsistence production is common in all villages, bush fallowing is also common but with variations in cropping and fallow periods, and arable land per family ranges from 2 to 4 acres. Land is readily available and labor

(mainly family) is the limiting factor. Net farm incomes range from £74 to £94. Yams and cassava are the main root crops, cocoa and rubber the main cash crops. Under (2), villages were ranked on a scale of social amenities, and farmers on a scale of personal characteristics including progressiveness, personal control, independence of thought, sophistication, innovation, status contentment, and attitude to family size. Income from farming was significantly correlated with independence of thought, sophistication, innovation, and status. (CAB)

UPTON, M. 1969. The influence of management on farm production on a sample of Nigerian farms. Farm Economist 11(12): 526-536. [18.10]
Both physical (conventional) inputs and social characteristics of farmers are brought together into a single production relationship. Many sociological studies suggested that personal characteristics such as education, status, membership of societies, age, and breadth of experience have an influence upon willingness to innovate and even upon farm income. The technique of principal component analysis is used to extract a single variable representing the personal characteristics of the farmer, and this is then used as a proxy variable for management. By incorporating this "management" variable in the production an estimate is made of its influence on farm production. The data are derived from a total of 153 farms surveyed during 1964 in six villages in south western Nigeria. Findings can be summarized as follows. (1) Principal components analysis of nine personal characteristics of the sample farmers showed only the first three differ significantly from each other. (2) Of these three significant components, the first identified with independence of thought, sophistication, innovation, and youth is described as the "management factor." Alone it accounts for 19% of the total variation in all nine personal characteristics. (3) The introduction of the "management factor" as a proxy variable for management inputs in the production function leads to a significant increase in "explanation" of the variation in total gross margin. The management factor explains 6% of the total variation in gross margin. (4) The partial regression coefficients for certain of the "conventional inputs" were changed by the introduction of the "management factor" into the function. On hypothetical grounds a reduction in specification bias is to be expected. (5) Returns to scale were estimated to be constant and no change occurs with the introduction of the "management factor." (6) Individual personal characteristics introduced into the production function yield a smaller increase in "explanation" of the dependent variable than does the first principal component of "management factor." (CAB)

USHE-UBA, J. 1973. An analysis of the spatial patterns and physical determinants of agricultural systems in the Hadejia flood plain. M.A. thesis, Ahmadu Bello University, Nigeria. [19.20]

WATTS, M. 1978. The sociology and political economy of seasonal food shortage: some thoughts on Hausaland. Paper presented at the Conference on Seasonal Dimensions to Rural Poverty, 1978. Brighton, UK: University of Sussex, Institute of Development Studies. [21.20]
The problem of seasonal hunger provides a possibility for exploitive relationships developing at the village level.

WEBER, G. 1971.. A cost study of tractors in the Agricultural Services Division. Jos, Nigeria: Ministry of Natural Resources. [20.12]

WILLIAMS, G. 1978. Bibliography of Nigerian agriculture and inequality. Oxford, UK: Oxford University, St. Peter's College. [23.00; 11.00; 21.10]
About 1000 references are given. (BH)

WIT, T.J. de. 1978a. Notes on levels of fertilizer use, agricultural production, farmers' incomes and fertilizer subsidies. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.31; 13.32]
Gives information on the expansion of the use of fertilizer in the project area (5 kg/ha in 1974 to 150 kg/ha in 1976) and increases in production (12% to 100% depending on the crop). Recommendations include a differentiated fertilizer subsidy system to be used in conjunction with a credit, savings, and distribution system.

WIT, T.J. de. 1978b. Some general price and cropping pattern data from Giwa District. Zaria, Nigeria: Ahmadu Bello University, IAR. [19.12]
Gives prices and crop mixture information from the Guided Change Project area.

WIT, T.J. de. 1978c. The economic monitoring and evaluation of the Guided Change Project. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.31]

ZUCKERMAN, P. 1977. Field work design and application for a micro-level farm management study in Western Nigeria. Washington, D.C., USA: IBRD. [12.00]

General

ACKELS, A.A., ANDERSON, D.E., BRINKMAN, G., SORENSON, L.D. 1970. A study and plan for regional grain stabilization in West Africa. Manhattan, USA: Kansas State University. [13.33]
This is a study for regional grain supply and price stabilization in West Africa with the end goal of attaining regional self-sufficiency in food grain supplies. Studies were made in Mali, Upper Volta, and Senegal. Conclusions call for technical aid for successful economic development, and the establishment of a regional implementation of marketing activities. (CILSS)

ACOCK, A.M. 1964. Policies in the field of food and nutrition as part of national economic policies. Agricultural Economics Bulletin for Africa no. 6. [13.10]
The author characterizes African agriculture in general, and the conditions of food supplies and nutrition. The basic policy objectives linking economic development and food supplies and nutrition are: (1) fewer farms, (2) higher productivity of farmers to supply the cities and increase exports, (3) as income per capita rises, nutrition, education, and special funding programs for city and farm dwellers to further raise productivity, and (4) an understanding of the population relationship with food supply. (CILSS)

ADAMS, J.M. 1977a. A bibliography on post-harvest losses in cereals and pulses with particular reference to tropical and sub-tropical countries. London, UK: Tropical Products Institute. [21.30; 23.00]

ADAMS, J.M. 1977b. A review of the literature concerning losses in stored cereals and pulses published since 1964. Tropical Science 19(1): 1-28. [21.30; 23.00]

AHMED, R. 1977. Agriculture in Integrated Rural Development—a critique. Food Policy 2(2): 149-157. [13.31]
This critique comes in response to an article by Montague Yudelman with the same title published in November 1976. It reviews Yudelman's discussion of the World Bank's experience and approach. Their strategy, which aims at aiding small farmers without regard to what happens to landless laborers, is basically production-oriented and differs little from the conventional approach to agricultural development. The alternative approach suggested has three basic components: agricultural development, nonfarm rural occupations, and public-sector productive workers programs. (CAB)

ALLAN, W. 1965. The African husbandman. Edinburgh, UK: Oliver and Boyd. [11.00]

AMIRA. 1978. Bilan des travaux. Paris, France: Association Française des Instituts de Recherche pour le Développement. [12.00]
This research group was created in 1975 to improve investigative methods in the rural African environment. Gives list of publications to date and discusses goals of work.

ANCEY, 1975a. Les notions d'activités et d'actifs à l'interieur d'une exploitation agricole. AMIRA no. 11. Paris, France: INSEE. [12.00]
This is a critique of use of the *actif* concept in socioeconomic or agricultural surveys.

ANCEY, G. 1975b. Niveaux de décision et fonctions objectifs en milieu rural africain. AMIRA no. 3. Paris, France: INSEE. [12.00]
Points out the fallacy and inefficiency of considering the rural African milieu as the simple juxtaposition of statistical units. Presents nine levels of decision making and compares their goals.

ANCIAN, G. 1967. Le développement rural dans les pays d'Afrique noire d'expression française. 9 vol. Paris, France: SEDES. [13.31]
Different types of recent rural development in this area mainly under French initiative are fully analyzed. Four basic points were established: (1) Most of the actions have led to an important extension of production for export combined with stagnation or even a regression in food production. (2) Most of the apparent reasons for failures or doubtful successes are known, but these often hide the basic causes of the existing disequilibrium. These spring from a lack of knowledge of the differences in kind and not of degree between the traditional African agrarian system and a market economy, and from inadequate attention to inevitable collisions between the two systems. (3) It is first necessary to define the exact context of development schemes, then to direct action towards the real needs of the beneficiaries and finally to integrate these actions into their physical and human context in such a way that the development will be effected "from within" by a dynamic assimilation and not be a passive

acceptance of the conditions of progress. (4) There is an urgent need to apply a rational methodology to rural development activities in each of their three phases: planning, putting into effect, and checking the adequacy of the methods and means against the objectives. (CAB)

ANCIAN, G., LEGOTIEN, H., and MANHIOT, B. 1969. Propositions pour une réorientation des actions de développement rural. Development Civilisations 38: 24-38. [13.31]
This study by SEDES considers programs for rural development and their implementation over a 20-year period, with special reference to French-speaking West Africa and Malagasy. Part 1 consists of (a) an analysis of actual development from written evidence and local observations; (b) an historical examination of rural development; and (c) tentative measurement of developments especially on the basis of growth rates of the countries concerned. Part 2 emphasizes two major aspects of development: (a) choice between food production for export, and for the African market, and (b) factors to be considered in the light of previous studies, their development programs and their control, and includes (i) a detailed socioeconomic analysis of progress in the Mora region (Cameroon) following the development program carried out by CFDT (Compagnie Française pour le Développement des Fibres Textiles); (ii) a study of the value and limitations of hydroelectric schemes, using examples from Africa and Malagasy; (iii) an attempt to assess food prospects in the region of 1985; (iv) provisional alternative plans and methods of implementing rural development. (CAB)

ANGE, M. 1968. Introduction: temps social et développement. Cahiers ORSTOM (Série Sciences Humaines) 5(3). [30.00]

ANNEGERS, J.F. 1973. Seasonal food shortages in West Africa. Ecology of Food and Nutrition 2: 251-257. [21.20]

ANONYMOUS. 1973a. Cotton as a factor in African agricultural development and generator of employment. Coton et Fibres Tropicales 28(4): 455-460. [19.13]
Cotton has been grown for more than 20 years in the Sudano-Sahelian zone, involving some 15 million people and providing cash for farmers previously living in a subsistence economy. Moreover, it has made the farmers familiar with technical improvements such as the use of animal traction for row cultivation, mineral fertilizers, crop protection, and rotation. In the cotton-growing areas people enjoy a higher standard of living and are able to buy food in years of food scarcity due to drought. In addition, textile industries established in the countries concerned are listed. (CAB)

ANONYMOUS. 1973b. La rationalité économique paysanne. Techniques et Développement no. 8.[18.20]

ANONYMOUS. 1974a. Results and prospects of cotton production in francophone Africa and Madagascar. Europe Outre-Mer 535: 28-32. [19.12]
A brief survey of cotton-growing conditions covering 3 years (1971-73), is given for Ivory Coast, Dahomey, Upper Volta, Mali, Niger, Senegal, Togo, Cameroon, Central African Republic, Chad, and Malagassy. (CAB)

ANONYMOUS. 1975c. West Africa: rural development. Africa 45: 29-30. [13.31]
The view is taken that Africa's potential in food production can only be realized if small farmers are given an opportunity to become familiar with improved growing methods and up-to-date agricultural technology, if they understand the desirability of abandoning unproductive traditional practices and adopting new ways, and if they are provided with the means with which to do so. Of the many rural development programs being carried out in Africa, those showing the most positive results appear to be those designed to deal with general problems at once, and those where local people are given maximum opportunity for participation. Examples are cited from Upper Vola, Dahomey, and Liberia. (CAB)

ARDITI, C. 1974. Economie, commerce traditionnel et crédit en Afrique sahélienne. Bulletin de Liaison STATECO no. 5. [21.10]
The notion of "subsistence economy" has long characterized African economic systems in the specialized literature. Such a concept cannot represent the variety of production systems in western Africa. In particular, the Sahel fringe was an area of intense commercial, cultural, and religious links between north Africa and sub-Saharan Africa. Nevertheless it is possible to speak of a subsistence sector within the observed economic system. This sector used to allow the constitution of grain stocks that were quite important. Presently, this sector participates in the food marketing process due to urban population growth and especially due to pressures on the African peasant, that oblige him to commercialize an important part of his food grain crop, even if he has no surplus. At a later time he must buy it back at uncontrolled and, therefore, higher prices. Two studies on Niger by Raynault and Nicolas illustrate this process of destruction of the subsistence sector and show its impacts on the socioeconomic structure. (CILSS)

ARDITI, C. 1975. Les circuits de commercialisation des produits du secteur primaire en Afrique de l'Ouest: analyse bibliographique. Etudes et documents no. 22. Paris, France: Ministère de la Coopération. [23.00; 21.40]

This bibliography analyses staple food crop production and marketing in West Africa, that area's socioeconomic history and the commercial situation in its sociopolitical context. The work includes analyses of 30 studies, primarily on West Africa. The author emphasizes a historical perspective so that one can "understand the past and the future of the trading communities of this region of the world." (CILSS)

BADOUIN, R. 1970. Régime foncier et développement économique en Afrique intertropicale. Civilisations, Bruxelles 20(1): 50-65. [15.10]

In Africa land-holding systems do exist; there is no such thing as unappropriated land except in uninhabited areas. However, the right of appropriation is generally communal and is inherited at group level. With it goes the right of cultivation, usually by family, household, or individual but not always on the same plots. Land allocation is flexible. (CAB)

BADOUIN, R. 1975. Les agricultures de subsistance et de développement économique. Paris, France: Centre de Recherche, d'Etude et de Documentation sur les Institutions et les Législations Africaines. [14.00; 16.10]

This book describes the kind of social organization linked with the subsistence kind of agriculture, and the various models of subsistence societies which exist. Each of these is described in the following terms: the search for food and the objectives of traditional society, the hold that social factors have over subsistence agriculture, the evidence of economic factors in subsistence farming, factors likely to disturb subsistence societies, and factors engendering change in such societies. Several examples of African village communities are described and used to illustrate reactions to change of various subsistence groups. (CAB)

BAKER, P.R. 1977. Bibliography for the Sahel. Norwich, UK: University of East Anglia, School of Development Studies. [23.00]

BANTJE, H. 1975. A working bibliography of the western Sahel. Amsterdam, Netherlands: Royal Tropical Institute. [23.00; 20.11]

The bibliography's main focus is the relationship between nomadic pastoralists and sedentary cultivators in the western Sahel, in particular in Mali, Upper Volta, and Mauritania. An attempt has been made to cover the literature on this and related subjects from a social science point of view. The bibliography complements work on the technical aspects of the problems in the Sahelian zone. (CAB)

BARRES, J.F. 1974. Analytical bibliography on the Sahel. Rome, Italy: FAO. [23.00]

BARRES, V. et al. 1975. La participation des femmes rurales au développement. Paris, France: IRAM. [16.22]

BAUMANN, H. 1928. The division of work according to sex in African hoe culture. Africa 1(3): 289-319. [16.21; 16.22]

BELLONCLE, G. 1968. Le crédit agricole dans les pays d'Afrique d'expression française au sud du Sahara. Rome, Italy: FAO. [13.32]

Part 1 analyses the common problems of agricultural credit in the French-speaking countries of the Sahara with chapters devoted to lessons of the past, the Senegalese experience, the need of "integrated credit", the credit requirements of African agriculture and problems of the credit institutions. Some 18 country studies are given in Part 2. The conclusions mention, inter alia, the need of an integrated agricultural development effort of which agricultural credit is only a part. It is recommended that well coordinated agricultural extension and agricultural credit services deal mainly with the multipurpose intervillage cooperatives that are to be created. A specialized educational service is necessary for the practical training of the large number of local leaders required. The development institutions should assist in this training program, of which a large part would take place in the field. (CAB)

BELLONCLE, G. 1971. Problèmes de la coopération d'épargne et de crédit dans les pays en voie de développement. Développement et Civilisations 43-46: 30-39. [17.00]

BELLONCLE, G. 1975. Problèles posés par la promotion de la femme rurale en Afrique de l'Ouest: les leçons de l'expérience nigérienne d'animation féminine. Paris, France: Institut de Recherches et d'Applications des Méthodes de Développement. [16.22]

BENDIX, R. and LIPSET, S.M. (eds.). 1967. Class, status and power. London, UK: Routledge and Kegan Paul. [14.00]

BERG, E.J. 1975. The recent economic evolution of the Sahel. Ann Arbor, USA: University of Michigan, CRED. [11.30]

In an attempt to remedy a lack of knowledge about the effects of drought on the Sahelian economies, this paper first records and explains these effects in conventional economic terms—production, budgets, balance of payments, income distribution, etc. The report then brings together a large body of basic data on recent economic developments in the Sahel, creating an historical presentation, marking trends and changes over time of significant economic variables. Data are brought together from official reports, published literature, and from the field (as of 1975). It is synthesized and made consistent so as to present, in one place and one form, a useful set of economic indicators. (CILSS)

BERG, E.J. 1976a. The economic impact of drought and inflation in the Sahel. Discussion Paper no. 51. Ann Arbor, USA: University of Michigan, CRED. [21.50]

Using currently available data from a wide variety of sources, this paper summarizes the main lines of economic evolution of the Sahel countries in recent years. The first section is a survey of the economic effects of abnormally dry weather, clarifying and describing briefly the economic impact of the drought, inflation, and government policies, with attention given to income as a function of geography and a source of livelihood. A number of key policy issues are discussed in a concluding section.

BERG, E.J. 1976b. The Sahel: time for a new approach. OECD Observer no. 79. Paris, France: OECD. [13.10; 21.50]

A review of the problems of the Sahel, including the reversible and irreversible effects of the drought. Recommendations for future opportunities include: (1) expanded intra-sahel cooperation, (2) new external relations, (3) restoration of the ecological balance (cutting back livestock), (4) stimulation of innovative behavior, and (5) availability of new resources through technology. (CILSS)

BERNUS, E., BOUTRAIS, J., and PELISSIER, P. 1974. Evolution et formes modernes de l'élevage dans les zones arides et tropicales. Cahiers ORSTOM (Série Sciences Humaines) 11(2). [20.20]

BIGGS, H.H., and TINNERMEIER, R.L. 1974. Small farm agricultural development problems. Fort Collins, USA: Colorado State University. [13.10]

These articles originated as a series of seminars presented to an interdisciplinary group of faculty and graduate students at Colorado State University during 1973 and 1974 concerned with water resources development and management in developing countries with special emphasis on water delivery and removal systems. The first three articles: New perspectives on development strategies (H.H. Biggs); The significance of small farms in developing countries (W.F. Owen); Some aspects of resource management by traditional farmers (G.C. Wilken), are concerned with some general aspects relating to the small-farm sector. These emphasize, from different perspectives, why development planners should pay special attention to this sector of the population. The last five articles: Primitive and peasant economies (J.L. Schultz); The adoption of new agricultural inputs and practices by Indian farmers (L.L. Hodgdon); Credit for small farmers (R.L. Tinnermeier); Livestock production on small farms as a contribution to economic development (G.M. Ward); Water user organizations for small farmers (G.E. Radosevick); New technologies for small farmers: the Puebla project (H.H. Biggs), are concerned with specific problems associated with formulating and implementing a small-farm development program. These articles are based on the authors' observations and experiences in India, Korea, West Africa, Pakistan, Peru, Mexico, Egypt, and Indonesia. (CAB)

BINET, J. 1970. Psychologie économique Africaine; éléments d'une recherche interdisciplinaire. Paris, France: Payot. [13.20]

BINGEN, R.J. 1977. Research studies in Sahel francophone West Africa: Chad, Gambia, Mali, Mauritania, Niger, Senegal, Upper Volta, regional. AID Research and Development Abstracts 5(2): 12-13. [13.20]

A series of reports provides an inventory of work undertaken in francophone West Africa. Summaries include: (1) project reports and evaluations, (2) reviews of papers, conferences and trips, and (3) studies—completed, current, proposed long-term, and short-term. The inventory is presented on data sheets that include, for each title, such information as methods of study, recommendations, and progress. The research inventory sheets are classified by these sectors: livestock; rainfed agriculture; irrigated agriculture; fisheries; ecology and environment; adaptive technology; human resources, health, nutrition and population; transportation and infrastructure; marketing; pricing and storage; and other. Each of the project's eight publications may not contain all of these sectors. Furthermore, the inventory itself is neither complete nor final, and include only those countries who are members of the Permanent Interstate Committee for Drought Relief. The individual reports cover Chad, Gambia, Mali,

Mauritania, Niger, Senegal, Upper Volta, and the region as a whole. (CAB)

BINSWANGER, H.P. No date. Risk attitudes of rural households in semi-arid tropical India. Patancheru, A.P., India: ICRISAT, Economics Program. [18.30]

BINSWANGER, H.P., JODHA, N.S., RYAN, J.G., and von OPPEN, M. 1977. Approach and hypotheses for the village-level studies of the International Crops Research Institute for the Semi-Arid Tropics. Economics Program Occasional Paper no. 15. Patancheru, A.P., India: ICRISAT. [12.00]

BLANC, J. le. 1969. Nutrition et développement. Réflexion sur les aspects économiques de l'alimentation en Afrique de l'Ouest. Grenoble, France: Institut de Recherche de Planification Economique. [21.20]

Problems of undernutrition and malnutrition at present occurring in West Africa are a hindrance to its development, because of the poor state of health and low capacity for work that they entail. To discuss this problem is to pinpoint Africa's entire development problem. The satisfaction of nutritional requirements is what makes development possible. Part 1 describes the nutritional situation in West Africa, its implications for the level of health of the population and its consequences for development, material available for the study of individual nutritional situations (enquiries, family budgets, clinical signs); food consumption by climatic zones. In Part 2 this latter interaction is enlarged upon, the ties between nutrition and economic development are defined, and hunger and malnutrition as factors of economic destruction in African countries are analysed. The case of Senegal is more closely analysed, and Niger's incorporation of a nutrition program into its development policy is described. (CAB)

