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9. ABSTRACT

This report presents the findings of a study of the status and future development potential of the Eastern rural development organization (ORD) in Upper Volta. From mid-October to mid-December of 1975, the MSU team gathered information and conducted field visits. The report presents its economic analysis and recommendations for infrastructure development; agricultural production, marketing, and credit; livestock; staff training; and the ORD annual plan. The recommendations concerning infrastructure development road improvements and the best means of accomplishing them. This is the top priority in development. The lack of road transportation has multiple and interrelated negative effects on the possible development of the region. Recommendations concerning development of marketing programs include (1) rapid ORD reaction to national marketing and financial policy decisions; (2) rationalization and improvement in marketing management, logistics, and financial operations; (3) the strengthening of effective demand through development of new market outlets; and (4) the need to initiate baseline studies of present marketing system for basic cash and food crops, along with collection of basic market information. Recommendations concerning agricultural credit include (1) the need for ORD to develop a five-year, versatile credit program; (2) limiting credit for animal traction equipment to HV2A and HV2B equipment; (3) extending medium-term credit for the 1976 crop season to paysons encadres in the Community Development villages and the four intensive zones; (4) preparation of extension checklists on how to evaluate the debt-carrying capacity of farmers and collective organizations; (5) establishing a credit system for trained blacksmiths; and (7) undertaking technical and economic feasibility studies to determine possibilities for small-scale agricultural processing activities. Recommendations concerning livestock management deal with acquisition of inoculation equipment, organization of cash beef markets, pilot demonstrations of feed supplement programs, surveys of land use and

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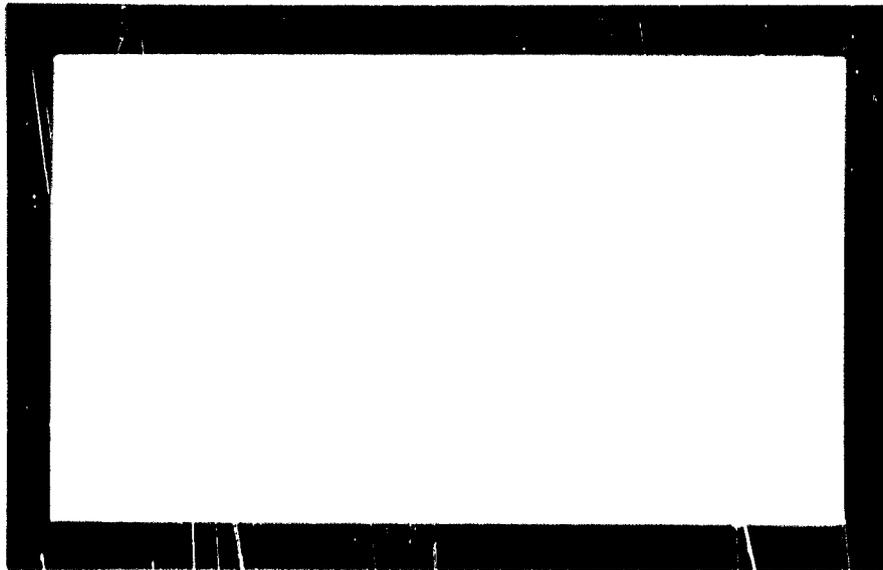
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parasite infestations, observation of Dahomey Animal Traction Associations, the gathering of livestock production and marketing information, and generation of guidelines for farm prototypes. Recommendations concerning training concern investments in training institutions, establishment of a low-cost training center in each sector headquarters, initiation of workshops at the sector level, development of an extension manual for field staff, and initiation of an ongoing ORD training program. The report concludes with a discussion and six recommendations concerning ORD annual planning relating to marketing, credit, logistics, and training and research.

AFRICAN RURAL ECONOMY PROGRAM

WORKING PAPER



**Department of Agricultural Economics
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**AN ANALYSIS OF THE EASTERN ORD RURAL
DEVELOPMENT PROJECT IN UPPER VOLTA:
REPORT OF THE M.S.U. MISSION**

by

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AFRICAN RURAL ECONOMY PROGRAM

The African Rural Economy Program was established in 1976 as an activity of Michigan State's Department of Agricultural Economics. The African Rural Economy Program is a successor to the African Rural Employment Research Network which functioned over the 1971-76 period.