BLANCHET, J. 1968-69. Le problème des structures de la production agricole en milieu africain. Revue Economique 3-4: 209-226. [14.00; 19.13]

The inevitable transition from subsistence to market production may be impeded by social rather than technical problems. In the latter field medium-sized farms have already resulted in technical and commercial improvements. However, any movement towards individualism in farming should be discouraged, and emphasis placed on the traditional communal systems, even if this results in slightly less rapid technical progress, so as to preserve the stability of the traditional social structure. (CAB)

BLASE, M.G. 1977. Institutions and facilities—development considerations. Pages 219-232 *in* Dimensions of world food problems (ed. E.R. Duncan). Ames, USA: Iowa State University Press. [13.30]

The chapter begins by considering the various physical and institutional investments of infrastructure and then examines how countries can best determine their investment priorities to expedite agricultural development. Physical and institutional investments include transportation, communications, dams, and drainage. These kinds of development projects, however, need other less obvious support, particularly from institutions. It is only recently that the importance of institutional infrastructure in development has been recognized. Its role in expediting agricultural development may indeed be more important than physical infrastructure. Institutions for the following are discussed in some detail: markets for agricultural inputs and products, credit, research, agricultural education, planning, local government, and legal systems. All these elements are dependent on each other to form an effective agricultural infrastructure. The strength of this infrastructure is only that of its weakest link. In the final analysis, even though infrastructure is necessary for development, increased agricultural production must come from the individual farm. (CAB)

BODENSTEDT, A.A. 1977. Agrotechnical progress and rural development. Sociologia Ruralis 17(1,2): 29-42. [13.10]

Agrotechnical progress tends to be valued in terms of the economic rationality of industrialized countries, implying a certain way of using natural resources. During the past 2 centuries agricultural mechanization has been implemented through industrialization, and therefore the two terms "mechanization" and "industrialization" have become confused. To understand the problem of adoption of agrotechnical progress in developing countries, their attitudes to natural resources and agricultural production need to be considered as part of their social structure. Biases in use of terminology mean that this social structure is often too narrowly interpreted. A model for collection of data to set up a typology of groups is presented, as an empirical basis for a new understanding of peasant rationality. A development strategy can then be adopted based on the fundamental concepts of energy and emancipation. (CAB)

BOHANNON, P. 1963. "Land", "tenure" and "land tenure". Pages 101-115 *in* African agrarian systems (ed. D. Biebuyck). London, UK: Oxford University Press. [15.10]

BONNEFOND, P. 1970. L'introduction de la motorisation en agriculture traditionnelle. Cahiers ORSTOM (Série Sciences Humaines) 7(4). [20.12]

BOSERUP, E. 1965. The conditions of agricultural growth. The economics of agrarian change under population pressure. London, UK: Allen and Unwin. [13.10]

BOUMAN, F.J.A. 1977. Indigenous savings and credit societies in the Third World: a message. Savings and Development 4: 181-219. [17.00]

BROWN, W.O. 1969. Rural sociology: its relevance for Africa. Canadian Journal of African Studies 3(1): 201-207. [13.20]
The aim of this analysis is to consider the relevance of rural sociology, as it has developed in the USA, for African countries. Attention is focused on: (1) general background; (2) limited development and use of rural sociology in African countries up to the present time; (3) the extent and type of recent research; and (4) possible future uses of rural sociology in Africa. (CAB)

BRUCE, J.W. 1974. Some suggestions concerning policy-oriented research on "communal" land tenures in Africa. University of Wisconsin. Land Tenure Center, Newsletter 43: 25-28. [13.20; 15.10]

BUNTING, A.H. 1970. Change in agriculture. London, UK: Duckworth. [13.10]

BYERLEE, D. 1979. Rural labor markets in West Africa with emphasis on the semi-arid tropical areas. Pages 348-356 *in* Proceedings, International Workshop on Socioeconomic Constraints to Development of Semi-Arid Tropical Agriculture, 19-23 February 1979, Hyderabad, India. Patancheru, A.P., India: ICRISAT. [16.00]

BYERLEE, D., EICHER, C., LUDHOLM, C., and SPENCER, D. 1977. Rural employment in tropical Africa: summary of findings. African Rural Economy Working Paper no. 20. East Lansing, USA: Michigan State University. [22.00]

CARR, M. 1976. Economically appropriate technologies for developing countries: an annotated bibliography. London, UK: Intermediate Technology Publications. [23.00; 19.13]
This bibliography has been compiled in response to the growing number of requests received by ITDC for reference material on the economic aspects of intermediate technology and, in particular, for factual information on the economic appropriateness of intermediate technologies for developing countries. It concentrates on the "hardware" aspects of intermediate technology; the "soft-ware" aspects (information, education, training, management, and organizations) will be covered in another bibliography. The six main sections here cover: low-cost housing and building materials; manufacturing; infrastructure; handbooks, manuals, buyers' guides, and technical publications; and some relevant bibliographies. (CAB)

CATT, D.C. 1966. Surveying peasant farmers: some experiences. Journal of Agricultural Economics 17: 99-100. [12.00]

CEEMAT/SEAE. 1968. Manuel de culture avec traction animale. Paris, France: CEEMAT/SEAE. [20.12]
Manual prepared by CEEMAT at the request of the French Secretariat d'Etat aux Affaires Etrangères to aid workers in Africa. Presents information on different animals and equipment for use in animal traction.

CENTER FOR RESEARCH ON ECONOMIC DEVELOPMENT. 1977a. Marketing, price policy and storage of food grains in the Sahel. Volume 1: Synthesis with statistical compilation and annotated bibliography. Ann Arbor, USA: University of Michigan, CRED. [23.00; 13.33; 21.40]

CENTER FOR RESEARCH ON ECONOMIC DEVELOPMENT. 1977b. Marketing, price policy and storage of food grains in the Sahel. Volume 2: Country studies. Ann Arbor, USA: University of Michigan, CRED. [13.33; 21.40]

CHAMBERS, R. 1972. Planning for rural areas in Africa: experience and prescriptions. African Review 1(3): 130-147. [13.31]
Some of the experience of the 1960s in Africa in developing decentralized planning is assessed, explanations are sought for the levels of performance achieved, and prescriptions are made for the future. The paper does not consider in any detail either regional physical planning or sectoral planning (e.g., for roads, water, and agriculture at decentralized levels) but is concerned rather with area-based planning, defined as planning and plan implementation with participation by local-level staff or multisector programs for specific rural areas. The main focus is on the district and subdistrict levels, and most attention is paid to Kenya and Tanzania. (CAB)

CHAMBERS, R. 1978a. Seasonal dimensions to rural poverty. Paper presented to the Conference on Seasonal Dimensions in Rural Poverty. Brighton, UK: University of Sussex, Institute of Development Studies. [21.10]
Presents a model of the interaction of climatic, agricultural, and demographic seasonality. Suggests that the seasonal operation of the commodity and money markets operate to screw the poor down into relations of dependency. (BH)

CHAMBERS, R. 1978b. Towards rural futures: an approach through the planning of technologies. Discussions Paper no. 134. Brighton, UK: University of Sussex, Institute of Development Studies. [19.13]

CHAMBERS, R., and HOWES, M. 1978. The uses of indigenous technical knowledge in rural development. A summary of proceedings of the workshop held at the Institute of Development Studies, 13-14 April 1978. Brighton, UK: University of Sussex, Institute of Development Studies. [19.13]

CHAMBERS, R., and LONGHURST, R. 1978. Review of a Conference on Seasonal Dimensions to Rural Poverty, Brighton, July 1978. Brighton, UK: University of Sussex, Institute of Development Studies. [21.10]

CHARMES, J. 1975a. Sociétés de transition, ambivalence des concepts et connaissance statistique. AMIRA no. 1. Paris, France: INSEE. [12.00; 13.10]
Considers relations between statistics, anthropology, and economics and the design of rural development policies.

CHARMES, J. 1977. De l'ostentation à l'accumulation: production et reproduction des rapports marchands dans les sociétés traditionnelles à partir de l'analyse du surplus. Pages 105-137 *in* Essais sur la reproduction de formations sociales dominées (ed. ORSTOM). Paris, France: ORSTOM. [21.40]

CHARREAU, C. 1978. Some controversial technical aspects of farming systems in semi-arid West Africa. Dakar, Senegal: ICRISAT Regional Office. [11.10; 13.20]

CHAYANOV, A.V. 1966. On the theory of peasant economy. Homewood, USA: Irwin. [22.00]
The editor's introduction describes the life, career, and works of Chayanov, whose book is described as one of the most sophisticated and best documented Russian studies of the theory and problems of peasant economy in the half-century from 1880 to 1930. His theory of non-capitalist economic systems and peasant farm organizations are discussed. Chapters of the translated book deal with influence of the development of the peasant family on economic activity; measure of self-exploitation of the peasant family labor force; the concept of advantage in the labor farm; the basic principles of peasant farm organization; the organizational plans of the peasant farm; capital on the labor farm; consequences for the economy following from the family farm's organizational features; the family farm as a component of the national economy, and its possible forms of development. There is an 18-page bibliography of books, articles, and reports by Chayanov. (CAB)

CHECCHI and COMPANY. 1970. Food grain production and marketing in West Africa. Final Report of a Special Study Team. Washington, D.C., USA: USAID. [13.10]
The report is a "short but comprehensive study" of the growing food grain deficit in West Africa. Senegal, Mali, Upper Volta, and Niger are the countries of reference. Traditional food grains (millet, sorghum, and maize) are emphasized. The authors consider the basic agricultural problems of the region, provide individual country reviews, and offer recommendations for dealing with the problem of food-grain deficit. (CILSS)

CLARK, C. 1962. Future sources of food supply: economic problems. Journal of the Royal Statistical Society, Series A (General) 25(3): 418-444. [12.00]

CLAYTON, E.W. 1964. Agrarian development in peasant economies. Oxford, UK: Pergamon. [13.10; 18.20]

CLEAVE, J.H. 1974. African farmers: labour use in development of smallholder agriculture. New York, USA: Praeger. [22.00]

CLEAVE, J.H. 1977. Decision-making on the African farm. Oxford, UK: University of Oxford, Institute of Agricultural Economics, for the International Association of Agricultural Economists. [18.00]

CLINE, W.R. 1973. Interrelationships between agricultural strategy and rural income distribution. Food Research Institute Studies 12(2): 139-157. [13.10; 21.10]

This study examines the income distribution implications of alternative agricultural policies. It gives special attention to land redistribution, the policy most likely to increase both output and equity; improved seeds with fertilizer, the instrument of greatest current production impact; and farm mechanization, the policy most likely to concentrate rural income. Empirical estimates presented refer to rural savings as related to income distribution and to net effects of alternative policies. The study draws on previous research by the author and on the general literature. (CILSS)

COCHEME, J., and FRANQUIN, P. 1967. Rapport technique sur une étude d'agroclimatologie de l'Afrique sèche au sud du Sahara en Afrique Occidentale. Rome, Italy: FAO. [11.10]

COLLINSON, M.P. 1972. Farm management in peasant agriculture: a handbook for rural development planning in Africa. New York, USA: Praeger. [12.00; 22.00]

COMITE D'INFORMATION SAHEL. 1975. Qui se nourrit de la famine en Afrique? Paris, France: Maspero. [21.50]

COMMUNAUTE ECONOMIQUE DE L'AFRIQUE DE L'OUEST. 1976. Production, commercialisation et distribution des facteurs de production agricole. Montrouge, France: SEMA. [13.10]

COMTE, B. 1968. Développement rural et coopération agricole en Afrique tropicale. Cahiers de l'Institut des Sciences Economiques et Sociales no. 19. Friebourg, Switzerland: Université Freibourg Suisse. [13.34]

The way in which cooperative organizations of peasants can contribute to rural development is demonstrated as part of a study of agricultural cooperation in francophone Africa. Peasant associations appear to be the foundation of development but they leave some unresolved problems—hence the need for cooperatives. Part 1 Ch. 1 deals with strategic imperatives of rural development in tropical Africa and Ch. 2 with rural animation. Ch. 3 discusses cooperative development. Part 2 provides detailed studies of actual cooperative movements in: (1) Dahomey (Department of the Center), and the joint cooperative operated by the Dahomey Government and the Swiss Union of Consumer Cooperatives; (2) Senegal; (3) Ruanda. Part 3 deals with a cooperative strategy of development: (a) three models for rural development by cooperation; (b) guidemarks for a general model. Some conclusions are that cooperative societies ought to contribute not only to assisting agricultural production but also to providing credit, aid to poor, sick, or afflicted farmers, and mutual financial assurance. (CAB)

CONNELL, J. 1973. Labour utilisation: a bibliography of village studies. 2 vols. Brighton, UK: University of Sussex, Institute of Development Studies. [23.00; 16.00]

This bibliography complements a report entitled *Assessing village labour problems in developing countries: a comparative study of aims, concepts and methods in village studies bearing on labour utilization,* submitted to the ILO in October 1973. The bibliograpgy attempts to list and summarize all village surveys from less-developed countries that are oriented to labor utilization and/or have particular sorts of related information (i.e., studies are selected for their analysis and cover of labor input data). Criteria for inclusion included two or more of the following: (1) population much less than 5000; (2) settled (rather than migrant) population; (3) persons belonging to a community; (4) nucleated; (5) agricultural emphasis. Anything qualifying as a full-scale, single-village socioeconomic survey with labor data has been included whether or not it contains particularly interesting details or is of high quality. The distribution of studies accurately reflects the work done in the general area of labor utilization; Indian villages represent exactly half the total, but these studies are generally less useful than many studies carried out elsewhere. Latin America is notably absent. (CAB)

CONNELL, J., and LIPTON, M. 1977. Assessing village labour situations in developing countries. New Delhi, India: Oxford University Press. [12.00; 16.00]

COTE D'IVOIRE, MINISTERE DE LA RECHERCHE SCIENTIFIQUE. 1978. Division d'agro-économie en regions de savane. Rapport de Synthèse 1977. Bouaké, Ivory Coast: Institut des Savanes. [13.20]

COUTY, P.H. 1968. La structure des économies de savane Africaine. Cahiers ORSTOM (Série Sciences Humaines) 5(2): pp. 20. [13.10]

CZARNOCKI, K. 1973. The relationship between crops and livestock in the Sudanese zone of West Africa. Africana Bulletin 19: 115-122. [20.10]

After a brief description of the main characteristics of subsistence agriculture in West Africa, ways in which soil fertility and productivity, considered the two main areas for development, can be improved are discussed. The role of livestock, long revered as second only to fire in importance to the traditional community, as a means to improvement is discussed, although the danger of agriculture becoming even more extensive with the use of draft power is

stressed. Impressions of the area gained during work with the Office du Niger in Mali are described. The projects introduced are intended as prototypes of a modern production system, oriented towards commercial, horticultural, and feed crops, with associated intensive livestock production. Cotton has been added to rice, as has sugarcane. The associated livestock production has so far emerged as extensive rather than intensive. However, the future for livestock production looks promising, with great interest displayed in demonstrations of organic fertilizer and silage production, and of an experimental livestock unit fed on by-products of local subsistence crops (rice flour, cotton seed cake, etc.). An intensive cow unit was also set up, to demonstrate how manure could be collected over several months, the building thus serving as both now shed and manure store. Some villagers were also persuaded to make more use of livestock as a substitute for human labor. Extension by example seems to have worked very successfully in this case. (CAB)

DALBY, D., and HARRISON CHURCH, R. 1973. Symposium on drought in Africa, London, July 19-20, 1973. London, UK: University of London, Centre for African Studies. [21.50]

DESROCHE, H., and RAMBAUD, P., (eds.) 1971. Villages en développement. Contribution à une sociologie villageoise. Actes des premier et deuxième Colloques d'Albiez-le-Vieux 1969 et 1970. Paris, France: Mouton. [14.00]

The village is viewed as a crystallization of the utopias in which dissatisfactions and aspirations are expressed. It is a place where a new way of life is sought, a land of laboratory where industrialized societies experiment with hitherto untried forms of social living together in a community, where anything can still be done. The wide range of case studies covers periurban villages and agricultural cooperation in France, rural development in Africa and Malagasy, the Yugoslav cooperative system, the Russian village, and Israel's various forms of village. These various means to an end provide important sociological material. (CAB)

DEVEZE, J.C. 1969. Contribution à l'étude des rapports entre la culture et l'élevage en Afrique tropicale et à Madagascar. Terre Malagache (July issue, 1969): 171-207. [21.00]

The relevance of connections between arable and livestock farming as criteria for the analysis of an agrarian structure, and for development, are discussed. (CAB)

DEVITT, P. 1977. Notes on poverty-oriented rural development. Pages 20-41 *in* Extension, Planning, and the poor (ed. ODI). Occasional Paper no. 2. London, UK: Overseas Development Institute. [13.10]

The paper discusses the culture of the poor (in so far as it is relevant to development) and the nondirective and yet helpful role which outsiders must play if the poor are to gain confidence that some part at least of their predicament can be eased by their own efforts. Some preliminary thoughts are presented on the nature and causes of rural poverty (Section A), some reasons for the difficulties most development programs have encountered in reaching the poor (Section B), and some suggestions for poverty-oriented aid programs (Section C). It is concluded that if those agencies and governments who say they are serious about helping the poor are actually going to do something about it, they will eventually have to adopt a low-key, essentially explorative approach that aims to develop the will and the confidence of the people to help themselves. Young people must form the core of this development movement, to provide the necessary flexibility, buoyancy, and vigor. These are the movement's essential characteristics, whereas the technical and organizational expertise that is normally the preserve of older and more experienced people can always be called in as and when required. These notes search for the meaning of poverty in daily life, in the hope that by understanding this some latent power of transformation may be liberated. (CAB)

DIARRA, S. 1972. Les civilisations paysannes face au développement en Afrique occidentale. Cahiers d'Etudes Africaines 12(47): 342-352. [30.00]

DOMMEN, B. 1977. Agriculture and the new technology in tropical Africa, Geneva, Switzerland: UNDP/UNRISD. [19.13]

DOUGLASS, J. 1971. Broadcasting to farmers. Freedom from Hunger Campaign Report no. 67. Rome, Italy: FAO. [13.32]

The publication contains the following papers: The Canadian experience (R.G. Knowles). The Indian experience: broadcasting in a multilingual society (P.V. Krishnamoorthy). Indian farm forums, including (a) Definition and function (P.V. Krishnamoorthy); (b) Planning and execution (D.B. Jadhav). Farm forums in an African context: experience in Ghana (A.A. Opoku). Experience in Dahomey (P. Daniel). Farm broadcasting and animal production (K.V.L. Kesteven). Programmes of interest to women (R. McIntosh). Audience reaction and sampling techniques in relation to farm programmes (R. Newell). (CAB)

DOYLE, C.J. 1974. Productivity, technical change, and the peasant producer: a profile of the African cultivator. Food Research Institute Studies 13(1): 61-76. [19.13]
Evidence is cited to suggest that the persistence of traditional methods of farming among African cultivators cannot be entirely attributed to lack of interest in material ends. The apparent obstacles created by African rural value systems to development may really be a function of the weakness of the economic incentives to change. A fair number of documented cases suggest that new crops and techniques promoted have not always been well considered. Closer analysis of the implications of the chosen innovation at the farm level would have shown that its profitability was more apparent than real. Differences in the weight ascribed by the planners and the African farmers to specific economic considerations have often resulted in the intended outcome of an innovation being widely different from that realized. This reaction has been mistakenly identified with the idea that apparently profitable innovations have been rejected because of social attitudes. Explanations of the low productivity of African farming may better serve future development if they concentrate more on the paucity of the economic incentives and less on the alleged unwillingness of the cultivator to respond to these incentives. What is lacking at the moment in many African rural areas is the incentive to change, not the ability or the desire. (CAB)

DROP, A.B. 1975. La famille rurale Wolof: mode de résidence et organisation socio-économique. Bulletin de l'IFAN Sêrie (B) 36(1): 147-163. [16.10]

DUBOIS, V.D. 1975b. A note on the Sahel. American University Fieldstaff Reports, West Africa Series 16(4). [21.50]
This is a review of immediate social, environmental, economic, and political consequences of the Sahel drought. Grave impacts on Sahelian ecosystem are seen in the loss of vegetation, water sources, and topsoil. Morbidity and mortality rates are especially high among nomads with great spread of disease and malnutrition. Demographic dislocations, and swelling urban areas unable to provide adequate facilities, have led to social and political problems. Economically, the drought has caused decreased agricultural production, food shortages, steep price rises, reduction of consumer purchasing power and foreign exchange earnings from exports, sharp increases in food imports, and aggravation of the trade imbalance. The area of cultivable land is greatly reduced and the livestock population virtually eliminated. Only through international aid have the Sahel governments been able to keep down discontent and avoid total disaster. (CILSS)

DUBOIS, V.D. 1975c. Former French Black Africa and France: Part 1. The continuing ties. Part 2. Towards disengagement. American University Fieldstaff Reports, West Africa Series 16(2/3). [13.10]
Part 1 examines the extent to which French influence in the former territories has changed since independence. The author believes that France has maintained and probably increased these ties due to several causes: close personal relations between peoples, economic and military aid, and a vigorous campaign of cultural expansion that France has pursued in Africa. Part 2 examines the greater national sovereignty being expressed by African leaders. Among the problems the author discusses are racism, inequality, economic exploitation, and the decline of a purely African culture. (CILSS)

DUMONT, R. 1966. False start in Africa. London, UK: Andre Duetsch. [13.10]

DUMONT, R. 1970. Le mouvement coopératif Africain: plus d'échecs que de réussites. Revue Française d'Etudes Politiques 59. [13.34]
The author compares the origins of the cooperative movement in Denmark and in Africa. In Denmark, cooperatives developed spontaneously, relying on the widespread availability of adult education. Conditions favorable to the success of African cooperative movements do not exist, due to the poor standards of primary education. Thus it was necessary for the government to take the initiative rather than the peasants. The character of the cooperative movement was changed; it was considered by the peasants as a creation of the government and did not command allegiance. To help the peasants, the government granted loans, subsidies and sometimes exorbitant monopolies. Through several examples, drawn from experiments in Egypt, Tanzania, Zambia, Trinidad and Tobago, Mali, and Senegal, the author shows that in most cases the results were disappointing for many reasons: clumsiness of administration, interference by politicians, and lack of education and training of the peasants that hinders their participation in a system which they feel is imposed by external authorities. (CILSS)

DUMONT, R. 1971. Notes sur les implications sociales de la "Révolution Verte" en quelques pays d'Afrique. Geneva, Switzerland: UNDP. [19.13]

DUNCAN, E.R. (ed.). 1977. Dimensions of world food problems. Ames, USA: Iowa State University Press. [13.10]

EICHER, C.K. 1970. Research on agricultural development in five English-speaking countries in West Africa. New York, USA: Agricultural Development Council. [13.20]
Part 1 discusses agricultural development in five English-speaking countries in West Africa: Gambia, Ghana, Liberia, Nigeria, and Sierra Leone, while the latter part includes an inventory, classification, and evaluation of recent and current research on agricultural development, a discussion of major rural development problems in West Africa in the 1970s and of priority areas of research needing attention in the 1970s. The threefold objectives are: (1) to present the results of an intensive interdisciplinary study of Nigerian rural development strategies for the 1969-85 period and to draw from this study some implications of the nature of the development process in West Africa; (2) to assess the research on rural development in West Africa in general and in each of the five English-speaking countries in West Africa over the 1950-60 period; (3) to identify the research gaps and priority research problem areas in the 1970s in order that the interested researchers can avoid duplication and can focus on problems of high priority to West African nations. (CAB)

EICHER, C., ZALLA, T., KOCHER, J., and WINCH, F. 1970. Employment generation in African agriculture. Research Report no. 9. East Lansing, USA: Michigan State University, College of Agriculture and Natural Resources, Institute of International Agriculture. [13.10]

ELKAN, W. 1960. Migrants and proletarians. London, UK: Oxford University Press. [16.24]

ELLIOTT, H. 1977. Farming systems research in francophone Africa: methods and results. Abidjan, Ivory Coast: Ford Foundation. [13.20]

ELLIOTT, H., VERLET, M., HAUCHECORNE, J., and GEORGE, M. No date. Agricultural development projects in francophonic Africa. *In* Notes and Papers in Development no. 11 (ed. P. McLoughlin Associates). Comox: P. McLoughlin Associates Ltd. [13.32; 19.20]
The first contribution, on "animation rurale" and "encadrement technique" in the Ivory Coast, by H.J.C. Elliott, is in six sections: a brief introduction to the Ivorian economy; the failure of the early cooperative movement to bring about development; a comparison of the rice and cotton program, the factors relevant to their apparent success, and their weaknesses; a brief discussion of the official program of animation and of private experiment operating along the lines of community development; a review of proposals for extending the method of global development now found in the pilot projects to entire geographical regions where attempts will be made to modernize agriculture, housing, health, and education simultaneously through government assistance; the response of the peasant to development programs. M. Verlet and J. Hauchecorne examine wheat cultivation at Lake Chad on the basis of a survey of 33 farmers in 1963. A series of contradictions seems to restrict the development of wheat production in the Lake Chad polders: competition between activities, of which fishing and herding are the most remunerative; conflict between traditional attitudes and administrative policy; forced abandonment of the semisedentary life; and the special demands of intensive cultivation. Past efforts to develop wheat have thus involved a major contradiction between national food and foreign exchange needs, and the contribution that wheat cultivation could make to regional and local economic development. Finally M. George looks at the structure of farming units and the importance of sorghum in the subdivision of Guider (north Cameroon). (CAB)

ESMAY, M.L., and HALL, C.W. (eds.) 1973. Agricultural mechanization in developing countries. Tokyo, Japan: Shin-Norinsha. [20.12]
Agricultural mechanization is defined to include those devices, tools, and machines to extend the hand of man and to reduce drudgery. The principles of mechanization of agriculture are defined in the context of developing countries, with the relationships to many segments of the society and the economy. These relationships are delineated in terms of general principles, for various degrees of mechanization as related to manual, animal, tractor, and other external power (such as electricity), for various parts of the world; with a final chapter emphasizing the importance of educational and training programs designed to precede or parallel developments in mechanization. The individual chapters are the following: 1. Principles of agricultural mechanization (C.W. Hall). 2. Agricultural mechanization in equatorial Africa (B.A. Stout, C.K. Kline, D.A.G. Green, and R.L. Donahue). 3. Agricultural mechanization in Asia (H.F. McColly). 4. Agricultural mechanization in Latin America (R.H. Wilkinson, and C.W. Hall). 5. Ownership patterns for tractors and machinery (M.L. Esmay, and L.W. Faidley). 6. Drying, storing, and handling food grains in developing countries (M.L. Esmay). 7. Irrigation in developing countries (R.H. Wilkinson, and E.H. Kidder). 8. Education and training for agricultural mechanization in developing countries. (CAB)

FAO. 1972. Expanding food crop research in the dry tropical region of West Africa. Rome, Italy: FAO. [13.20]

FAO. 1973b. Initial survey phase for a project for strengthening agricultural mechanization research in West Africa. Ghana-Dahomey-Nigeria-Ivory Coast-Mali-Senegal. August-October, 1972. Agricultural mechanization in West Africa: country reports. Rome, Italy: FAO. [13.20]

In 1972 a five-man mission, assigned by FAO and organizations in the UK, France, and Nigeria, made an initial survey of a project for strengthening agricultural mechanization research in West Africa. The countries visited were Ghana, Dahomey, Nigeria, Ivory Coast, Mali, and Senegal. The objectives of the mission were to make an inventory of past and ongoing research programs in agricultural mechanization, to carry out locally in-depth studies of selected mechanized scheme results, and to note the importance of rural underemployment and policy of the governments. The establishment of an Agricultural Mechanization Research Organization in West Africa is recommended. It should be concerned mainly with training research, and documentation and communication. A separate appendix deals with reports by country. These reports are in French for Dahomey, Ivory Coast, Mali, and Senegal, and in English for Ghana and Nigeria. (CAB)

FAO. 1974a. Report on the FAO expert consultation on emerging agrarian structures in Africa, held in Dakar, Senegal, 29 November - 1 December, 1973. Abstracts on Tropical Agriculture 2(6): 9183. [14.00; 15.10]

The report contains six case studies referring to areas of Ghana, Kenya, Cameroon, and Ethiopia. As a result of trade, monetization, education and colonization, customary land tenure systems and traditional structures tend to lose their validity. Modern substitutions for traditional structures are meeting with varying degrees of success. (CAB)

FAO. 1974b. Shifting cultivation and soil conservation in Africa. Soils Bulletin no. 24. Rome, Italy: FAO. [19.11]

The papers cover current work on the problem, the need to make shifting cultivation more productive, the possibilities of doing so, and the interrelation between shifting cultivation and soil conservation. Many of the papers give detailed description of the shifting cultivation practices of specific traditional farming areas, including duration of the system, rotation practiced, and local terminology. (CAB)

FAO. 1976. Perspective study on agricultural development in the Sahelian countries, 1975-1990. 3 vols. Rome, Italy: FAO. [13.10]

FARRINGTON, J. 1975. Farm surveys in Malawi. Development Study no. 16. Reading, UK: University of Reading. [12.00; 16.21]

FAYE, J., GALLAIS, T., and BILLAZ, R. 1977. Peasant agronomy: a challenge to planners' models. African Environment 2(4) and 3(1): 37-46. [16.10; 18.20]

Illustrates the problems of the conventional approach of thinking of a farm in West Africa in terms of a European farm run by a monogamous family operating on the basis of financial profitability with 100% of the product being marketed. In reality the situation is very different with a food product rationality on the one hand (the satisfaction of family needs) and a financial rationality on the other: the two are not practiced by the same individuals, as they do not constitute a balanced agronomic and economic integration but, on the contrary, a permanent dialectic (young people seeking to become independent by freeing themselves from the constraint of work on the collective field, and concentrating on commercial crops).

FLORES, X.A. 1968. Problems in the modernization of African agriculture. UN Research Institute of Social Development, Working Paper no. 3. [13.10]

FORREST, R.S., et al. 1975. The post-harvest foodgrain industry in semi-arid Africa. Ottawa, Canada: IDRC. [21.30]

FREYSSINET, J., and MOUNIER, A. 1974. Measuring the incomes of agricultural workers. International Labour Review 110(3): 251-266. [12.00]

Attempts to measure the incomes of agricultural workers in nonindustrialized countries are beset by numerous difficulties, both statistical (the paucity and unreliability of available data) and conceptual (the danger of applying theories devised for the developed economies to totally different conditions). On the basis of a study carried out in ten Central and West African countries, the problems involved in selecting the measurement approach is examined (identification of the economic agents whose incomes are to be measured, choice of the appropriate unit of measurement), a definition of the various concepts of income that may be used is given, and an attempt at a brief critique is made of the sources of information currently available. Recognizing that measurement is always an approximation, it is concluded that this is unimportant provided that it indicates not only the order of magnitude of the phenomenon

measured but also the margin of possible error. (CAB)

FREYSSINET, J., and MOUNIER, A. 1975. Les revenus des travailleurs agricoles en Afrique centrale et occidentale. Geneva, Switzerland: International Labour Office. [12.00]
This study covers six countries of West Africa (Senegal, Ivory Coast, Ghana, Cameroon, Sierra Leone, Dahomey) and four in Central Africa (Togo, Gabon, Congo, and Zaire). Three main themes concerning income are discussed: methodological problems of income measurement, income structure, and national policies. The documentation available for each country is collated before a general analysis is made of the problem. The conclusion reiterates that no policy for agricultural incomes alone has any chance of lasting efficacy. Any modification of income level or composition has to be contained in an overall development strategy. A policy for agricultural incomes cannot be effective unless a minimum of statistical data are available. (CAB)

FRIEDRICH, 1977. Farm management data collection and analysis system. Working document. Rome, Italy: FAO. [12.00]

FSR REVIEW TEAM. 1978. The review of farming systems research at the international agricultural research centers CIAT, IITA, ICRISAT, and IRRI. Rome, Italy: FAO/TAC Secretariat. [13.20]

GEMMILL, G., and EICHER, C.K. 1973. A framework for research on the economics of farm mechanization in developing countries. African Rural Employment/Economy Paper no. 6. East Lansing, USA: Michigan State University, Department of Agricultural Economics, African Rural Economy Program. [13.20]

GEORGULAS, N. 1969. Operational problems in African rural development planning. International Development Review 11(2): 19-21. [13.10]
A case is made here for focusing greater attention on development planning for rural areas, for using local area units rather than sectors, and for treating villages as the focal points for change. National planning in Africa would be more effective if local and regional teams were mobilized to obtain much needed information and also to follow up plan implementation. (CAB)

GLANTZ, M.H. (ed.). 1976. Politics of natural disaster: the case of the Sahel drought. New York, USA: Praeger. [21.50]

GLEAVE, M.B. 1969. Population density and agricultural systems in West Africa. Pages 273-300 *in* Environment and labour use in Africa (eds. M.F. Thomas and G.W. Whittington). London, UK: Methuen. [11.00]

GORMAN, G.E. (ed.). 1978. Development studies: register of research in the United Kingdom 1977-78. Brighton, UK: University of Sussex, Institute of Development Studies. [23.00; 13.20]

GOSSELIN, G. 1970. Développement et tradition dans les sociétés rurales africaines. Etudes et Documents, Bureau International du Travail no. 76. Geneva: ILO. [13.32; 14.00]
Traditional labor organization and social values are examined in terms of whether they act as supports or impediments to economic and social development. The analysis concentrates on rural areas in Africa south of the Sahara, examining eight development projects in Upper Volta, Cameroon, Central African Republic, Nigeria, Mali, Dahomey, Senegal, and Tanzania. It is concluded that local participation in economic and social development is hindered rather than helped by the traditional way of life. Tradition, however, besides being a complex of values and institutions, is also a system of social mechanisms. At this level it can be useful, or even essential, to the success of experiments in development. The chances for progress of rural African masses rest on this fact. (CAB)

GUILLEMIN, R. 1956. Evolution de l'agriculture autochtone dans les savanes de l'Oubangui. Agronomie Tropicale 11(1): 39-61; (2): 143-176, (3): 280-309. [11.10]

GUINARD, A. 1967. Conservation and improvement of soil fertility. Part 2. World Crops 19(6): 29-31. [13.20]

HAERINGER, P. 1973. Cheminements migrations Maliens, Voltaïques et Nigériens en Côte-d'Ivoire. Cahiers ORSTOM (Série Sciences Humaines) 10(2/3): 1-309. [16.24]

HARRIS, B. 1978a. The marketing of food grains in the West African Sudano-Sahelian States. An interpretative review of literature. ICRISAT Economics Program Progress Report. Patancheru, A.P., India: ICRISAT Economics Program. [13.33; 21.40]

HARRIS, B. 1978b. Agricultural marketing in the semi-arid tropics of West Africa. ICRISAT Economics Program Progress Report. Patancheru, A.P., India: ICRISAT Economics Program. [13.33; 21.40]

HARRIS, B. 1978c. Relevant and feasible research for ICRISAT's research program in agricultural markets. ICRISAT Economics Program Progress Report. Patancheru, A.P., India: ICRISAT Economics Program. [23.00; 13.33; 21.40]

HASIF, Le. 1978. L'emploi de la traction animale dans les exploitations agricoles. Colloque sur l'Amélioration des Systèmes de Production au Niveau des Exploitations Agricoles dans les Pays du Sahel, 20 au 28 février 1978. Bamako, Mali: IER. [20.12]

HAUGERUD, A. 1978. An anthropologist's view of farm management research: pitfalls in the methodological paradigm. Chicago, USA: Northwestern University. (Mimeo.). [12.00]

HEDGES, T.R. 1963. Farm management decisions. Englewood Cliffs, USA: Prentice Hall. [12.00]

HELLEINER, G.K. 1975. Smallholder decision making: tropical African evidence. *In* Agriculture in development theory (ed. W.G. Reynolds). New Haven, USA: Yale University Press. [18.20]

HILL, P. 1966. A plea for indigenous economics: the West Africa example. Economic Development and Cultural Change 15(1): 10-20. [13.20]
The need is stressed for greater formal attention to the study of "indigenous" economics, i.e., the systematic appraisal and classification of nonindustrial economic organization in developing countries. "Indigenous" economics will appear in some ways conservative and opposed to "development" economics, though it is much concerned with processes of change and modernization (but from a nongovernmental point of view). However, the distinction between the two types of approach is not hard and fast (e.g., although "indigenous" economics would tend to take the broad lines of government policy for granted in that it is not concerned with their formulation, its practitioners might well hold strong views on the effects of introducing new policies). Finally, while it is generally similar to conventional (or Western) economics, the factors requiring emphasis in any situation may be unexpected, so that those who guess on the basis of Western experience are apt to go wrong even on fundamentals. The economic behavior of individual West Africans is basically "rational" and responsive, but the structure of this rationality requires much empirical study. (CAB)

HILL, P. 1970. Studies in rural capitalism in West Africa. London, UK: Cambridge University Press. [22.00]
Interdisciplinary studies of indigenous economies in Ghana and Nigeria are made. They illustrate the contention that most economists interested in underdeveloped countries have neglected the detailed study of economic organization and mechanism in the field, especially in rural areas, and that, as a result, there has been little testing of many conventional implicit assumptions that happen to be invalid. Socioeconomic generalizations based on too few data are vigorously corrected, and a research method demonstrated that is more akin to anthropology than economics. The six separate studies show African farmers, fishermen, cattle rearers, and cattle traders acting shrewdly and enterprisingly, sometimes handling large sums of capital, giving a most sophisticated picture of certain aspects of West African rural life. (CAB)

HOPKINS, A.G. 1973. An economic history of West Africa. London, UK: Longman. [11.00]

HOPKINS, N.S. 1969b. Anthropology and rural economic development. Canadian Journal of African Studies 3(1): 168-173. [13.20]
This paper describes and comments on some of the approaches that anthropologists have followed in the analysis of economic development and social change in rural Africa. (CAB)

HOROWITZ, M.M. 1976. Colloquium on the effects of drought on the productive strategies of Sudano-Sahelian herdsmen and farmers: implications for development. Binghamton, USA: Institute for Development Anthropology. [22.00; 21.50]

HOROWITZ, M.M., STACY, R., MORRIS, W., and WISENBORNE, D. 1974. Multi-year Sahelian planning paper. Washington, D.C., USA: USAID. [13.10]
Contains: an approach to a strategy for immediate extensive Sahelian development; preliminary midterm research proposals; livestock sector summary; crop production sector summary; human resources development; the deteriorating trading position of the Sahelian states and its effect on post-drought recovery. Annex A: Sub-Sahara livestock sector analysis. Annex B: Sahelo-Sudanian crop production sector analysis.

HUNTER, G. 1969. Modernizing peasant societies. A comparative study in Asia and Africa. London, UK: Oxford University Press. [13.10]
A description is given of "ancient" social structure in a modern world, emphasizing that societies live and grow as a whole; technology and economies are intertwined with politics, administrative standards, education, even fundamental beliefs, and values. The book deals mainly with India, Pakistan, and Southeast Asia, and with Africa between the Sahara and Zambesi. After describing the background of local life and attitudes, the central section deals with the modernization of the agricultural economy, and the later chapters with the issues—economic, administrative, political, and religious—which both shape and are shaped by the modernizing process. (CAB)

HUNTER, G. 1973. Agricultural administration and institutes. Food Research Institute Studies 12(3): 233-251. [13.10]
The paper analyzes the nature of administrative difficulties in agricultural development and attempts to suggest a framework to make possible a more rational and coherent approach to the problem. The author's conclusions call for more local policy making and control and for more accurate statistical and evaluative systems. (CILSS)

HUNTER, G. 1977. Planning and the small farmer. Pages 47-57 *in* Extension, planning, and the poor (ed. ODI). Occasional Paper no. 2. London, UK: Overseas Development Institute. [13.10]
The paper deals primarily with quite a small part of the total activities called "planning"; the first part of the paper is in wider, general terms; the second part deals with planning at the district level and below. It is concluded that in all probability it is from very local solutions that answers will begin to come, if they are actively sought and wisely supported, and there must be more improvements in individual farms, one by one. They must certainly include an element of people's management externally supported. There is a need for a detailed scheme for: defragmentation; pest control; water control; a stock control; quality control; risk-sharing; and water investment or land-shaping for which external expertise and funds can be contributed. None of these requirements is impossible and many different ways may be found in practice to meet them. At the heart of them all is some form of cooperation. (CAB)

HUNTER, J. 1977. Zones d'exploration pour les terres neuves du Sahel. East Lansing, USA: Michigan State University. [13.10]

IBRD. 1976. West Africa food grain study. Washington, D.C., USA: IBRD. [13.10]

ICRISAT. 1975. Proceedings, International Workshop on Farming Systems, 18-21 November 1974, Hyderabad. Patancheru, A.P., India: ICRISAT. [11.00; 13.20]
The proceedings of this workshop on farming systems consist of four parts: (1) resource assessment and utilization of research for farming systems, land, water, climate, and man; (2) crops and cropping patterns; (3) socioeconomic research in farming systems; and (4) technology transfer and off-site research. (CAB)

ICRISAT. 1976. ICRISAT annual report, 1975-76. Patancheru, A.P., India: ICRISAT. [13.20]

ICRISAT. 1977b. ICRISAT annual report, 1976-77. Patancheru, A.P., India: ICRISAT. [13.20]

IDUSOGIE, E.O. 1973. Centuries of changing food consumption patterns in African communities. Food and Nutrition in Africa 12: 5-32. [21.20]
The main aim is to assemble available published and unpublished data on foodstuffs indigenous to Africa and which have been eaten in the communities concerned from earliest recorded times. The paper also discusses changes in African food consumption habits over time, and likely future trends. (CAB)

ILO. 1978. A research note on technology and rural women. Geneva, Switzerland: World Employment Programme. [16.22]
Points out the double bind of developments that reduce women's independence to trade and to engage in agricultural production. (BH)

INSTITUTE FOR AGRICULTURAL RESEARCH. 1972. Report to the Board of Governors for 1971. Zaria, Nigeria: Ahmadu Bello University, IAR. [13.20]

INSTITUT DU SAHEL. No date. Historique et présentation. Bamako, Mali: Institut du Sahel. [13.20]

INSTITUT DU SAHEL. 1977. Proposition de programmes d'activités de l'Institut du Sahel, 1977-82. Bamako, Mali: Institut du Sahel. [13.20]

INTERNATIONAL FERTILIZER DEVELOPMENT CENTER. 1976. West Africa fertilizer study. Vol. 2. Technical Bulletin IFDC-T-4. Florence, USA: International Fertilizer Development Center. [13.32; 19.13]

IRAT. 1977a. Les cultures associées: bibliographie. Paris, France: IRAT. [13.20; 19.12; 23.00]

IRAT. 1977b. L'IRAT et l'amélioration du sorgho. Présentation des travaux. Agronomie Tropicale 33(3): 279-318. [13.20]

IRAT. 1978a. Publications 1976. Paris, France: IRAT. [23.00; 13.20]
Each year a list of publications produced by IRAT is prepared. This is one of the latest available and is a supplement to the first issue of l'Agronomie Tropicale in 1978.