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The African Rural Economy Library is a specialized collection of 2,500 volumes which is available to MSU faculty members and graduate students and visiting scholars.

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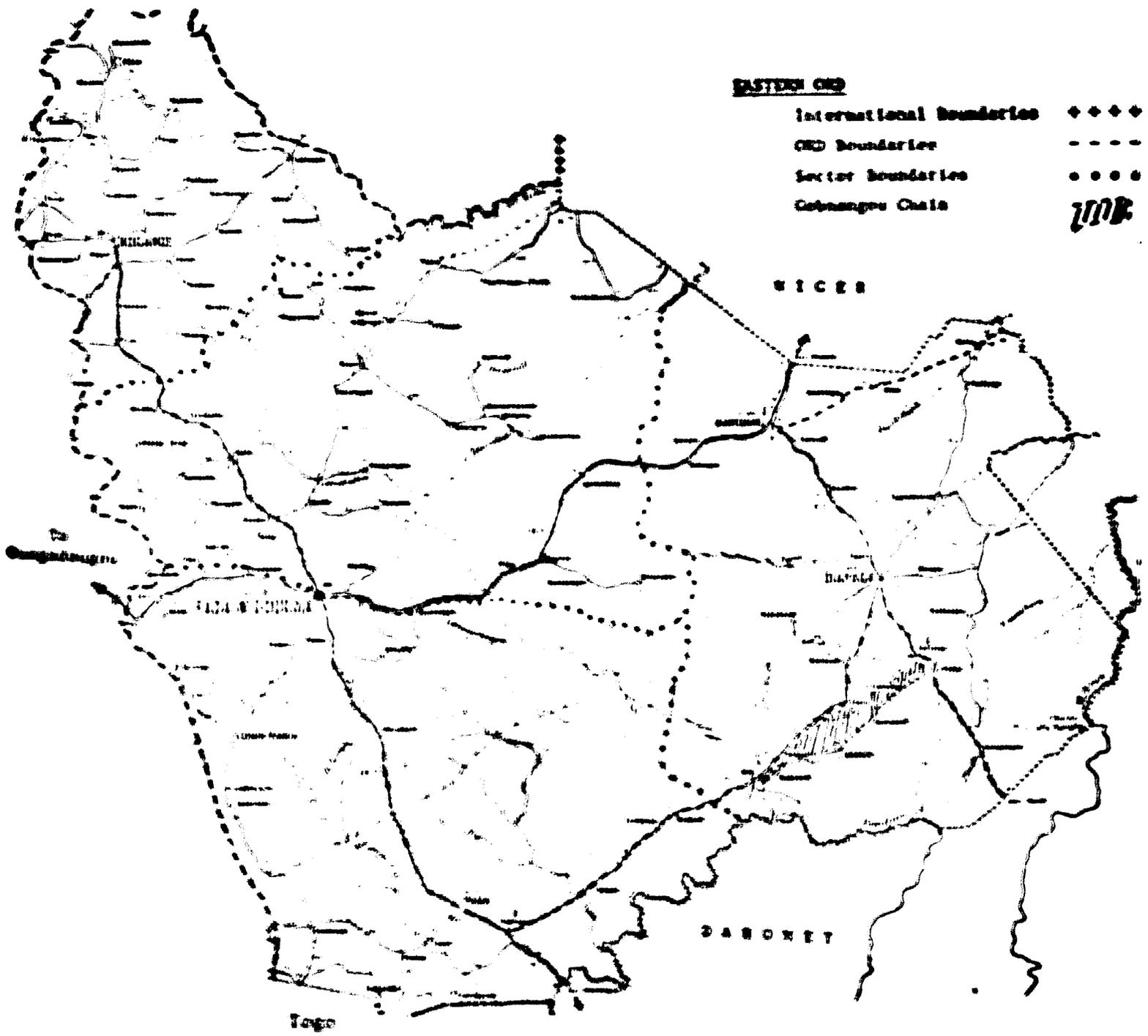
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I. INTRODUCTION

A. Purpose

From mid-October to mid-December, 1975, at the request of USAID, four members of the Department of Agricultural Economics at Michigan State University (MSU) conducted a study mission in Upper Volta, Niger and Benin (Dahomey).^{1/} The focus of this effort centered on the implementation and future development potential of Upper Volta's Eastern ORD^{2/} rural development organization which is receiving major material and technical assistance from USAID.^{3/}

As partial fulfillment of its contract obligations the MSU team gathered information and conducted field visits in the Eastern ORD in order to assist in furthering the implementation of regional development activities. This report presents our observations, economic analysis and tentative recommendations for infrastructure development; agricultural production, marketing and credit; livestock; staff training and the ORD Annual Plan. Each major section contains an assessment of the current status and major issues in that functional area and a series of priority recommendations for consideration by the ORD.