IRAT. 1978b. Resumé des articles IRAT publiés dans l'Agronomie Tropicale 1960-74. Supplément à l'Agronomie Tropicale no. 2, 1978. Paris, France: IRAT. [23.00; 13.20]
Useful summary of articles and annotations on articles on economic studies, development assistance, credit, rural sociology, livestock.

JEAN, S. 1975. Les jachères en Afrique tropicale; interprétation technique et foncière. Paris, France: Institut d'Ethnologie, Musée de l'Homme. [19.11]

JELLEMA, B.M. 1973. Improvement of cereal production and marketing in the central African region. Ibadan, Nigeria: International Institute of Tropical Agriculture. [13.33]
The main staple foods in the Central African region are maize, sorghum, and millet. Rice and wheat are of less importance. The four countries considered are Cameroon, Central African Republic, Chad, and Gabon. Subsistence motives prevail in food crop production. Only a surplus over family needs is sold. The percentage of total production that enters marketing channels is as a result quite small and the quantity and market price fluctuate strongly. An increase in production much larger than the increase in population would have disastrous effects on prices and farmers' incomes. Handling and storage losses are high, especially for maize, and probably highest at the traders' level. There is good potential for maize production in the Cameroon highlands. The introduction of improved seeds and practices may have a large impact on production. It is essential to increase simultaneously the demand for maize through poultry feeding. An integrated project is proposed to work in the improvement of all aspects of maize production, storage, and marketing, aiming both at small traders and farmers. An interregional center for applied research, training, and seed multiplication is proposed for the sorghum and millet region serving the north of Cameroon, Chad, and the north of Central African Republic. There are several promising areas for rice production. Outside donors have already financed projects in this field, but a good training component should be added to these activities. Finally, wheat has a potential in the polders of Lake Chad and on irrigated land in the Benue valley. Support for SODELAC is recommended to increase the area under its management. (CAB)

JIGGINS, J. 1977. Motivation and performance of extension field staff. Pages 1-19 *in* Extension, planning, and the poor (ed. ODI). Occasional Paper no. 2. London, UK: Overseas Development Institute. [13.32]
The paper discusses extension services for the mass of small farmers rather than those provided under government-run or privately-owned commodity schemes, where a relatively efficient superior structure and organization exists. It takes as a starting point the accusations that current extension effort is inadequate for the enormity of the problem, that services are ill-structured to the nature of the risk, and that junior staff, even if they start with enthusiasm and energy, are pushed by the very system within which they work, and the lack of regard and incentives, towards an attitude of resignation, apathy, or self-interest. The paper looks first at the structural reasons for the existing performance and procedural characteristics of extension services, considers what criteria should determine extension organization, and then discusses the type of extension service these criteria would entail. It then turns to the situation problems arising from the bureaucratic setting, the managerial problems these generate, and the management effort needed to meet them. Thirdly, the paper focuses on the individual aspects of extension motivation, junior staff's relationships with farmers, and recruitment and training. Finally, the paper considers the implications of the preceding actions for extension organization and the motivation of junior staff. It advocates: (a) redefining roles and tasks and some restructuring of extension administration so as to make it rational and advantageous for junior staff to work hard and conscientiously at extension goals; (b) a recasting of the role of extension agents to move their work closer to the reality of serving the farmer; and (c) far more personal, in-the-field management and support of staff and a review of recruitment, training, and promotion procedures. (CAB)

JODHA, N.S. 1977. Resource base as determinant of cropping patterns. Economics Program Occasional Paper no. 14. Patancheru, A.P., India: ICRISAT. [19.12]

JOHL, S.S. 1971. Agricultural shortages and surpluses: a marketing trap for the developing countries. Columbus, USA: Ohio State University. [13.33]
The paper states that, since most of the developing economies have little absorptive capacity for surpluses and are too sensitive to shortages due to lack of appropriate storage and holding capacity, marginal deficits in the agricultural production are reflected in serious shortages while small increases in production create large surpluses. These developing economies need to rethink their approach and remodel their market structure to be flexible and responsive to the changing demand and supply conditions for various agricultural commodities. (CILSS)

JOHNSON, A.W. 1972. Individuality and experimentation in traditional agriculture. Human Ecology 1:149-159. [19.11]

JOHNSTON, B.F. 1958. The staple food economies of western tropical Africa. Palo Alto, USA: Stanford University Press. [11.00]

JONES, M.J. 1973. A review of the use of rock phosphate as fertilizers in francophone West Africa. Samara Miscellaneous Paper no. 43. Zaria, Nigeria: Ahmadu Bello University, IAR. [11.10]

JONES, W.O. 1968. Labour and leisure in traditional African societies. Items 22: 1-6. [16.00]

JOYCE, S., and BEUDOT, F. 1976. Elements for a bibliography of the Sahel drought. Paris, France: OECD. [23.00; 21.50]
A bibliography on the Sahel drought covering a 3-year period, from 1972 to 1975. In their outline for such a bibliography, the authors include a wide variety of topics, such as climatological and ecological factors, other factors having contributed to the severity of the drought, proposed ways and means of combating the drought, aid rehabilitation and development of the Sahel, and the evolution of the overall situation since 1974. (CILSS)

KASSAM, A.H. 1976. Crops of the West African semi-arid tropics. Patancheru, A.P., India: ICRISAT. [19.12]

KASSAPU, S. 1976. Les dépenses de recherche agricole dans 34 pays d'Afrique tropicale. Paris, France: OECD. [13.20]

KATES, R.W., JOHNSON, D.L., and HARING, K.J. 1977. Population, society and desertification. New York, USA: UN [13.10]

KEARL, B. 1976. Field data collection in the social sciences: experiences in less developing countries. ADC Discussion Paper no. 10. New York, USA: Agricultural Development Council. [12.00]

KLINE, C.K., GREEN, D.A.G., DONAHUE, R.L., and STOUT, B.A. 1969. Agricultural mechanization in equatorial Africa. Research Report no. 6. East Lansing, USA: Michigan State University, Institute of International Agriculture. [20.12]

KOSINSKI, L.A., and PROTHERO, R.M. (eds.). 1974-75. People on the move: studies on internal migration. London, UK: Methuen. [23.00; 16.23; 16.24]
This volume is based on papers submitted and discussions held during the Symposium on internal migration held by the International Geographical Union Commission on Population Geography at Edmonton, Canada, in 1972. Many of the papers have been substantially rewritten, several contributions added, and an introductory and linking text provided. The aim was to provide a text on migration to demonstrate the important contribution being made by geographers to the study of this phenomenon. The introduction draws together the main threads of research to date on migration, and the conclusion makes suggestions as to future research directions. A list of bibliographies and review articles devoted specifically to migration, and one of periodicals exclusively or partially devoted to migration, are also included. (CAB)

KOWAL, J.M., and KASSAM, A.W. 1978. Agricultural ecology of savanna: a study of West Africa. Oxford, UK: Clarendon Press. [11.00]
Gives comprehensive discussion with numerous references on the climate, soil, and water resources in the area. Also has chapters on rangeland, livestock, and characteristics of crops grown in the area. Finally there is a chapter on farming systems and the problems of improving them.

KRAUSZ, J.P. 1974. Competition among the root and cereal staples in tropical agricultural

development. Agricultural Economics Staff Paper no. 74-12. Ithaca, USA: Cornell University. [19.12]

The paper makes several points concerning the choice between staples in tropical agricultural development. The study found root crops, in relation to cereal crops, to have a higher caloric yield per unit of time, generally lower production costs, and a greater untapped genetic potential. Cereal crops were found to be more easily stored and transported, and preferable to root crops as income rose in a developing country. For the early stages of development, the author concludes it is essential that tropical root and tuber crops be given considerably more emphasis in tropical agricultural developmental schemes. (CILSS)

LAGEMANN, J. 1977. Traditional African farming systems in eastern Nigeria. Munchen, Germany: Weltforum Verlag. [22.00]

LAWSON, R.M. 1976. The changing role of women in food and agricultural marketing. Cultures et Développement 8(4): 595-606. [16.22]

Women food traders in many underdeveloped countries are undergoing a serious diminution in their socioeconomic status, because of (1) rapid growth of urbanization which draws them away from their traditional society, and (2) increased demand for foodstuffs due to higher urban cash incomes, and the emergence of large-scale buyers, from which is evolving a marketing system that favors a small number of large-scale traders. The issues involved are clearly illustrated by the changing situation in West Africa, where women play a more important role in food and agricultural marketing than in many other countries. (CAB)

LELE, U. 1975. The design of rural development: lessons from Africa. Baltimore, USA: Johns Hopkins University Press. [13.31]

The book summarizes the performance of rural development programs with a view to drawing lessons for the design and implementation of future programs. In presenting a view of rural development derived from a catalog of insights, it is assumed that, in the future, one of the objectives of rural development will be to reach a mass of the low income rural population. (CILSS)

LEVI, J., and BELLAMY, M. 1975. Agricultural resource use in West Africa. World Agricultural Economics and Rural Sociology Abstracts 17(3): 81-93. [23.00; 22.00]

Polly Hill's contention: "if economists would persist with detailed studies in the field, they would soon learn to discern a variety of forms of standard economic behavior amid the diversity—that economic behavior is often more standardized in West Africa than it is in the West. The difficulty is that the diversity and uniformity require similar emphasis", is taken as a starting point. The article concentrates on the uniformity, reviewing land, labor and capital utilization in crop production in traditional agriculture in West Africa. The determinants of resource use in peasant agriculture are explained in terms of the standard utility-maximizing model, the farmer allocating his time between farm work and other activities. The bibliography illustrates the diversity, by including 258 references on 18 countries as well as some general works. (CAB)

LEWICKI, T., and JOHNSON, M. 1974. West African food in the middle ages: according to Arabic sources. London, UK: Cambridge University Press. [21.20]

LIPTON, M.A., and MOORE, M. 1972. The methodology of village studies in less developed countries. IDS Discussion Paper no. 10. Brighton, UK: University of Sussex, Institute of Development Studies. [12.00]

LIVINGSTONE, I. 1977. Supply response of peasant producers: the effect of own-account consumption on the supply of marketed output. Journal of Agricultural Economics 28(2): 153-159.[21.20; 21.40]

LUNING, H.A. 1972. Economic aspects of the collectivization of agriculture. Landbouwkundig Tijdschrift 84(10): 370-374. [13.31]

The question is posed whether collectivization is a desirable and possible alternative for accelerating agricultural development in low-income countries. Collectivization is often advocated for one or several of the following reasons: the benefits of "economies of scale", a greater scope for labor absorption, less social and economic inequality, and larger opportunities for participation. It is indicated that the available evidence is not convincing. A gradual approach is recommended, though this may be politically unacceptable. In connection with social and political demands, the economics of alterntive ideologies have been discussed. (CAB)

LUNING, H.A. 1978. Socio-economic effects of agricultural research in the Third World. Economisch - Statistiche Berichten 63(3136): 11-14. [13.20]

In developing countries much less is spent on agricultural research than in developed countries. According to this article, this is due to two common misconceptions: firstly, that agricultural research shows little profit and that even this is slow in coming, and secondly that sufficient research is already being carried out. The article shows that if agricultural research is well organized and performed, it can be extremely fruitful and that the profits from it are often unevenly distributed between producers and consumers and among the various production factors. It is shown how research can be instrumental in development strategy, in particular for helping the mass of small farmers. (CAB)

LYNCH, F. 1976. Field data collection in developing countries. New York; USA: Agricultural Development Council. [12.00]

MacARTHUR, H.A. 1968. The economic study of African small farmers: some Kenya experiences. Journal of Agricultural Economics 19: 193-205. [12.00]

MALASSIS, L. 1977. Toward a technical humanism. It is not enough to explain the world; one must also transform it. Ceres 10(1): 30-33. [13.20; 13.31]
The essence of development is change, the introduction into social practice of a new technology, the fruit of experience accumulated by the people concerned or of a sensible transfer. This new technology is rarely neutral, it questions traditional social structures. There are dialectic relationships between technology and society that cannot be ignored by those who wish to introduce technological change as a basis for agricultural growth. It is in the context of these relationships that the concept of integrated rural development becomes meaningful. Proposals for change should always be based on preliminary analysis of rural societies and on the evaluation of the relationships between technological and social change. Without these analyses, the best laboratory-tested techniques may be rejected when it comes to social practice. (CAB)

MANN, R. 1974. Intermediate Technology Development Group "Rural Africa Development Project." National Collecge of Agricultural Engineering, Project Report no. 3. Silsoe, UK: National College of Agricultural Engineering. [12.00; 13.20]
It has to be accepted that in future a prerequisite for success in agricultural research in tropical Africa is an adequate knowledge of the human system into which the results of research are to fit. Such knowledge must include an understanding of the technological factors and bottlenecks that operate in the production of various crops and of the way in which these interact with the social, economic, and family life of the farmer. This report describes in detail how micro-level examination of local practices on individual smallholdings may be carried out by farm-level survey techniques within the grasp of the nonspecialist worker. (CAB) [12.00; 13.20]

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. 1974. A framework for evaluating long-term strategies for the development of the Sahel-Sudan region. Cambridge, USA: Massachusetts Institute of Technology, Center for Policy Alternatives. [13.10]
This work consists of 11 volumes. 1. Summary report: project objectives, methodologies, and major findings. 2. Agriculture. 3. Economic considerations. 4. Health, nutrition, and population. 5. Industrial and urban development. 6. Socio-political considerations. 7. Pastoralism in the West African Sahel. 8. The development and application of technology in the Sahel-Sudan. 9. Transport. 10. Water resource planning. 11. Energy and mineral resources.

MAUSS, M. 1954. The gift. Glencoe, UK: The Free Press. [14.00]

McCALL, D.F. 1969. Peasant production of cash crops and social stability. African Studies Bulletin 12(3): 255-264. Waltham, USA: University of Boston. [13.10; 14.00]
The relative merits of peasant and plantation poduction of cash crops is discussed. The arguments involve political, social, economic, and moral questions. The theme here after consideration of the above factors is that peasant production is conducive to social stability. Examples are taken from West African economies. (CAB)

McLOUGHLIN, P.F.M. (ed.). 1970. African food production systems. Cases and theory. Baltimore, USA: Johns Hopkins University Press. [13.10]
In an introduction P.F.M. McLoughlin evaluates Africa's food production problem and then reviews various theories of economic development, providing a theoretical context for seven case studies. Food production systems for five tribes are studied in detail: (1) the Haya (Tanzania) (P. Reining); (2) the Karimojong (Uganda) (R. and N. Dyson-Hudson); (3) the Zande (Sudan, Congo, Central African Republic) (C.C. Reining); (4) the Yalunka (Sierra Leone) (L. Donald); and (5) the Diola (Senegal) (O. Linares de Sapir). (6) The social and economic impact of the Gambia's effort to increase farm productivity by introducing farmers to more so-

phisticated methods of cultivation, especially the use of mechanical, ox-drawn plows, is discussed by P.M. Weil. (7) The food economy of a rural African village, Djoliba, Mali, is described by W.I. Jones. In conclusion, P.F.M. McLoughlin discusses the lessons to be learned from the case studies for economic development. (CAB)

MEDANI, A.I. 1970. The supply response of African farmers in Sudan to price. Tropical Agriculture 47: 183-188. [21.40]
A yield and an acreage response function have been specified and estimated for some crops in the Sudan Republic. Empirical results indicate that acreage is positively related to price. The price factor explains most of the variation for sorghum, groundnuts, and sesame. All crops have positive short-run elasticities varying from 0.09 (millet) to 0.72 (groundnuts). The corresponding long-run price elasticities range from 0.36 to 1.62. (INTECH)

MEILLASSOUX, C. 1960. Essai d'interprétation du phénomène économique dans les sociétés traditionnelles d'auto-subsistance. Cahiers d'Etudes Africaines 4: 38-67. [11.00; 16.00]

MEILLASSOUX, C. 1974. Development for exploitation: is the Sahel famine good business? Review of African Political Economy 1: 27-33. [21.50]
If the drought can be seen as an act of nature, the same cannot be said for the famine, which is seen largely as the result of international agricultural exploitation, of which "development or aid" is a part. The famine also offers the opportunity for a radical transformation of the traditional modes of agricultural production, promoting the establishment of a highly productive system of capitalist agriculture that is not only oriented towards the satisfaction of industrual needs, but also capable of supplying food to capitalist countries. (CAB)

MELLOR, J.W. 1976. The new economics of growth. Ithaca, USA: Cornell University Press. [13.10]

MENDRAS, H. 1970. Terre, paysans et politique. Paris, France: SEDES. [13.10]

MENDRAS, H. 1976a. Sociétés paysannes: élêments pour une théorie de la paysannerie. Paris, France: Colin. [18.10]

MENDRAS, H. et al. 1976b. Communautés rurales et paysanneries tropicales. Travaux et Documents de l'ORSTOM no. 53. Paris, France: ORSTOM. [14.00]
The papers included in this volume reflect ORSTOM's research interest in the structure and dynamic of rural communities, and were presented at a conference held in Abidjan in February 1972. With the objective of more closely defining the concept of a rural community, participants were asked to examine connected concepts such as "village" "(national) economic self-sufficiency", and "individual self-sufficiency". The discussion took place on two levels; one, concerning the community or village itself, and the other the more abstract sociological concepts village itself, and the other the more abstract sociological concepts and theory involved. H. Mendras contributes a framework within which to analyze Western peasant communities. P. Etienne writes on the village as it exists among the Baoule of Ivory Coast. A. Schawartz describes the idea of rural community among the Guere, Ivory Coast. Studies on Cameroon cover the Bamleke (J.C. Barbier), some village communities (S. Noumbe Manga); the Guiziga (G. Pontie), and the Makatam (J.Y. Martin), and B. Delpeche looks at the village in Serer society (Senegal). (CAB)

MILLER, N.N. (ed.). 1969. Research in rural Africa. Montreal, Canada, and East Lansing, USA: Loyala College and Michigan State University, African Studies Center. [23.00; 13.20]
The needs of research in many fields in rural areas of Africa are examined. An introduction by N. Miller assesses research priorities in Africa, while other comments and bibliographies are grouped under: (1) Political anthropology; (2) Local politics and development administration; (3) Agricultural economics; (4) Rural sociology and communications; (5) Rural geography; (6) Research notes. (CAB)

MONOD, T. (ed.). 1975. Pastoralism in tropical Africa. Studies presented and discussed at the 13th International African Seminar, Niamey, December 1972. London, UK: Oxford University Press. [20.20]
These 17 studies prepared for the 13th International African Seminar, in Niamey, Niger, in 1972, review African pastoralism (in both West and East Africa) in ecology, economy, social and community organization, kinship, intergroup relations, modern administrative attitudes, and development problems and policies. The introduction discusses the situation confronting peoples and cultures in Africa that practice pastoralism as a main way of life, particularly when governments and others assume it to be in some way secondary to agriculture and fail to understand its present and future contribution to African societies. (CAB)

MONYO, J.H., KERR, A.R., and CAMPBELL, M. (eds.). 1976. Intercropping in semi-arid areas. Ottawa, Canada: IDRC. [13.20]
Consists of a series of papers on intercropping research in Africa.

MORGAN, W.B. 1969. Peasant agriculture in tropical Africa. Pages 241-272 *in* Environment and land use in Africa (ed. M.E. Thomas and G.E. Whittington). London, UK: Methuen. [11.00]

MORRIS, W. 1977. Farming in West African savannas and Sahel. West Lafayette, USA: Purdue University. [11.00]

MORRIS, W., and STACY, R. 1974. An analysis of the sub-Saharan livestock sector. Washington, D.C., USA: USAID, Regional Economic Development Service Office, West Africa. [20.00]
Contains: multipurpose livestock; objectives, background interventions, and developments; recommended livestock program; constraints and parameters; improving fertility of stock; calf production in the Sahel; other programs in the Sahelian zone; program for development zones, interventions, recommended programs and longer term programs; recommended programs for the Guinea zone.

MORRIS, W., STACY, R., and WISENBORNE, D. 1974. Sahelo-Sudanian crop production possibilities. Washington, D.C., USA; USAID, Regional Economic Development Service Office, West Africa. [13.10]
Contains: description of the farming system; soil fertility; higher technological levels of agriculture in Sahel-Sudanian zones; macroeconomic considerations; cash crops versus food grains; urban demand; agricultural development alternatives; social environment for increasing production; various possible approaches to increase production; feasible technical package; expansion of simple irrigation and other water management practices.

MPHURU, A.N. 1976. Losses which occur during the harvesting and storage of grains: a bibliography. Special Report no. 4. Manhattan, USA: Kansas State University, Food and Feed Grain Institute. [23.00; 21.30]
This bibliography is intended to draw together in one volume what has been published or reported on grain storage losses/damage/estimation and detection. It is divided into four sections. The first part includes literature pertaining to internal infestation and detection procedures. The second part includes losses due to insects, rodents, and birds. The third section covers harvesting, handling, conditioning, and processing losses; and the last section covers literature on nutrient, fungal and germination losses. (CILSS)

MURDOCK, G.P. 1960. Staple subsistence crops of Africa. Geographical Review 50: 523-540.[19.12]

NACRO, A.M. (ed.). 1977. Colloque sur le développement de la production et de la commercialisation des céréales dans la communauté. Tome 1: Document introductif. Tome 2: Rapport final, Communauté Economique de l'Afrique de l'Ouest. Bamako, Mali: Bureau Communautaire de Développement Agricole. [13.10; 13.20]
This report includes details on agricultural research; agricultural production and the questions of aggregate regional deficits, and of means to increase production; and agricultural commerce, in particular cereals, procurement, costs, and returns on cereals production, and price policy. It accuses public authorities of neglecting cereals and argues for a reorientation of political will. (IDS)

NEUMANN, J.L. 1973. Les mathématiques dans l'étude économique des exploitations agricoles: l'analyse de groupe. Techniques et Développement 9: 12-18. [12.00]
The group analysis method enables the economics of different farm units to be compared and thus contributes in building up a farm management advice system. The method is explained, including its critical points, and demonstrated on the basis of data of a survey of farm structure conducted among pilot groundnut farmers in the Sine-Saloup region in Senegal. (CAB)

NEWMAN, M.D. 1977. Determinants of marketing surplus in rural households: towards an applied research agenda from an African policy perspective. M.Sc. thesis, Michigan State University, Department of Agricultural Economics. [21.40]

NEWMAN, M.D. 1978. Changing patterns of food consumption in tropical Africa: a working bibliography. Working Paper no. 23. East Lansing, USA: Michigan State University, Department of Agricultural Economics, African Rural Economy Program. [23.00; 21.20]

NEWMAN, M.D., and WILCOCK, D.C. 1976. Food self sufficiency, marketing and reserves in the Sahel. Working Paper no. 16. East Lancing, USA: Michigan State University, Department of Agricultural Economics, African Rural Economy Program. [21.20; 21.40]

NORMAN, D.W. 1977c. Problems associated with the gathering of technical, economic, and social data at the farm level in West Africa. Paper given at the International Conference on the Economic Development of Sahelian Countries, Centre de Recherche en Développement Economique, Université de Montreal, 13-14 October 1977. Montreal, Canada: University of Montreal. [12.00]

OAULME, D. (ed.). 1960. Femmes d'Afrique noire. Paris, France: Mouton. [16.22]

OECD. 1977a. Appropriate post-harvest technology in semi-subsistence transitional marketing systems. Pages 33-43 *in* Report of the OECD/FAO Joint Seminar, Paris, 18-22 October 1976. Rome, Italy: FAO. [13.33; 21.30]
After consideration of the adequacy and availability of technology for marketing systems (transport, storage, processing, distribution) serving small peasant farmers it was concluded that, in general, information on adequate technology was available for small-scale farm marketing systems. However, the limiting factor was the lack of organizational and management skill to select the right type of technology and have it applied effectively within the existing overall marketing systems. The need for training in marketing management and operations was underlined, in particular for small-scale marketing enterprises. This was also relevant for the organizational and management of large work forces in the application of those labor-intensive methods of constructing appropriate feeder roads. (CAB)

OECD. 1977b. The catalytic role of various types of marketing enterprises in stimulating the expansion of local food production. Pages 18-32 *in* Report of the OECD/FAO Joint Seminar, Paris, 18-22 October 1976. Rome, Italy: FAO. [13.33]
The examination of the different types of marketing enterprises such as cooperative, private, and state enterprises, showed that in market-oriented economies each of them has to play a specific role, their close cooperation and coordination of their activities being essential for the effectiveness of the marketing system. A number of participants felt that the potential contribution made by private marketing enterprises to small-scale farmer development was considerably underrated, while there was generally an overexpectation of the contribution made by cooperatives and state enterprises that could perform effectively only under well-defined conditions, of which policy makers are often not aware. In order to make better use of the underutilized resources (management skill and facilities) of the private trade, more efforts are required in regulating the behavior of traders in competitive marketing systems. The meeting stressed the need for vertical coordination and integration of marketing systems that was, under many conditions, felt to be more important than arguments regarding ownership. (CAB)

OFORI, I.M. (ed.). 1973. Factors of agricultural growth in West Africa. Proceeding of an international conference held at Legon, April 1971. Legon, Ghana: University of Ghana, Institute of Statistical, Social and Economic Research. [13.10]

OGBU, J.U. 1973. Seasonal hunger in tropical Africa as a cultural phenomenon. Africa 43(4): 317-332. [21.20]

OMOLOLU, A. 1971. Changing food habits in Africa. Ecology of Food and Nutrition 1(2): 165-168. [21.20]

OPTIONS MEDITERRANEENNES. 1970. Mécanisation de l'agriculture. Options Mediterranéennes 4: 13-122. [20.12]
The issue of the journal is devoted to mechanized agriculture.

ORSTOM. 1977b. Editions de l'ORSTOM. Périodiques, Ouvrages. Paris, France: ORSTOM. [23.00; 22.00]

ORSTOM. 1977c. Rapport d'activité, 1974-76. Paris, France: ORSTOM. [23.00; 22.00]

ORSTOM. 1978. Catalogue 1977. Paris, France: ORSTOM. [23.00; 22.00]

OWEN, D.F. 1973. Man's environmental predicament: an introduction to human ecology in tropical Africa. London, UK: Oxford University Press. [11.00]

PALA, A. 1976. African women in rural development: research trends and priorities. OLC Paper no. 12. Washington, D.C., USA: American Council on Education, Overseas Liaison Committee. [13.20; 16.22]

PAYLORE, P., and HANEY, R. (eds.). 1976. West Africa Conference, April 11-15 1976. Proceedings sponsored by the CSIR and the University of Arizona. Tucson, USA: University of Arizona. [13.10]

PEASE, S. 1976. The effects of transportation costs in low-income agricultural economics. Journal of Development Studies 12. no. 3: 229-245. [13.30]
The author argues that transport costs, in low-income agricultural economies, can easily lead to uneven intensity of cultivation across space, to technological dualism in agriculture, to the existence of surplus land in a poor country, to an urban-rural wage gap. (CILSS)

PHILLIPS, P.G. 1954. The metabolic cost of common West African Agricultural activities. The Journal of Tropical Medicine and Hygiene 57(1): 12-20. [21.20]

POLANYI, K. 1964. The great transformation. Boston, USA: Beacon Hill. [15.10]

PROTHERO, R.M. (ed.). 1972. People and land in Africa south of the Sahara. Readings in social geography. London, UK: Oxford University Press. [11.00]
Papers in this collection of geographic essays are arranged in six groups.

PURDUE UNIVERSITY, 1978a. Progress report on contracts AID/AFR C-1257 and 1258. West Lafayette, USA: Purdue University, Agricultural Economics Department, West African Program. [13.20]

PURDUE UNIVERSITY, 1978b. The costs and benefits from small and medium sized irrigated perimeters in the Sahelian countries. West Lafayette, USA: Purdue University, Agricultural Economics Department, West African Program. [19.20]

PURDUE UNIVERSITY. 1978c. The costs and returns of sorghum and millet production in the Sahelian countries. West Lafayette, USA: Purdue University, Agricultural Economics Department, West African Program. [19.12]

RADCLIFFE-BROWN, A.R. 1952. Structure and function in primitive society. Glencoe, UK: The Free Press. [14.00; 16.10]

RADO, E., and SINHA, R. 1977. Africa: a continent in transition. World Development 5(5/7): 447-457. [13.10]
The African continent is attempting to telescope into decades the process of agricultural development that spread over centuries in Asia and Europe. This paper highlights some of the potential problems of this rapid process, discussing the factor endowment of this continent, the food and nutrition situation, the population situation, import requirements, and the prospects and conditions for success in increasing agricultural production, that include reform of land ownership and price stabilization. It is concluded that the incentive structure and agricultural price policies must be revised to improve production of foodgrains and animal products, since this was successful in encouraging farmers to develop the wide variety of export crops that are produced. (CAB)

RIEHL, S., KINCH, M., and BAKER, R. 1976. Dryland agriculture bibliography: a list of materials on agriculture of semi-arid temperate regions. Corvallis, USA: Oregon State University, Consortium for International Development Information Network. [23.00; 11.00]

RIPLEY, P. 1975. Shifting cultivation and burning versus crop rotations in the tropics. Accra, Ghana: Council for Scientific and Industrial Research. [19.11]

ROCH, J. 1975. Selective bibliography on the famines and the drought in the Sahel. African Environment 1(2): 94-116. [23.00; 21.50]

ROCKEFELLER FOUNDATION. 1975. International development strategies for the Sahel. Bellagio, Italy: Bellagio Study and Conference Center. [13.10]
Three background papers abstracted in this report are: "The Sudan-Sahelian zone", by L.K.Opeke; "Weather and climate in the Sahel: an initial study", by A.H. Bunting; and "Preliminary conclusions regarding long-term development strategies in relation to environmental management in the Sahel", by George M. van Dyne.

RUTHENBURG, H. 1971. Farming systems in the tropics. Oxford, UK: Clarendon Press. [19.00; 20.00]
This analysis of principal farming systems in the tropics, with details of farm management problem arising in each case, distinguishes seven basically different systems: (1) shifting cultivation; (2) semi-permanent cultivation; (3) with regulated ley farming; (4) with permanent cultivation on rainfed land, (5) with arable irrigation farming; (6) with perennial crops; (7) grazing. In each the implications of the three major economic problems on soil fertility, uncertainty, and labor productivity are emphasized, and particular consideration given to ways in which technological and farm management changes can be made to overcome them. Each system is illustrated with case studies from a variety of areas. J.D. MacArthur provides a discussion

of general characteristics of farming in a tropical environment, and a concluding chapter outlining general tendencies in the development of farm systems. (CAB)

RYAN, J.G. 1977. Farming systems research in the Economics Program. Economics Program Discussion Paper no. 2. Patancheru, A.P., India: ICRISAT. [13.20]

RYAN, J.G., and Associates. 1975. Socioeconomic aspects of agricultural development in the semi-arid tropics. Pages 389-432 *in* Proceedings, International Workshop on Farming Systems, 18-21 November 1974, India. Patancheru, A.P., India: ICRISAT. [11.00]
Gives an idea of the extent of the semi-arid tropics and some of their general characteristics.

SAHLINS, M. 1974. Stone age economics. London, UK: Tavistock Publications. [22.00]

SAWADOGO, R.C. 1977. Index bibliographique sur les migrations dans les sept pays du programme Onchocerose. Ouagadougou, Upper Volta: World Health Organization. [23.00; 16.24]

SCET. 1975. Attempt to outline an anti-drought strategy in the French-speaking Sahelian countries of Western Africa; summary of the main report. Puteaux: SCET International. [13.10]

SEIBEL, H.D., and MASSING, A. 1974. Traditional organizations and economic development. Studies of indigenous cooperatives in Liberia. New York, USA, and London, UK: Praeger and Pall Mall Press. [13.34; 14.00]
The thesis is that cooperative organization of traditional rather than outside origin exists in indigenous societies, but has remained undiscovered or been ignored. Such organizations could be made much more use of as vehicles of development, instead of importing both the institutions and the techniques. More use could be made of the traditional organization in which to implant the technical change. In order to more fully appreciate the potential of these organizations, a very detailed study was made of traditional cooperatives and related forms of economic cooperation in all 16 societies of Liberia. The main conclusions and proposals were as follows. In all Liberian societies, indigenous cooperatives and other organizations with economic functions are very widespread. 2. Structurally and functionally, they have adapted well to changing economic and social conditions. 3. Indigenous cooperatives and other organizations have a number of manifest or latent problems they cannot solve, or perhaps only after long periods of adaptation. 4. With technical aid these indigenous organizations could be modernized. 5. The attempts by government and development aid agencies in Liberia to import modern cooperatives from the US and elsewhere have completely failed or been too expensive to be economically viable. 6. It appears to be cheaper to save time and expert personnel, and to be generally more effective to modernize indigenous cooperatives rather than import them. In a society where agricultural development has not yet preceded industrial development, this may very well be the first step to creating the prerequisite modernization. (CAB)

SHAPIRO, K.H. 1976. Efficiency differentials in peasant agriculture and their implications for development policies. Discussion Paper no. 52. Ann Arbor, USA: University of Michigan, CRED. [18.00]

SONGRE, A. 1973. La emigración en masa de Alto Volta; realidades y efectos. Revista Internacional de Trabajo 87: 231-245. [16.24]

SPENCER, D.S.C. 1972. Micro-level farm management and production economics research among traditional farmers: lessons from Sierra Leone. African Rural Employment Study Paper no. 3. East Lansing, USA: Michigan State University. [12.00]

SPENCER, D.S.C., and BYERLEE, D. 1977. Small farms in West Africa: a descriptive analysis of employment, incomes and productivity in Sierra Leone. African Rural Economy Program Working Paper no. 19. East Lansing, USA: Michigan State University. [22.00]

STAUDT, K.A. 1977. Inequities in the delivery services to a female farm clientele: some implications for policy. Discussion Paper no. 247. Nairobi, Kenya: University of Nairobi, Institute for Development Studies. [13.31; 16.22]
This paper is based on data collected in 1975 from a geographically stratified sample of 212 small-scale farm household in one administrative location of Kakamega District, western Kenya. It is found that women farm managers experience a persistent and pervasive bias in the delivery of the government agricultural services to which they are entitled. The bias increases in intensity as the value of the services increases. Moreover the bias holds under a number of different controls including economic standing, size of land holding and a demonstrated interest in adopting agricultural innovations in a timely way. Despite these inequities in

access to services, women farm managers in the area appear to be as productive and willing to adopt innovations as other types of farmers. A number of suggestions are made to deal with the problem of inequity in the delivery of agricultural services. (CAB)

STEVENS, R.D. (ed.). 1977. Tradition and dynamics in small-farm agriculture, economic studies in Asia, Africa, and Latin America. Ames, USA: Iowa State University Press. [22.00]

STRYKER, J.D. 1978. Food security, self-sufficiency, and economic growth in the Sahelian countries of West Africa. Prepared for the Agency for International Development. Palo Alto, USA: Stanford University, Food Research Institute. [13.10]

SURGERS, M., and VERNEUIL, P. 1978a. La pratique des enquêtes. Amira no. 20. Paris, France: Association Française des Instituts de Recherche pour le Développement. [12.00]

SWIFT, J. 1978b. Notes on traditional knowledge, modern knowledge and rural development. IDS Workshop on the Use of Indigenous Technical Knowledge in Rural Development. Brighton, UK: University of Sussex, Institute of Development Studies. [20.20]

THENEVIN, P. 1978. L'investigation en milieu rural et la pratique du développement: cadre d'intégration et approche systématique. Amira no. 18 Paris, France: Association Française des Instituts de Recherche pour le Développement. [12.00]

TIMMER, C.P. 1975. Interaction of energy and food prices in less developed countries. American Journal of Agricultural Economics 57: 219-224. [13.10]
Timmer argues that, with some exceptions, "modern, energy intensive agriculture is the only hope for many of the world's present population and for the most of its yet-to-be-born." His purpose in this paper is to "identify some of the longer run economic relationships between the price of (nonsolar) energy and the price of food that are a consequence of the necessity to develop in developing countries high-yield, fossil-fuel based agriculture over the next few decades." Timmer uses a simple macromodel to consider energy-related inputs and to examine input-output price relationships. (CILSS)

TOLLENS, E.F. 1975. Problems of micro-economic data collection on farms in northern Zaire. African Rural Employment Paper no. 7. East Lansing, USA: Michigan State University1 [12.00]

TOURTE, R. 1974b. Réflexions sur les voies et moyens d'intensification de l'agriculture en Afrique de l'Ouest. Agronomie Tropicale 29(9): 917-946. [13.20]

TROLL, C. 1966. Seasonal climates of the earth. The seasonal course of natural phenomena in the different climate zones of the earth. Pages 7-28 *in* World maps of climatology (ed. M.E. Linsberg, et al.). New York, USA: Springer. [11.10]

UCHENDU, V.C. 1967. Some issues in African land tenure. Tropical Agriculture 44: 91-101.[15.10]

UNITED NATIONS. 1977. Transnational project on management of livestock and rangelands to combat desertification in the Sudano-Sahelian regions (Solar). New York, USA: UN. [20.00]
The crisis caused by the drought in the Sahelian region and in other parts of Africa must primarily be attributed to excessive densities of human and animal populations. However, the exploitation of natural pastures through domestic and wild animals must still be regarded as the best way of utilizing these semiarid rangelands. The difficulty lies in making the pastoralists themselves responsible for the protection of land resources. The introduction of rotation comprising fodder crops, the establishment of artificial pastures, and land reform could help to solve the problem. Regional stratification programs that would lead to an increase in the prices paid to producers for young animals or those raised on the range until maturity could also be useful. The transnational project should be conceived as a program of coordinated actions designed to improve livestock and rangeland management by better stratification across the Sahelian regions and also in more humid ecological zones. Four types of action should be considered: (1) extensive grazing units on rangeland receiving less than 400 mm annual rainfall; (2) agropastoral units located in regions receiving between 400 and 800 mm annual rainfall and comibining animal and agricultural production; (3) units associated with irrigated regions, in which animal production would be developed as a complementary activity; (4) complementary units in humid savanna regions, combining in the stratification scheme for animal production, the production of fodder in rotation with food and commercial crops, as well as animal draft and peasant-operated fattening. (CAB)

UN ECONOMIC COMMISSION FOR AFRICA. 1973. Survey of economic conditions in Africa, 1972. Part 1 Addis Ababa, Ethiopia: Economic Commission for Africa. [13.10]

Chapter 4 is entirely devoted to a review of the agricultural situation. The performance of agriculture in 1971 was satisfactory, as the target of the Second United Nations Development Decade of 4 percent was reached. Total agricultural production excluding fisheries and forestry increased by 4.1% and food production increased by over 3%. Among the staple foodstuffs group, cereals registered a high growth rate of 7%. Starchy root crops and pulses, however, have not increased significantly. The preliminary data available for 1972 show that both cash export commodities and staple foodstuffs registered only a slight increase, with the result that the rate of growth of agriculture was less than 2% a serious situation in view of the rapid rate of population growth and the economic and social significance of agriculture in Africa. (CAB)

US ACADEMY OF SCIENCES. 1968. Agricultural research priorities for economic development in Africa. 2 vol. Washington, D.C., USA: US Academy of Sciences, National Research Council. [13.20]

USAID. 1973. Small farmer credit: analytical paper. Washington, D.C., USA: USAID. [13.32]

USAID, 1975c. Special report to the Congress on the drought situation in Sub-Sahara Africa, Washington, D.C., USA: USAID. [21.50]
This report gives concise background reading on the drought situation, lists technical assistance plans and gives country-by-country comments. (CILSS) [21.50]

USAID. 1976b. Report to the United States Congress: proposal for a long-term comprehensive development program for the Sahel. Washington, D.C., USA: USAID. [13.10]
This report is submitted in response to the statutory mandate (of Congress). It covers the following areas: (1) current international coordination for the planning of long-term-development with the involvement of the African countries and organizations, and (2) AID's proposal for long-term development planning for the Sahel. (CILSS)

VAY, C. Le. (ed.). 1975. Symposium on the designing and intercropping of questionnaires. Aberystwyth, UK: University College of Wales, Department of Agricultural Economics. [12.00]
The purpose of the symposium was to give an opportunity for research workers conducting surveys among farmers to share their problems. Experience in Africa is reflected in two contributions: (a) designing questionnaires and carrying out surveys of farmers in Africa (M. Simpson), and (b) attitudes measurement in Africa (M. Upton, and D.S. Thornton).

VERMEER, D.E. 1976. Food, farming, and the future: the role of traditional agriculture in the developing areas of the world. Social Science Quarterly 57(2): 383-396. [13.10]
Insufficient attention is being paid to the traditional agricultural sectors of developing countries and their potential contribution to world food supplies. The applicability of western technology to developing areas is questionable: energy-intensive agricultural systems are uneconomical; widespread agricultural mechanization suffers from a lack of qualified personnel; it can ruin an ecologically-delicate environment if land has to be completely cleared; it threatens the social structure, often causing selective migration of the most able-bodied to the cities; and land reform may damage land by bringing in into permanent use. The accumulated wisdom in traditional systems must be understood and used to its full advantage so that developing countries may more fully satisfy their internal needs for foodstuffs. (CAB)

VERNEUIL, P. 1978. Comment orienter l'investigation en milieu rural Africain à partir de la relation entre echange inégal, développement inégal et transfert de valeur. Amira no. 22. Paris, France: Association Française des Instituts de Recherche pour le Développement. [17.00; 21.00]
Looks at the impact of exchange relations on conditions of production and productivity as well as the level of living. Discusses resale of agricultural implements purchased on credit, and implications for the cycle of increasing poverty linked to the hungry-season needs for consumption on credit.