^{1/} The terms of reference for the MSU team are spelled out in AID contract AID/afrc-1187 of October 16, 1975.

^{2/} Organisation Régionale de Développement (ORD).

^{3/} A wide range of technical assistance is also being supplied by a complementary FAO/UNDP project. For detail see draft document "Objectives du Projet," Fall, 1975, available from FAO project director in Ouagadougou.

B. Rural Development in Upper Volta and the Eastern ORD Project^{1/}

Since 1965 Upper Volta has pursued a regional approach to rural economic and social development through regional development organizations (ORD's). Ten of the eleven ORD's have now received major foreign assistance funding which has allowed them to expand the range and depth of development services offered. The Eastern (or Gourma) Region has historically received much less attention and development assistance than other parts of the country and was the tenth ORD to receive substantial foreign aid.

Several aspects of ORD structure and policy will have important implications for the evolution of rural development in the Eastern region. First, decentralization of development organization to the regional level and the breadth of the overall ORD mandate of 1965 permit greater flexibility and adaptation to local conditions which vary widely across Upper Volta. Decentralization should also elicit greater local participation in determining the scope of ORD activities and who is to benefit from these new programs. On the negative side, the provision of more autonomy to the ORDs has produced some rivalry and has occasionally made it difficult to administer nationwide programs. However, these coordination problems should be drastically reduced as the relatively new national Coordinating Committee on Rural Development grows in experience and capacity. Second, the adoption of the ORD as the major

^{1/} This section contains only selected observations on rural development in Upper Volta and on the Eastern ORD project. For the reader who desires a more detailed introduction we suggest the following: (1) a good general overview of rural development is provided by USAID, Development Assistance Program, Upper Volta and Niger, Department of State, Washington, D.C., March 1975; (2) the new policy of développement communautaire and the recent reorganization of ORD structures etc explained in a "Note Explicative" and in various issues of Essai Rural (particularly No. 14) which is also published by the Ministry of Plan, Rural Development, Environment and Tourism and (3) information on USAID and FAO/UNDP and overall ORD activities can be most easily obtained in: (a) USAID, Upper Volta: Integrated Rural Development Project, Department of State, Washington, D.C., October 1974; (b) USAID Eastern ORD Project Manager, "Quarterly Reports," various dates; (c) an official FAO document should be available soon but to this date a draft document, "Objectifs du Projet," Fall 1975, has been available from the FAO project director, Ouagadougou and (d) ORD de l'Est Volta: Rapport Annuel, Mai, 1975; Programme d'Activités; Campagne 1975-1976, Avril, 1975 and Projet de Budget, Février 1976.

vehicle for rural transformation has been accompanied by a governmental reorganization which increased the ORD's horizontal control over previously autonomous and often conflicting rural activities of different ministries. This process is being complemented by efforts to standardize and develop national guidelines for major agricultural development components such as animal traction equipment and medium term agricultural credit. Third, there has been a concurrent reorganization of the internal structure of ORD's to conform with the adoption of the new strategy of développement communautaire. The main objective of the community development effort is to foster popular participation in the identification and solution of local problems. Major emphasis is put on the village as the "cell" of community development and the basic "unit of intervention" of development services. In 1975 five community development villages were identified in each ORD. The five in the Eastern ORD are all located a short distance from Yada N'Gouma rather than being dispersed throughout the vastly different ecological and farming zones in the region.