VIGO, A.H.S. 1965. A survey of agricultural credit in the northern region of Nigeria. Kaduna, Nigeria: Ministry of Agriculture. [17.00]

WARE, H. 1975. The Sahelian drought: some thoughts on the future. New York, USA: UN. [21.50]

WATERS, A.R. 1974. Understanding African agriculture and its potential for change. The Journal of Modern African Studies 12(1): 45-56. [18.10]
The article questions "the accuracy and relevance of existing data about the small-holder sector in African agriculture." It is asserted that "the small-scale farmer in Africa knows his environment, his resources, and his own locality better than anyone else" can at present, and that he acts rationally to take advantage of this knowledge—furthermore, that short of altering his surroundings or providing him with more assets, we cannot hope to improve his

productivity. Lastly, Waters suggests a tentative method by which to obtain more reliable information. (CILSS)

WEISSE, M., and JANSEN, A. 1976. Drought in Africa: climatic, ecological and sociological aspects. Dokumentationsdienst Afrika no. 14. Institut für Afrika-Kunde, Reihe A. pp 115. [23.00; 21.50]
The bibliography contains titles on the causes, extent, and consequences of the Sahelian drought, on international relief and on long-term programs for the rehabilitation of the drought-stricken areas. Included are studies on climatic, hydrological, and ecological conditions as well as on socioeconomic, historical, and political factors. Many publications are concerned with the problems of pastoralism and nomadism; other important topics are land use in semi-arid areas, soil conservation, management of water resources, and forestry. (CAB)

WHARTON, C.R. 1971. Risk, uncertainty and the subsistence farmer: technological innovation and resistance to change in the context of survival. Studies in Economic Anthropology AS7. [18.30]
The introduction of technology among subsistence farmers encounters resistance as profit maximization may not be as important in a subsistence or barter economy as the maximization of security and survival. Previous measures of risk are inadequate when applied to subsistence farmers. The author suggests studying the interaction between two sets of variables: (1) the absolute levels of farm family living as they relate to social standards for the minimal level of subsistence and the average productivity and income levels, and (2) the farmers subjective expected variance in output associated with the proposed technological introduction. (CILSS)

WILCOCK, D.C. 1978. The political economy of grain marketing and storage in the Sahel. Working Paper no. 24. East Lansing, USA: Michigan State University; African Rural Economy Program. [13.33; 21.30; 21.40]

WILDE, J.C. de. 1967b. Experience with agricultural development in tropical Africa. 2 vols. Baltimore, USA: Johns Hopkins University Press. [13.00; 22.00]

WILLIAMS, M. 1977. The Sahel: planning for the year 2000. An overall development strategy. OECD Observer 89: 27-31. [13.10]
The Sahel Development Plan (1978-2000) was drawn up by a Working Group formed at the first meeting of the Club du Sahel in Dakar in March 1976. The first action program (1978-82) cost $3000 million over the next 5 years excluding the development of the major river basins. The program for the development of the Sahel proposes objectives, the means of achieving them, and the time-table for doing so. It aims at integration of all resources, local and international, to implement a priority goal of food selfsufficiency. It covers an area that is capable of agricultural and general economic progress, and much better endowed with water, land, and human resources than is generally thought. The spirit of dialogue in the Club and its working methods should make it possible progressively to overcome the obstacles that are bound to arise during the long period over which the plan will be implemented. (CAB)

WINCH, F. 1976. Farming systems research at the International Institute of Tropical Agriculture. Ibadan, Nigeria: International Institute of Tropical Agriculture. [13.20]

WORLD METEOROLOGICAL ORGANIZATION. 1973. Agroclimatology in the semi-arid areas of Africa south of the Sahara. Geneva, Switzerland: World Meterological Organization. [11.10]

ZALLA, T., DIAMOND, R.B., and MUDAHAR, M.S. 1977. Economic and technical aspects of fertilizer production and use in West Africa. Working Paper no. 22. East Lansing, USA: Michigan State University, African Rural Economy Program. [19.13]

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116. Berg, E.J. 1975. 11.30.*84*
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119. Bergmann, H. 1972. 13.34.*29*
120. Bernus, E. 1974a. 20.20.*20*
121. Bernus, E. 1974b. 20.11.*20*
122. Bernus, E., Boutrais, J., and Pellissier, P. 1974. 20.20.*84*
123. Berthe, M., and Meyer-Ruhle, G.O. 1977. 13.31; 21.40.*13*
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125. Biggs, H.H., and Tinnermeier, R.L. 1974. 13.10.*84*
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128. Binet, J. 1970. 13.20.*84*
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131. Binswanger, H.P. nd. 18.30.*85*
132. Binswanger, H.P., Jodha, N.S., Ryan, J.G., and von Oppen, M. 1977. 12.00.*85*
133. Birnbaum, P. 1975. 13.31.*20*
134. Bitard, J.P. 1961. 14.00; 21.20.*47*
135. Black-Michaud, A. and J. 1978. 13.32.*30*
136. Blanc, C. le. 1962. 22.00.*30*
137. Blanc, C. le. 1964. 22.00.*30*
138. Blanc, J. le. 1969. 21.20.*85*
139. Blanchet, J. 1968-69. 14.00; 19.13.*85*
140. Blase, M.G. 1977. 13.30.*85*
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142. Bohannon, P. 1963. 15.10.*85*
143. Bonnefond, P. 1970. 20.12.*86*
144. Bond, M., and Lam, M. 1977. 13.32.*30*
145. Bonte, P. 1973. 20.20.*20*
146. Booth, S.A. 1976. 13.20.*56*
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148. Boserup, E. 1965. 13.10.*86*
149. Boulet, J. 1970. 22.00.*1*
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151. Bouman, F.J.A. and Harteveld, K. 1976. 17.00.*86*
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153. Bourgeot, A. 1977. 20.20.*20*
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155. Bourliaud, J., Boussard, J.M., and Leblanc, J. 1977. 18.20.*30*
156. Bourret, M.L. 1972. 19.13.*20*
157. Boutillier, J.L. 1962. 22.00.*20*
158. Boutillier, J.L. 1964. 15.10.*47*
159. Boyd, J.E.L., and Ayok, E.A. 1973. 20.12.*56*
160. Brasseur, G. 1961. 22.00.*14*
161. Braud, M. 1967. 13.20.*2*
162. Braud, M. 1976. 12.00; 13.20.*14*
163. Bray, F.R., and Nodzievor, S.K. 1961. 22.00.*9*
164. Brochier, J. 1968. 19.13.*30*
165. Brochier, J. 1971. 13.34.*31*
166. Broekhuyse, J.T. 1976. 22.00.*47*
167. Brothier, M.R. 1965. 19.13.*31*
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174. Buntjer, B.J. 1970a. 14.00.*56*
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177. Buntjer, B.J. 1971. 19.11.*56*
178. Buntjer, B.J. 1972. 13.32.*57*
179. Byerlee, D. 1973. 13.10.*57*
180. Byerlee, D. 1979. 16.00.*86*
181. Byerlee, D., Eicher, C., Liedholm, C., and Spencer D. 1977. 22.00.*86*
182. Cabot, J. 1953. 19.00.*4*
183. Caisse Centrale de Coopération Economique, Mali. 1977. 13.10.*14*
184. Caldwell, J.C. 1968. 16.24.*10*
185. Caldwell, J.C. 1969. 16.24.*10*
186. Campbell, D.J. 1977. 21.50.*20*
187. Cantrelle, B. 1969. 11.20.*31*
188. Cantrelle, P. 1962. 22.00.*31*
189. Cantrelle, P. 1969. 11.20.*31*
190. Capron, J. 1973. 14.00.*47*
191. Carr, M. 1976. 23.00/19.13.*86*
192. Carter, J. 1967. 20.11; 20.20.*2*
193. Caswell, G.H. 1975. 21.30.*57*
194. Catt, D.C. 1966. 12.00.*86*
195. CEEMAT/SEAE. 1968. 20.12.*86*
196. Center for Research on Economic Development. 1977. 13.10.*14*
197. Center for Research on Economic Development. 1977a. 23.00; 13.33; 21.40.*86*
198. Center for Research on Economic Development. 1977b. 13.33; 21.40.*86*
199. Central Statistics Division, Gambia. 1975. 11.30.*6*
200. Centre d'Etudes et de Recherches Ethonologiques, Bordeaux. 1976. 13.20.*20*
201. Chambers, R. 1972. 13.31.*86*
202. Chambers, R. 1978a. 21.10.*87*
203. Chambers, R. 1978b. 19.13.*87*
204. Chambers, R., and Howes, M. 1978. 19.13.*87*
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206. Chantran, P., and Grimal, R. 1971. 13.32; 20.12.*14*
207. Charlick, R.B. 1972a. 14.00.*21*
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219. Charreau, C. 1978. 11.10; 13.20.*87*
220. Chavatte, D., and Lemoigne, M. nd. 13.10.*31*
221. Chayanov, A.V. 1966. 22.00.*87*
222. Checchi and Company. 1970. 13.10.*87*
223. CILSS. 1977. 13.10. 13.20.*14*

224. Clark, C. 1962. 12.00.*87*
225. Clayton, E.W. 1964. 13.10; 18.20.*87*
226. Cleave, J.H. 1974. 22.00.*87*
227. Cleave, J.H. 1977. 18.00.*87*
228. Cline, W.R. 1973. 13.10; 21.10.*87*
229. Clough, P. 1977a. 21.10; 21.40.*57*
230. Clough, P. 1977b. 21.10; 21.40.*57*
231. CMDT. Mali. 1978a. 13.31.*14*
232. CMDT. Mali. 1978b. 13.31.*14*
233. CNPER. 1973. 11.00.*14*
234. CNRA (Senegal). 1973. 16.21.*31*
235. CNRA. 1974. 13.20; 13.31.*31*
236. CNRA. 1975. 23.00/13.20; 19.13.*31*
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240. CNRA. 1978a. 22.00.*32*
241. CNRA. 1978b. 22.00.*32*
242. CNRA/ISRA. 1976. 13.20.*32*
243. Cocheme, J., and Franquin, P. 1967. 11.10.*88*
244. Collins, J.D. 1974. 21.40.*21*
245. Collins, J.D. 1976. 13.10; 21.40.*22*
246. Collinson, M.P. 1972. 12.00; 22.00.*88*
247. Comité d'Information Sahel. 1975. 21.50.*88*
248. Communauté Economique de l'Afrique de l'OUest. 1976. 13.10.*88*
249. Comte, B. 1968. 13.34.*88*
250. Connell, J. 1973. 23.00/16.00.*88*
251. Connell, J., and Lipton, M. 1977. 12.00; 16.00.*88*
252. Copans, J., Couty, P., Roch, J., and Rocheteau, G. 1972. 22.00.*32*
253. Coppock, J.T. 1966. 13.10.*57*
254. Côte d'Ivoire, Ministère de la Recherche Scientifique. 1978. 13.20.*88*
255. Cotton, H.J., and Mesuri, L. 1968. 18.10.*1*
256. Couty, P.H. 1965. 19.10.*2*
257. Couty, P.H. 1968. 13.10.*88*
258. Couty, P.H. 1977. 16.21; 16.22.*32*
259. Croix, D. de la. 1976. 13.20.*15*
260. Czarnocki, K. 1973. 20.10.*88*
261. Daenen, J. 1975. 11.20.*22*
262. Dalby, D., and Harrison Church, R. 1973. 21.50.*89*
263. Dankoussou, I., Diarra, S., Laya, D., and Pool, D.I. 1975. 11.20.*22*
264. Daves, T., and Elterich, J. 1978. 21.30; 21.40.*22*
265. Davies, H.R.J. 1974. 11.20.*57*
266. Degand, J. 1972. 13.10.*4*
267. Delgado, C.L. 1977. 20.11.*47*
268. Delgado, C.L. 1978. 22.00.*48*
269. Deschamps, L. 1965. 16.10.*32*
270. Desroche, H., and Rambaud, P. 1971. 14.00.*89*
271. Deveze, J.C. 1969. 21.00.*89*
272. Devitt, P. 1977. 13.10.*89*
273. Diarassouba, V.C. 1968. 13.30.*32*
274. Diarra, F.A. 1971. 16.22.*22*
275. Diarra, S. 1972. 30.00.*89*
276. Diarra, S. 1975. 20.11.*22*
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279. Dickson, K.B. 1972. 19.13.*10*
280. Dione, J. 1975a. 13.10.*33*
281. Dione, J. 1975b. 19.12; 21.30; 21.40.*33*
282. Diziain, R. 1954. 22.00.*2*
283. Documentation Africaine. 1970. 13.10.*4*
284. Dommen, B. 1977. 19.13.*89*
285. Douglass, J. 1971. 13.32.*89*
286. Doyle, C.J. 1974. 19.13.*90*
287. Drop, A.B. 1975. 16.10.*90*
288. DSA, Upper Volta. 1976. 13.10.*48*
289. Dubois, J.P. 1971. 16.24; 22.00.*33*
290. Dubois, J.P. 1975. 16.24.*33*
291. Dubois, V.D. 1975a. 13.10. 21.50.*15*
292. Dubois, V.D. 1975b. 21.50.*90*
293. Dubois, V.D. 1975c. 13.10.*90*
294. Dubourg, J. 1957. 22.00.*48*
295. Dumont, R. 1951. 11.00.*33*
296. Dumont, R. 1966. 13.10.*90*
297. Dumont, R. 1970. 13.34.*90*
298. Dumont, R. 1971. 19.13.*90*
299. Duncan, E.R. 1977. 13.10.*90*
300. Dunsmore, J.R., Rains, A.B., Lowe, G.D.N., Moffatt, D.J., Anderson, I.P., and Williams, J.B. 1976. 11.10; 11.20; 22.00.*6*
301. Dupeyron. 1959. 22.00.*15*
302. Dupre, G. 1965. 14.00; 19.11.*33*
303. Durand, C.L., and Ferrier, M. 1963. 13.10; 21.40.*22*
304. Echard, N. 1964. 22.00.*22*
305. Eckebil, J.P. 1970. 13.20.*2*
306. Eddy, E. 1978. 20.11.*22*
307. Eicher, C.K. 1970. 13.20.*91*
308. Eicher, C.K., Sargent, M., Tapsoba, E., and Wilcock, E. 1976. 13.10.*48*
309. Eicher, C., Zalla, T., Kocher, J., and Winch, F. 1970. 13.10.*91*
310. Ejiga, N.O.O. 1977. 21.30; 21.40.*57*
311. Elias, T. 1962. 15.10.*58*
312. Elkan, W. 1960. 16.24.*91*
313. Elkan, W. 1976. 16.24.*33*
314. Elliott, H. 1977. 13.20.*91*
315. Elliott, H., Verlet, M., Hauchecorne, J., and George, M. nd. 13.32; 19.20
316. Engelhard, R. 1978. 13.32.*58*
317. Eriksen, J. 1978. 20.00.*6*
318. Ernst, K. 1971. 22.00.*15*
319. Ernst, K. 1976. 22.00.*15*
320. Eskelien, R.K. 1977. 22.00.*15*
321. Esmay, M.L., and Hall, C.W. (eds.). 1973. 20.12.*91*
322. Etienne, S., Jeanroy, J.L., and Raharivaivd. 1969. 21.10; 21.20.*4*
323. Faculty of Agriculture, University of Ghana. 1969. 13.10.*10*
324. Fall, M. 1976a. 12.00.*33*
325. Fall, M. 1976b. 18.20.*34*
326. Fall, M. 1977a. 19.12.*34*
327. Fall, M. 1977b. 22.00.*34*
328. Fall, M. 1977c. 22.00.*34*
329. Fall, M. 1978. 12.00.*34*
330. Falusi, A.O. 1973. 13.32.*58*
331. Falusi, B. 1976. 19.13.*58*
332. Famoriyo, S. 1978. 13.10.*58*
333. FAO. 1964. 19.20.*6*
334. FAO. 1970. 13.10.*34*
335. FAO. 1972. 13.20.*91*
336. FAO. 1973a. 13.33.*15*
337. FAO. 1973b. 13.20.*92*
338. FAO. 1974a. 14.00; 15.10.*92*

339. FAO. 1974b. 19.11.*92*
340. FAO. 1976. 13.10.*92*
341. Farrington, J. 1975. 12.00; 16.21.*92*
342. Faulkingham, R.H. 1977. 21.50.*22*
343. Faulkingham, R.H., and Thorbahn, P.F. 1975. 21.50.*22*
344. Faye, J. 1976. 13.20.*34*
345. Faye, J. 1977. 19.13; 20.12.*34*
346. Faye, J., Gallais, T., and Billaz, R. 1977. 16.10; 18.20.*92*
347. Faye, J. and Niang, M. 1977. 15.10.*34*
348. Ferguson, D.S. 1973. 23.00/13.10.*2*
349. Fine, J.C. 1968. 13.10.*58*
350. Flores, X.A. 1968. 13.10.*92*
351. Forrest, R.S. 1975. 21.30.*92*
352. Forrest, T.C. 1978. 13.10.*58*
353. Fournier, A. 1971. 18.10.*2*
354. Fournier, A. 1973. 20.12.*2*
355. Fourrier, P. 1968. 13.10.*34*
356. Fox, R.H. 1953. 16.00; 21.20.*6*
357. France, Ministère des Affaires Etrangères. 1973. 13.10.*23*
358. Frechou, H. 1966. 20.11; 20.20.*2*
359. Freyssinet, J., and Mounier, A. 1974. 12.00. *92*
360. Freyssinet, J., and Mounier, A. 1975. 12.00. *93*
361. Fricke, W. 1965a. 14.00; 19.10.*58*
362. Fricke, W. 1965b. 14.00; 19.10.*58*
363. Friedrich, K. 1977. 12.00.*93*
364. FSR Review Team. 1978. 13.20.*93*
365. Gagnon, G., and J. Savaria. 1976. 13.34.*34*
366. Gallais, J. 1956-57. 22.00.*23*
367. Gallais, J. nd. 22.00.*15*
368. Gallais, J., and Marie, J. 1975. 20.11.*23*
369. Gamble, D.P. 1955. 22.00.*6*
370. Gamble, D.P. 1957. 14.00.*6*
371. Gamble, D.P. 1958. 22.00.*6*
372. Garin, M. 1966. 20.12.*35*
373. Gastellu, J.M. 1969. 16.10; 16.21.*35*
374. Gastellu, J.M., and Delpech, B. 1974. 22.00. *35*
375. Gemmill, G., and Eicher, C.K. 1973. 13.20.*93*
376. Gentil, D. 1971a. 13.34.*23*
377. Gentil, D. 1971b. 13.34.*23*
378. Gentil, D. 1973. 13.34.*23*
379. Georges, M. 1974. 16.10; 19.10.*2*
380. Georgulas, N. 1969. 13.10.*93*
381. Gilbert, E.H. 1969. 21.40.*59*
382. Giles, P.H. 1965. 21.30.*59*
383. Gilg, J.P. 1970. 19.13.*5*
384. Gill, D.S. 1966. 22.00.*59*
385. Gissou, J.: see Guissou, J.
386. Glantz, M.H. 1976. 21.50.*93*
387. Gleave, M.B. 1965. 16.24.*59*
388. Gleave, M.B. 1969. 11.00.*93*
389. Gleave, M.B., and Thomas, M.F. 1968. 19.11.*2*
390. Goddard, A.D. 1969. 16.10.*59*
391. Goddard, A.D. 1970. 15.10.*59*
392. Goddard, A.D. 1972. 15.10.*59*
393. Goddard, A.D. 1973a. 16.10.*59*
394. Goddard, A.D. 1973b. 15.00; 16.00.*60*
395. Goddard, A.D., Fine, J.C., and Norman, D.W. 1971a. 15.00; 16.10.*60*
396. Goddard, A.D., Fine, J.C., and Norman, D.W. 1971b. 15.20.*60*
397. Goddard, A.D., Mortimore, M.J., and Norman, D.W. 1975. 13.10.*60*
398. Goldmark, S. 1977. 15.10.*23*
399. Gondiam, O. 1965. 15.10.*35*
400. Gordon, J. 1970. 13.32.*10*
401. Gorman, G.E. (ed.) 1978. 23.00/13.20.*93*
402. Gosselin, G. 1969. 13.34.*48*
403. Gosselin, G. 1970. 13.32; 14.00.*93*
404. Grandet, D. 1957. 11.20.*15*
405. Grant, M.W. 1950. 21.20.*6*
406. Gronoff, J.D. 1965-66. 19.10.*23*
407. Gronoff, J.D., Masseport, E., and Valancot, A. 1966. 22.00.*23*
408. Guggenheim, H. 1977. 21.30.*16*
409. Guggenheim, H. 1978. 21.30.*16*
410. Guillard, J. 1958. 16.20.*2*
411. Guillard, J. 1965. 11.10; 11.20; 22.00.*2*
412. Guillaume, G.M.D., and Bederman, S.H. 1967. 22.00.*3*
413. Guillemin, R. 1956. 11.10.*93*
414. Guinard, A. 1967. 13.20.*93*
415. Guissou, J. 1977. 13.31; 16.22.*48*
416. Guissou, J., Lamizana, M., and Amadou, A. 1976. 16.22.*48*
417. Gwynn, C.A. 1976. 13.31.*16*
418. Haeringer, P. 1973. 16.24.*93*
419. Hallaire, A. 1961. 15.20; 19.11.*3*
420. Hallaire, A. 1971. 14.00.*3*
421. Hallaire, A. 1972. 21.40.*3*
422. Hammond, P.B. 1959. 14.00.*48*
423. Hommond, P.B. 1967. 16.20.*48*
424. Hansel L.H. 1971. 19.13.*11*
425. Harriss, B. 1978a. 13.33; 21.40.*93*
426. Harriss, B. 1978b. 13.33; 21.40.*94*
427. Harriss, B. 1978c. 23.00/13.33; 21.40.*94*
428. Hasif, Le. 1978. 20.12.*94*
429. Hasle, H. 1965. 13.00; 22.00.*1*
430. Haswell, M.R. 1953. 22.00.*6*
431. Haswell, M.R. 1963. 22.00.*7*
432. Haswell, M.R. 1975. 13.10; 22.00.*7*
433. Hata, N. 1973. 19.11.*3*
434. Haugerud, A. 1978. 12.00.*94*
435. Hays, H.M. 1973. 21.40.*60*
436. Hays, H.M. 1975a. 21.40.*61*
437. Hays, H.M. 1975b. 21.40.*61*
438. Hays, H.M. 1976. 21.40.*61*
439. Hays, H.M., and Raheja, A.K. 1977. 19.13.*61*
440. Hedges, T.R. 1963. 12.00.*94*
441. Helleiner, G.K. 1966. 13.20.*61*
442. Helleiner, G.K. 1975. 18.20.*94*
443. Hill, P. 1966. 13.20.*94*
444. Hill, P. 1968. 21.10.*61*
445. Hill, P. 1969. 22.00.*61*
446. Hill, P. 1970. 22.00.*94*
447. Hill, P. 1972. 22.00.*62*
448. Hill, P. 1977. 22.00.*62*
449. Hogendorn, J.S. 1966. 13.10.*62*
450. Hogendorn, J.S. 1976. 13.10.*62*
451. Hopkins, A.G. 1973. 11.00.*94*
452. Hopkins, E. 1972. 22.00.*35*
453. Hopkins, E. 1974. 13.32; 22.00.*35*
454. Hopkins, E. 1975. 22.00.*35*
455. Hopkins, E. 1976. 16.10.*35*
456. Hopkins, N.S. 1969a. 13.10; 14.00.*16*
457. Hopkins, N.S. 1969b. 13.10; 14.00.*94*
458. Hopkins, N.S. 1972. 13.10; 14.00.*16*

459. Horowitz, M.M. 1972. 20.11; 20.20.*23*
460. Horowitz, M.M. 1976. 20.00; 21.50.*94*
461. Horowitz, M., Stacy, R., Morris, W., and Wissenborne, D. 1974. 13.10.*94*
462. Huizinga, B. 1978. 13.31.*62*
463. Huizinga, B., Reawaruw, I.P., Engelhard, R.J., Wit, T.J. de, and Etuk, E.G. 1978a. 13.31.*63*
464. Huizinga, B., Reawaruw, I.P., Engelhard, R.J., Wit, T.J. de, and Etuk, E.G. 1978b. 13.31.*63*
465. Hunter, G. 1969. 13.10.*95*
466. Hunter, G. 1973. 13.10.*95*
467. Hunter, G. 1977. 13.10.*95*
468. Hunter, J.M. 1966. 21.20.*11*
469. Hunter, J. 1977. 13.10.*95*
470. Hurault, J. 1964. 20.11.*3*
471. Hurault, J., and Vallet, J. 1964. 22.00.*1*
472. IBRD. 1974. 13.10.*36*
473. IBRD. 1976. 13.10.*95*
474. ICRISAT. 1975. 11.00; 13.20.*95*
475. ICRISAT. 1976. 13.20.*95*
476. ICRISAT. 1977a. 13.20.*16*
477. ICRISAT. 1977b. 13.20.*95*
478. ICRISAT. 1977c. 13.20.*36*
479. ICRISAT. 1978a. 13.20.*16*
480. Idusogie, E.O. 1973. 21.20.*95*
481. Idusogie, E.O., Olayide, S.O., and Olatunbosun, D. 1973. 21.30; 21.40.*63*
482. IER/Institut Royal des Regions Tropicales Pays-Bas. 1978. 13.20.*16*
483. Ijere, M.O. 1975. 13.32.*63*
484. ILCA/CIPEA. 1978. 20.00.*16*
485. ILO. 1978. 16.22.*95*
486. INRA du Niger. 1976. 13.20.*23*
487. INRA du Niger. 1977. 13.20.*24*
488. INRA du Niger. nd. 13.20.*24*
489. INRA du Niger 1978. 13.20.*24*
490. INSEE, France. 1970. 11.30.*24*
491. Institut d'Economie Rurale. 1974. 13.31.*16*
492. Institut d'Economie Rurale. 1976a. 13.20.*16*
493. Institut d'Economie Rurale. 1976b. 12.00.*16*
494. Institut d'Economie Rurale. 1977a. 12.00. 13.20.*16*
495. Institut d'Economie Rurale. 1977b. 13.20.*17*
496. Institut d'Economie Rurale. 1978a. 13.20.*17*
497. Institut d'Economie Rurale. 1978b. 13.33.*17*
498. Institute for Agricultural Research. 1972. 13.20.*95*
499. Institut d'Ethnologie. 1966. 22.00.*5*
500. Institut du Sahel. nd. 13.20.*95*
501. Institut du Sahel. 1977. 13.20.*95*
502. International Development Research Centre. 1973. 21.20.*63*
503. International Fertilizer Development Center. 1976. 13.32; 19.13.*96*
504. International Monetary Fund. 1970. 13.10.*24*
505. IRAT. 1971. 13.20.*36*
506. IRAT. 1974. 13.20; 13.31.*36*
507. IRAT. 1977a. 23.00/13.20; 19.12.*96*
508. IRAT. 1977b. 13.20.*96*
509. IRAT. 1978a. 23.00/13.20.*96*
510. IRAT. 1978b. 23.00/13.20.*96*
511. IRAT/CNRA. 1973. 13.20; 13.31.*36*
512. IRAT, Upper Volta. nd. 13.20.*49*
513. ISRA. 1977. 13.20; 13.31.*36*
514. ISRA. 1978. 23.00/13.20.*36*
515. ISRA/GERDAT. 1977a. 13.20; 13.31.*36*
516. ISRA/GERDAT. 1977b. 13.20; 13.31.*36*
517. ISRA/GERDAT. 1978. 13.20; 13.31.*36*
518. Iyoha, M.A. 1972. 13.10.*64*
519. Jean, S. 1975. 19.11.*96*
520. Jellema, B.M. 1973. 13.33.*96*
521. Jiggins, J. 1977. 13.32.*96*
522. Jodha, N.S. 1977. 19.12.*97*
523. Johl, S.S. 1971. 13.33.*97*
524. Johnson, A.W. 1972. 19.11.*97*
525. Johnston, B.F. 1958. 11.00.*97*
526. Jones, M.J. 1973. 11.10.*97*
527. Jones, R.G.B. 1976. 11.10; 13.20.*7*
528. Jones, W.I. 1970. 22.00.*17*
529. Jones, W.I. 1973. 13.10; 22.00.*17*
530. Jones, W.I. 1976. 13.10; 22.00.*17*
531. Jones, W.O. 1968. 16.00.*97*
532. Jonge, K. de, Klei, J. van der, Meilink, H., and Storm, J.R. 1976. 16.24.*36*
533. Joyce, S., and Beudot, F. 1976. 23.00/21.50.*97*
534. Kafando, T.W. 1972a. 20.11.*49*
535. Kafando, T.W. 1972b. 12.00; 20.11.*49*
536. Kafando, T.W. 1972c. 13.10; 14.00.*49*
537. Kafando, W.T. 1973. 20.11.*49*
538. Kafando, W.T. 1975. 13.31; 16.24; 19.20.*49*
539. Kane, F. 1975. 16.22.*36*
540. Kane, F., and Lericollais, A. 1975. 16.24.*36*
541. Kassam, A.H. 1973. 13.20.*64*
542. Kassam, A.H. 1976. 19.12.*97*
543. Kassam, A.H., and Andrews, D.J. 1975. 13.20.*64*
544. Kassam, A.H., Dagg, M., Kowal, J., and Khadr, F. 1976. 13.10.*64*
545. Kassam, A.H., Kowal, J.M., Dagg, M., and Harrison, M.N. 1975. 13.20.*64*
546. Kassapu, S. 1976. 13.20.*97*
547. Kates, R.W., Johnson, D.L., and Haring, K.J. 1977. 13.10.*97*
548. Kearl, B. 1976. 12.00.*97*
549. Keita, M. 1975. 13.10.*24*
550. King, R. 1975. 13.34.*64*
551. King, R. 1976a. 13.32; 13.34.*64*
552. King, R, 1976b. 13.34.*65*
553. King, R. 1978. 13.34.*65*
554. Kintz, D. 1977. 20.20.*24*
555. Kleene, P. 1973. 13.20; 13.31.*36*
556. Kleene, P. 1974a. 15.10.*36*
557. Kleene, P. 1974b. 13.20.*36*
558. Kleene, P. 1976. 16.10.*36*
559. Kleene, P., Tangara, M. et al. 1977. 16.10.*17*
560. Kleene, P. and Tourte, R. 1973. 13.20; 13.31.*37*
561. Kline, C.K., Green, D.A.G., Donahue, R.L. and Stout, B.A. 1969. 20.12.*97*
562. Kohler, J.M. 1967. 14.00.*49*
563. Kohler, J.M. 1968. 15.10.*49*
564. Kohler, J.M. 1971. 22.00.*49*
565. Kohler, J.M. 1972. 16.24.*49*
566. Kohlhatkar, V.Y. 1965. 22.00.*65*
567. Kolawole, M.I. 1974. 20.12.*65*
568. Konan, M. 1975. 16.22; 16.23.*65*
569. Kone, D. 1972. 20.12.*17*
570. Kosinski, L.A., and Prothero, R.M. (eds.). 1974-75. 23.00/16.23; 16.24.*97*
571. Kowal, J.M., and Kassam, A.H. 1973. 21.50.*65*
572. Kowal, J.M., and Kassam, A.H. 1978. 11.00.*97*
573. Kowal, J.M. and Knabe, D.T. 1972. 11.10.*65*

574. Krausz, J.P. 1974. 19.12.*97*
575. Krings, T. 1976. 20.11.*49*
576. Kuranchie, P.A. 1975. 19.12.*11*
577. Lacombe, and Orlhae, 1967. 16.21.*37*
578. Lacombe, B. 1969. 16.24.*37*
579. Lacombe, B. 1972a. 16.24.*37*
580. Lacombe, B. 1972b. 16.24.*37*
581. Lacombe, B., Vavgelade, J., Drove, B., Baviere, M., Bertrand, A., and Duvchy, S. 1977. 16.24.*37*
582. Lacrouts, M. 1978. 20.00.*17*
583. Lagemann, J. 1977. 22.00.*98*
584. Lahuec, J.P. 1961. 22.00.*49*
585. Lahuec, J.P. 1970. 22.00.*49*
586. Lahuec, J.P. nd. 19.20.*50*
587. Laurent, C.K. 1968. 20.12.*65*
588. Laurent, C.K. 1969. 13.32.*65*
589. Laville, P. 1972. 13.34.*37*
590. Lawson, R.M. 1968. 16.21.*11*
591. Lawson, R.M. 1976. 16.22.*98*
592. Laya, D. 1975. 20.11.*24*
593. Leeuw, P. de, Lesslie, A., and Tuley, P. 1972. 11.10.*65*
594. Lele, U. 1975. 13.31.*98*
595. Lemoigne, M., and Chavatte, M. 1972a. 13.10.*18*
596. Lemoigne, M., and Chavatte, M. 1972b. 13.32; 13.33.*24*
597. Lemoigne, M., and Memni, P. 1973. 13.10.*18*
598. Lericollais, A. 1970. 13.10.*37*
599. Lericollais, A. 1972. 15.10.*37*
600. Lericollais, A. 1973. 11.00.*37*
601. Lericollais, A. 1975. 16.24.*37*
602. Lericollais, A., and Verniere, M. 1975. 16.24.*37*
603. Lesteven, A. 1974. 13.10.*24*
604. Levante, M., Montenez, J., and Droute, P. 1968. 19.13.*5*
605. Levi, J., and Bellamy, M. 1975. 23.00/22.00.*98*
606. Lewicki, T., and Johnson, M. 1974. 21.20.*98*
607. Lewis, J.V.D. 1978. 14.00.*18*
608. Lipton, M.A., and Moore, M. 1972. 12.00.*98*
609. Livingston, I. 1977. 21.20; 21.40.*98*
610. Lubin, S. 1977. 19.20.*37*
611. Luc, K.K., and Reid, E.F.J. 1978. 11.30; 13.31.*24*
612. Luning, H.A. 1963a. 22.00.*65*
613. Luning, H.A. 1963b. 22.00.*66*
614. Luning, H.A. 1963c. 22.00.*66*
615. Luning, H.A. 1964. 16.21.*66*
616. Luning, H.A. 1965. 15.20.*66*
617. Luning, H.A. 1967a. 13.10; 16.21.*66*
618. Luning, H.A. 1967b. 18.10; 18.20.*66*
619. Luning, H.A. 1972. 13.31.*98*
620. Luning, H.A. 1978. 13.20.*98*
621. Lynch, F. 1976. 12.00.*99*
622. MacArthur, H.A. 1968. 12.00.*99*
623. Mac Dowell, C.M. 1966. 15.10.*66*
624. Maiga, M. 1976. 13.10.*37*
625. Mainet, G., and Nicolas, G. 1964a. 22.00.*24*
626. Malassis, L. 1977. 13.20; 13.31.*99*
627. Mann, R. 1974. 12.00; 13.20.*99*
628. Mann, W.S. 1967. 22.00.*67*
629. Manneh, M. 1975. 13.34.*7*
630. Marchal, J.Y. 1977. 15.10; 19.11.*50*
631. Marticou, H. 1973. 13.1 ; 19.13.*3*
632. Massachusetts Institute of Technology. 1974. 13.10.*99*
633. Matlon, P.J. 1976. 22.00.*67*
634. Matlon, P.J. 1977. 22.00.*67*
635. Matlon, P. 1978. 22.00.*67*
636. Matlon, P., and Newman, M. 1978. 22.00.*67*
637. Maton, G. 1969. 19.20.*5*
638. Matthews, M.D.P., and Pullen, D.W.M. 1975. 13.20; 19.13.*7*
639. Mauss, M. 1954. 14.00.*99*
640. Maymard, J. 1974. 14.00.*38*
641. M'Bengue, A.B. 1965. 15.10.*38*
642. McCall, D.F. 1969. 13.10; 14.00.*99*
643. McLoughlin, P.F.M. (ed.). 1970. 13.10.*99*
644. Medani, A.I. 1970. 21.40.*100*
645. Meek, G.K. 1925. 19.11.*67*
646. Meillassoux, C. 1960. 11.00; 16.10.*100*
647. Meillassoux, C. 1970. 13.10; 14.00.*18*
648. Meillassoux, C. 1974. 21.50.*100*
649. Mellor, J.W. 1976. 13.10.*100*
650. Mendras, H. 1970. 13.10.*100*
651. Mendras, H. 1976a. 18.10.*100*
652. Mendras, H. et al. 1976b. 14.00.*100*
653. Mendy, R.M. 1976. 13.32.*38*
654. Merlier, H. 1972. 13.20.*38*
655. Mijindadi, N. 1976. 13.10.*67*
656. Miller, N.H. (ed.). 1969. 23.00/13.20.*100*
657. Miller, R. 1952. 19.11.*67*
658. Milleville, P. 1974. 22.00.*38*
659. Ministère du Développement Rural, Upper Volta. 1978. 13.10.*50*
660. Ministère du Plan, Upper Volta. 1978. 23.00/11.00.*50*
661. Minvielle, J. 1976. 16.24.*38*
662. Monnier, J. 1973. 13.20; 13.31.*38*
663. Monnier, J. 1974. 20.12.*38*
664. Monnier, J. 1976a. 19.10.*38*
665. Monnier, J. 1976b. 19.10.*38*
666. Monnier, J., Diagne, A., Sow, D. and Sow, Y. 1974. 16.10; 16.21.*38*
667. Monnier, J., and Talibart, P. 1971. 22.00.*39*
668. Monod, T. (ed.). 1975. 20.20.*100*
669. Monyo, J.H., Kerr, A.D.R., and Campbell, M. 1976. 13.20.*101*
670. Morgan, W.B. 1969. 11.00.*101*
671. Morris, W. 1977. 11.00.*101*
672. Morris, W., McDill, R., and Davis, W. 1977. 13.31.*39*
673. Morris, W., and Stacy, R. 1974. 22.00.*101*
674. Morris, W., Stacy, R., and Wisenborne, D. 1974. 13.10.*101*
675. Mortimore, M.J. 1967. 15.10.*67*
676. Mortimore, M.J. 1970. 11.10; 11.20.*68*
677. Mortimore, M.J. 1971. 15.10; 19.11.*68*
678. Mortimore, M.J. 1972. 11.20.*24*
679. Mortimore, M.J. 1973. 21.10; 21.50.*68*
680. Mortimore, M.J. 1974. 13.10.*68*
681. Mortimore, M.J., and Wilson, J. 1965. 22.00.*68*
682. Mphuru, A.N. 1976. 23.00/21.30.*101*
683. Muller, S. nd. 21.40.*5*
684. Murdock, G.P. 1960. 19.12.*101*
685. Murphy, J., and Sprey, L. 1978. 19.20.*50*
686. Murphy, M.C., and Acquaye, E. 1972. 15.10.*11*
687. Nabos, J. 1963-65. 13.20.*24*

688. Nacro, A.M. (ed.). 1977. 13.10; 13.20.*101*
689. Nenema, E.K. 1969. 14.00; 19.11.*50*
690. Netting, R. 1965. 16.10.*68*
691. Netting, R. 1968. 22.00.*68*
692. Neumann, J.L. 1973. 12.00.*101*
693. Neveu, J. 1975. 14.00.*50*
694. Newman, M.D. 1977. 21.40.*101*
695. Newman, M.D. 1978. 23.00/21.20.*101*
696. Newman, M.D., and Wilcock, D.C. 1976. 21.20; 21.40.*101*
697. Nguyen Van Chi-Bonnardel, R. 1968. 16.23.*39*
698. Nicolas, G. 1960. 22.00.*24*
699. Nicolas, G. 1961-62. 22.00.*24*
700. Nicolas, G. 1962. 22.00.*24*
701. Nicolas, G. 1965. 22.00.*24*
702. Nicolas, G. 1969. 13.10.*25*
703. Nicolas, G. 1973. 14.00.*25*
704. Nicolas, G. 1974. 17.00.*25*
705. Nicolas, G. 1975. 14.00.*25*
706. Nicolas, B., Doumesche, H., and Mouche, M.D. nd. 14.00; 19.20.*25*
707. Nicou, R. 1977. 13.20.*39*
708. Nielander, W. 1969. 13.31.*11*
709. Niger, Ministère de l'Economie Rurale. 1971. 13.34.*25*
710. Niger, Ministère de l'Economie Rurale. 1973. 11.30.*25*
711. Niger, Ministère de l'Economie Rurale. 1975. 11.30.*25*
712. Niger, Ministère du Développement. 1976. 11.30.*25*
713. Niger, Ministère du Développement. 1977. 13.10.*25*
714. Norman, D.W. 1967a. 15.00; 16.10.*69*
715. Norman, D.W. 1967b. 15.20.*69*
716. Norman, D.W. 1967c. 15.00; 16.20.*69*
717. Norman, D.W. 1968. 16.21; 16.23.*69*
718. Norman, D.W. 1969a. 12.00.*69*
719. Norman, D.W. 1969b. 16.21; 16.23.*69*
720. Norman, D.W. 1970a. 20.12.*69*
721. Norman, D.W. 1970b. 13.10; 19.13.*69*
722. Norman, D.W. 1971. 13.10; 19.13.*69*
723. Norman, D.W. 1972a. 22.00.*70*
724. Norman, D.W. 1972b. 22.00.*70*
725. Norman, D.W. 1973a. 19.12.*70*
726. Norman, D.W. 1973b. 22.00.*70*
727. Norman, D.W. 1973c. 13.20.*70*
728. Norman, D.W. 1973d. 12.00.*70*
729. Norman, D.W. 1973e. 18.20; 18.30.*70*
730. Norman, D.W. 1973f. 22.00.*71*
731. Norman, D.W. 1974. 19.12.*71*
732. Norman, D.W. 1976. 13.32; 19.13.*71*
733. Norman, D.W. 1977a. 22.00.*71*
734. Norman, D.W. 1977b. 19.12.*71*
735. Norman, D.W. 1977c. 12.00.*102*
736. Norman, D.W. 1978a. 22.00.*71*
737. Norman, D.W. 1978b. 13.20.*71*
738. Norman, D.W., Beeden, P., Kroeker, W.J., Pryor, D.H., Huizinga, B., and Hays, H.M. 1976a. 19.13.*71*
739. Norman, D.W., Beedebn P., Kroeker, W.J., Pryor, D.H., Huizinga, B., and Hays, H.M. 1976b. 19.13.*72*
740. Norman, D.W., Buntjer, B.J., and Goddard, A.D. 1970. 19.13.*72*
741. Norman, D.W., Fine, J.C., Goddard, A.D., Pryor, D.H., and Kroeker, W.J. 1976a. 22.00.*72*
742. Norman, D.W., Fine, J.C., Goddard, A.D., Pryor, D.H., and Kroeker, W.J. 1976b. 22.00.*72*
743. Norman, D.W., Hayward, J.A., and Hallam, H.R. 1974. 19.13.*72*
744. Norman, D.W., Hayward, J.A., and Hallam, H.R. 1975. 19.13.*72*
745. Norman, D.W., and Krishnaswamy, M.S. 1976. 19.13.*72*
746. Norman, D.W., Pryor, D.H., and Gibbs, C.J.N. 1978, 1979. 22.00.*72*
747. Norman, D.W., and Simmons, E.B. 1973. 13.20. *73*
748. Oaulme, D. (ed.). 1960. 16.22.*102*
749. O'Brien, D.B. Gruise. 1971. 13.34.*39*
750. OECD. 1977a. 13.33; 21.30.*102*
751. OECD. 1977b. 13.33.*102*
752. Ofori, I.M. (ed.). 1973. 13.10.*102*
753. Ogborn, J.E.A., and Mansfield, R.M. 1978. 13.20.*73*
754. Ogbu, J.U. 1973. 21.20.*102*
755. Ogunfowora, O. 1972a. 13.33; 21.40.*73*
756. Ogunfowora, O. 1972b. 18.20.*73*
757. Ogunfowora, O. 1973. 13.32; 19.13.*73*
758. Ogunfowora, O., Essang, S.M., and Olayide, S.O. 1974-75. 19.12.*73*
759. Ogunfowora, O., and Norman, D.W. 1973a. 19.13.*74*
760. Ogunfowora, O., and Norman, D.W. 1973b. 19.12; 19.13.*74*
761. Ojo. F. 1977. 13.10.*74*
762. Okurume, G.E. 1973. 13.10.*74*
763. Olatunbosum, D., and Olayami, J.K. 1973. 13.10.*74*
764. Olayide, S.O., Ogunfowora, O., and Essang, S.M. 1974. 13.33.*75*
765. Olayide, S.O., Olatunbosun, D., Idusogie, E.O., and Abiagom, J.D. 1972. 13.10.*75*
766. Olukosi, J.O. 1976a. 18.30.*75*
767. Olukosi, J.O. 1976b. 13.32.*75*
768. Oluwasanmi, H.A. nd. 13.34.*25*
769. Oluwasanmi, H.A. 1966. 13.10.*75*
770. Oluwasanmi, H.A., and Alao, J. 1964. 13.32.*75*
771. Omololu, A. 1971. 21.20.*102*
772. Oni, S.A., and Olatunbosun, D. 1973. 13.33.*75*
773. Options Méditerranéennes. 1970. 20.12.*102*
774. ORSTOM. 1975. 16.24.*50*
775. ORSTOM. 1977a. 23.00/13.20.*39*
776. ORSTOM. 1977b. 23.00/22.00.*102*
777. ORSTOM. 1977c. 23.00/22.00.*102*
778. ORSTOM. 1978. 23.00/22.00.*102*
779. Owen, D.F. 1973. 11.00.*102*
780. Owens, T. 1975. 13.10.*18*
781. Oyenuga, V.A. 1967. 11.00.*76*
782. Pala, A. 1976. 13.20. 16.22.*102*
783. Palmer-Jones, R.W. 1978a. 12.00.*76*
784. Palmer-Jones, R.W. 1978b. 12.00; 21.10.*76*
785. Palmer-Jones, R.W., and Norman, D.W. 1977. 12.00.*76*
786. Pauvert, J.C., and Lancrey-Javal, J.L. 1957. 30.00.*3*
787. Paylore, P., and Haney, R. (eds.). 1976. 13.10.*102*
788. Peacock, J.M. 1967. 20.12.*7*

789. Pease, S. 1976. 13.30.*103*
790. Peil, M. 1977. 16.23; 16.24.*7*
791. Pelissier, P. 1966. 22.00.*39*
792. Pelissier, P. 1970. 13.31.*39*
793. Philippe, J. 1975. 20.11.*50*
794. Phillips, P.G. 1954. 21.20.*103*
795. Piault, C. 1965. 16.22.*25*
796. Picq, A. du. 1933. 11.20.*25*
797. Platt, B.S. 1954. 21.20.*7*
798. Pocthier, G. 1973. 13.20; 13.31.*39*
799. Podlewski, A.M. 1966. 22.00.*3*
800. Podlewski, A.M. 1971. 22.00.*3*
801. Polanyi, K. 1964. 15.10.*103*
802. Pollet, E., and Winter, G. 1969. 14.00.*18*
803. Poncet, Y. 1973-74. 21.50.*25*
804. Pouillon, J. 1964. 14.00.*5*
805. Pradeau, C. 1970. 14.00; 19.11.*50*
806. Pradeau, C. 1975. 19.11.*50*
807. Prothero, R.M. 1957. 19.11.*77*
808. Prothero, R.M. (ed.). 1972. 11.00.*103*
809. Purdue University. 1978a. 13.20.*103*
810. Purdue University. 1978b. 19.20.*103*
811. Purdue University. 1978c. 19.12.*103*
812. Quan, C. 1976. 13.34.*26*
813. Quraishy, B.B. 1971. 15.10.*11*
814. Raay, H.G.T. van. 1969. 20.20.*77*
815. Raay, H.G.T. van. 1974. 20.20.*77*
816. Raay, H.G.T. van. 1975. 20.11; 20.20.*77*
817. Raay, H.G.T. van, and Leeuw, P.N. de. 1970. 20.11.*77*
818. Raay, H.G.T. van, and Leeuw, P.N. de. 1974. 20.11.*77*
819. Radcliffe-Brown, A.R. 1952. 14.00; 16.10.*103*
820. Rado, E., and Sinha, R. 1977. 13.10.*103*
821. Rake, A. 1975. 13.10.*77*
822. Ramond, C. 1975. 13.20; 13.31.*40*
823. Ramond, C. 1976. 13.31; 12.00.*40*
824. Ramond, C. et al. 1971. 13.20.*39*
825. Ramond, C., and Fall, M. 1976. 13.31; 22.00.*40*
826. Ramond, C., Fall, M., and Diop, T.M. 1976a. 13.31; 22.00.*40*
827. Ramond, C., Fall. M., and Diop, T.M. 1976b. 13.31; 22.00.*40*
828. Ramond, C., Monnier, J., and Cadot, R. 1974. 13.20.*40*
829. Raulin, H. nd a. 13.10; 14.00.*26*
830. Raulin, H. nd b. 22.00.*26*
831. Raulin, H. 1963. 15.00.*26*
832. Raulin, H. 1964. 22.00.*26*
833. Raulin, H. 1969. 14.00.*26*
834. Ravault, F. 1964. 11.00; 16.23; 16.24.*40*
835. Raynaut, C. 1969. 19.20.*26*
836. Raynaut, C. 1971. 22.00.*26*
837. Raynaut, C. 1973a. 22.00.*26*
838. Raynaut, C. 1973b. 21.10; 21.40.*26*
839. Raynaut, C. 1973c. 14.00.*26*
840. Raynaut, C. 1976. 21.10; 21.40.*26*
841. Raynaut, C. 1977a. 11.30.*27*
842. Raynaut, C. 1977b. 22.00.*27*
843. Reawaruw, I.P. 1978. 13.32.*77*
844. Reboul, C. 1972. 13.10; 13.31.*40*
845. Reboul, C. 1976a. 21.50.*40*
846. Reboul, C. 1976b. 13.10.*41*
847. Remfisch, F. 1956. 14.00; 16.20; 19.11.*3*
848. Remy, G. 1967. 22.00.*51*
849. Remy, G. 1968. 16.23.*51*
850. Remy, G. 1970a. 14.00.*51*
851. Remy, G. 1970b. 15.20.*51*
852. Remy, G. 1972. 22.00.*51*
853. Remy, G. 1973a. 16.24.*51*
854. Remy, G. 1973b. 23.00/16.24.*51*
855. Remy, G. 1977. 16.24.*51*
856. Remy, G. nd. 22.00.*50*
857. RERU (ed.). 1967. 12.00.*77*
858. RERU. 1972. 13.10.*78*
859. Reverdy, J.C. 1967. 14.00; 15.10.*41*
860. Reyna, S. 1977. 16.10.*5*
861. Richard, J.F. 1974. 13.31; 13.32.*41*
862. Richard, J.F. 1975a. 13.20; 13.31.*41*
863. Richard, J.F. 1975b. 13.31; 19.13.*41*
864. Richard, J.F. 1975c. 22.00.*41*
865. Richard, J.F., and Faye, J. 1975. 13.30.*41*
866. Richard, J.F., Fall, M., and Attonaty, J.M. 1976. 18.20.*41*
867. Riehl, S., Kinch, M., and Baker, R. 1976. 23.00/11.00.*103*
868. Ripley, P. 1975. 19.11.*103*
869. Robin, G. 1976. 23.00/22.00.*27*
870. Robson, P., and Smith, J. 1971. 13.10.*21*
871. Roch, J. 1969. 16.21.*41*
872. Roch, J. 1975. 23.00/21.50.*103*
873. Roch, J. 1976. 16.23.*41*
874. Roch, J., and Rocheteau, G. 1971. 11.00.*42*
875. Roch, J., and Rocheteau, G. 1975. 13.32.*42*
876. Rocheteau, G. 1969. 14.00; 16.10; 16.21.*42*
877. Rocheteau, G. 1970. 22.00.*42*
878. Rocheteau, G. 1974. 19.11; 21.20.*42*
879. Rocheteau, G. 1975a. 22.00.*42*
880. Rocheteau, G. 1975b. 16.24.*42*
881. Rochette, P. nd. 22.00.*27*
882. Rochette, R. 1965a. 22.00.*27*
883. Rochette, R. 1965b. 16.23; 19.11.*27*
884. Rochette, R., Gronoff, J.D., Masseport, E., and Valancot, A. 1966. 22.00.*27*
885. Rockefeller Foundation. 1975. 13.10.*103*
886. Rosa, J.L. le, and Belmont, M. 1962. 11.30.*42*
887. Rouamba, T.B. nd. 22.00.*51*
888. Rupp, M.A. 1976. 14.00.*27*
889. Russel, K.L. 1970. 19.12.*12*
890. Ruthenberg, H. 1971. 19.00; 20.00.*103*
891. Ryan, C. 1974. 13.32; 13.34.*27*
892. Ryan, J.G. 1977. 13.20.*104*
893. Ryan, J.G. and Associates. 1975. 11.00.*104*
894. SAED. 1978. 22.00.*51*
895. Sahlins, M. 1974. 22.00.*104*
896. Santoir, C.J. nd. 20.20; 21.50.*42*
897. Santoir, C.J. 1975. 16.24.*42*
898. Sardan, J.P.O. de. nd. 14.00.*27*
899. Sardan, J.P.O. de. 1976. 11.20.*27*
900. Sargent, M. 1974. 13.20.*43*
901. Sargent, M. 1975. 13.31; 20.12.*27*
902. Sargent, M. 1977. 13.31; 20.12.*27*
903. SATEC, France. 1973. 13.31.*51*
904. Savonnet, G. 1970. 14.00; 15.00.*51*
905. Sawadogo, P. et al. 1975. 13.31; 19.20.*51*
906. Sawadogo, R.C. 1977. 23.00/16.24.*104*
907. SCET. 1975. 13.10.*104*
908. Schulz, M., and Hilbrink, A. 1977. 13.32.*51*
909. Scott, E.P. 1974. 22.00.*78*
910. SEDES, France. nd. 11.30.*52*
911. SEDES, France. 1963. 19.10.*27*

912. Seibel, H.D., and Massing, A. 1974. 13.34; 14.00.*104*
913. Sene, D., and N'Diaye, M. 1973. 13.20.*43*
914. Sene, I. 1978. 13.32; 21.10.*43*
915. Senegal, Ministère de l'Agriculture. 1969. 13.10.*43*
916. Senegal, Ministère de Développement Rural. 1977. 13.10.*43*
917. Shapiro, K.H. 1976. 18.00.*104*
918. Sidibe, H. 1976. 22.00.*18*
919. Silvestre, P. 1961. 23.00; 13.20.*43*
920. Silvestre, P., and Bigot, Y. 1972. 13.31; 19.13.*43*
921. Simmons, E.B. 1971. 13.10.*78*
922. Simmons, E.B. 1973. 21.20.*78*
923. Simmons, E.B. 1975. 16.22; 16.23.*78*
924. Simmons, E.B. 1976a. 21.20.*78*
925. Simmons, E.B. 1976b. 16.22; 21.10.*78*
926. Simmons, E.B. 1976c. 21.20.*79*
927. Simmons, E.B. 1978. 21.20.*79*
928. Smirl, C.A., and Zoaka, L. 1974. 21.20.*79*
929. Smith, J. 1977. 22.00.*52*
930. Smith, M.G. 1952. 22.00.*79*
931. Smith, M.G. 1955. 22.00.*79*
932. SODEVA. 1976. 22.00.*43*
933. SODEVA. 1977a. 22.00.*43*
934. SODEVA. 1977b. 12.00.*43*
935. SODEVA. 1978a. 22.00.*44*
936. SODEVA. 1978b. 22.00.*44*
937. Soen, D., and Comarmond, P. de. 1972. 17.00.*3*
938. Sofranko, A.J., Fliegel, F.C., and Pletcher, W.R. 1976. 13.31; 19.13.*12*
939. SONED. 1978. 13.33.*44*
940. Songre, A. 1973. 16.24.*104*
941. Sow, A. 1977. 13.10.*44*
942. Sow, F. 1972. 13.10.*44*
943. Sow, Y. 1978. 13.32; 22.00.*44*
944. Spencer, D.C.S. 1972. 12.00.*104*
945. Spencer, D.S.C., and Byerlee, D. 1977. 22.00.*104*
946. Spittler, G. 1977. 16.24.*27*
947. Staudt, K.A. 1977. 13.31; 16.22.*104*
948. Steckle, J.M. 1973. 21.20.
949. Steedman, C., Daves, T.E., Johnson, M.O., and Sutter, J.W. 1976. 13.10.*18*
950. Stevens, R.D. (ed.). 1977. 22.00.*105*
951. Stickley, T. 1977. 13.32; 20.12.*52*
952. Storm, R. 1977. 13.34.*44*
953. STRC/OAU. 1972. 13.20.*42*
954. Stryker, J.D. 1975a. 13.10.*18*
955. Stryker, J.D. 1975b. 11.00.*44*
956. Stryker, J.D. 1978. 13.10.*105*
957. Stubbings, A.D.M. 1978. 13.31; 11.30.*79*
958. Surgers, M., and Verneuil, P. 1978. 12.00.*105*
959. Sutter, J.W. 1977. 22.00.*28*
960. Swanson, R.A. 1978. 14.00; 15.10; 19.11.*52*
961. Swift, J. 1978a. 20.20.*28*
962. Swift, J. 1978b. 20.20.*105*
963. Sylla, D. 1978. 13.20.*18*
964. Texas Technological University. 1974. 13.31.*28*
965. Thenevin, P. 1978. 12.00.*105*
966. Tiffen, M. 1971. 19.13.*79*
967. Tiffen, M. 1973. 16.10; 20.12.*79*
968. Tiffen, M. 1974a. 13.31.*79*
969. Tiffen, M. 1974b. 13.32.*79*
970. Tiffen, M. 1976. 13.31; 19.13.*79*
971. Timmer, C.P. 1975. 13.10.*105*
972. Tissandier, J. nd. 21.20; 22.00.*3*
973. Tollens, E.F. 1975. 12.00.*105*
974. Tourte, R. 1974a. 13.20.*44*
975. Tourte, R. 1974b. 13.20.*105*
976. Tourte, R., and Plessard, F. 1973. 20.12.*44*
977. Traore, K. 1977. 13.31.*19*
978. Traore, M. 1978. 20.12.*19*
979. Traore, N., and Toure, M. 1978. 20.12.*19*
980. Troll, C. 1966. 11.10.*105*
981. Tubiana, M.J. 1971. 20.20.*5*
982. Uchendu, V.C. 1967. 15.10.*105*
983. Unité d'Evaluation. 1976. 11.30; 13.31.*19*
984. Unité d'Evaluation. 1977a. 11.30.*19*
985. Unité d'Evaluation. 1977b. 11.30; 13.31.*19*
986. Unité d'Evaluation. 1977c. 22.00.*19*
987. Unité d'Evaluation. 1978a. 22.00.*19*
988. Unité d'Evaluation. 1978b. 13.31; 20.00.*19*
989. United Nations. 1977. 20.00.*105*
990. UNDP/FAO. 1969. 19.20.*12*
991. United Nations Economic Commission for Africa. 1973. 13.10.*105*
992. Upton, M. 1967. 22.00.*79*
993. Upton, M. 1969. 18.10.*80*
994. US Academy of Sciences. 1968. 13.20.*106*
995. USAID (See also Agency for International Development). 1973. 13.32.*106*
996. USAID. 1975a. 13.31.*28*
997. USAID. 1975b. 13.10.*44*
998. USAID. 1975c. 21.50.*106*
999. USAID. 1976a. 13.31.*28*
1000. USAID. 1976b. 13.10.*106*
1001. USAID. 1977. 13.31.*28*
1002. USAID. 1978a. 13.31; 20.12.*7*
1003. Ushe-Uba, J. 1973. 19.20.*80*
1004. Vallaeys, G., Chabrolin, R. and Silvestre, P. 1969. 13.20; 13.31.*44*
1005. Vay, C. le (ed.). 1975. 12.00.*106*
1006. Venema, B. 1972. 16.10.*44*
1007. Venema, L.B. 1978. 22.00.*45*
1008. Vercambre, M. 1974. 22.00.*45*
1009. Vercruijsse, E.V.W. and Boyd, T.A. 1970. 13.31; 13.32.*12*
1010. Vercruijsse, E.V.W., and Boyd, T.A. 1973. 13.31; 13.32.*12*
1011. Verlet, M., and Hauchecorne, I. 1974. 19.12.*5*
1012. Vermeer, D.E. 1976. 13.10.*106*
1013. Verneuil, P. 1978. 17.00; 21.00.*106*
1014. Vigo, A.H.S. 1965. 17.00.*106*
1015. Vincent, J.F. 1972. 16.22.*3*
1016. Ware, H. 1975. 21.50.*106*
1017. Waters, A.R. 1974. 18.10.*106*
1018. Watts, M. 1978. 21.20.*80*
1019. Weber, G. 1971. 20.12.*80*
1020. Weil, P.M. 1969. 13.20; 20.12.*7*
1021. Weil, P.M. 1970. 20.12.*8*
1022. Weil, P.M. 1971. 14.00.*8*
1023. Weil, P.M. 1973. 16.22; 19.11.*8*
1024. Weisse, M., and Jansen, A. 1976. 23.00/21.50.*107*
1025. Westebbe, R. 1974. 13.10.*5*
1026. Wharton, C.R. 1971. 18.30.*107*
1027. White, S. 1941. 22.00.*4*
1028. Wilcock, D.C. 1978. 13.33; 21.30; 21.40.*107*
1029. Wilde, J.C. de. 1967a. 13.32.*52*

1030. Wilde, J.C. de. 1967b. 13.00. 22.00.*107*
1031. Wilhelm, L. 1976. 21.40.*52*
1032. Williams, G. 1978. 23.00/11.00; 21.10.*80*
1033. Williams, M. 1977. 13.10.*107*
1034. Winch, F. 1976. 13.20.*107*
1035. Witt, T.J. de. 1978a. 13.31; 13.32.*80*
1036. Witt, T.J. de. 1978b. 19.12.*80*
1037. Witt, T.J. de. 1978c. 13.31.*80*
1038. Woodman, G. 1968. 15.10.*13*
1039. World Meteorological Organization. 1973. 11.10.*107*
1040. Yaciuk, G. 1977a. 21.30; 21.40.*45*
1041. Yaciuk, G. 1977b. 21.30; 21.40.*45*
1042. Yaciuk, G., and Yaciuk, A.D. 1977. 21.30.*45*
1043. Zalla, T. 1976. 13.32; 20.12.*52*
1044. Zalla, T., Diamond, R.B., and Mudahar, M.S. 1977. 19.13.*107*
1045. Zuckerman, P. 1977. 12.00.*80*

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