Several general observations about the status and functioning of the Eastern ORD help set the stage for the detailed analysis of the major functional components of the project which form the bulk of this report. To begin with, the origins of the Eastern ORD should be kept in mind. While originally created by statute in 1968 it achieved complete official status, with full operating rights such as access to AND (Banque National de Développement) credit, only in 1974 when its General Assembly was constituted for the first time. Further, substantial foreign assistance and the first USAID and FAO technical assistance personnel have only been available for about a year and much of their time has been necessarily spent on defining working relationships, beginning a construction program and the purchase of equipment. The ORD is undergoing a rapid expansion in budget, staff, equipment and program activities and the management of this expansion is virtually a full time activity for the ORD central staff, leaving little time for program development and experimentation. For example, the staff of the ORD, currently at about 125, is slated to increase to about 165 within a year, an increase of over 30 percent.

Historically the Eastern ORD has concentrated on fairly traditional extension work. The extension agents, of encadrement, promote the adoption

of a set of simple improved practices (e.g., use of improved seed, pesticide and fertilizer, sowing in lines, etc.). In some regions a more advanced set of practices, usually centered on some type of animal traction, is being promoted. The encadreurs, also help carry out buying campaigns and assist in the formation of village groups.

The rapid increase in ORD personnel and equipment is placing a heavy strain on a system whose lines of communication and coordination are already rather fragile. Donors must carefully consider whether the ORD has the capacity to absorb major new subprograms without jeopardizing existing programs and the managerial efficiency of the present staff. This is a difficult point to make because it is very easy to demonstrate the critical need to expand almost all services in Fada. However, it is critical to stress that if additional project components are added to the ORD then donors should be required to devote substantial attention to improving the managerial capacity of the ORD through on-the-job training programs.

The Eastern ORD Integrated Rural Development Project is classified by AID as a medium term Sahelian recovery project. However, the AID portions of the project are largely restricted to agricultural development--marketing, production, credit, livestock and coops. The bulk of this report, in a similar fashion, is restricted primarily to these core areas of agricultural development which, of course, must be at the heart of any rural development program. However, we feel it would be appropriate to set the stage for our somewhat narrow focus by first presenting our basic conception of a rural development which goes beyond just agricultural production and marketing.

C. Integrated Rural Development

To the MSU team rural development is a system of related economic, social, cultural and institutional changes which are designed to improve the material welfare of rural people in terms of minimum levels of food, clothing, shelter and vital services such as health and education. Thus, a broadly defined rural development can incorporate the full range of activities and interests in rural areas from agronomic improvements to disease control, education and important socio-political issues such as

a re-examination of the role of women in development. Further, attitudinal changes can often be seen to be as important as material changes. A more positive attitude toward the possibility of change, increasing collective participation in the creation of infrastructure and institutions, or an adjustment of patterns of consumption and savings are just a few examples of the many attitudinal changes which are prerequisite to societal transformation.^{1/}

Rural development cannot occur in the short time periods in which most donor agencies conceive and execute projects. We recommend that both AID and FAO adopt a ten year commitment in principle to the Eastern ORD. Only within such a time frame can enough social, economic, agronomic study, experimentation and application take place to begin to perceive substantial progress toward integrated rural development. For example, building a road may take six months while setting up a viable animal traction system may take seven or eight years but both should be seen as integral parts of the same long term process.

Rural development is a system of change that must be integrated functionally and over time. A change in one part of the system needs to be supported or coordinated with alteration of the rest of the system. Thus, in this sense, development in the Eastern ORD must be integrated with the economic, social and political evolution of Upper Volta and similar adjoining regions in Sahelian West Africa. Similarly, and of direct relevance to this report but on a more micro-level, the Gourmantché peasant must be considered as being part of an integrated production and marketing system. Production decisions are determined not only by the technology and physical characteristics of the land, seed stock and rainfall available to him but also by the availability of credit, by market opportunities and by local institutions, customs and rules.

All parts of this system, from input supply to purchase of output and debt repayment, must develop and work together. It is critical to remember that we cannot assume that by providing one part of this system that the other parts will be there or that they will function as we would like.

^{1/} For a similar approach to rural development which puts great stress on the necessity of institutional and political reform as preconditions for significant change see Edgar Owens and Robert Shaw, Development Reconsidered, D. C. Heath, Lexington, Massachusetts, 1972.

What is now needed is to begin to develop a solid understanding of the people, local institutions, principle farming systems and how they fit into the overall socio-economy. Throughout this report the MSU team will stress the need to devise an applied research and extension process which will help identify specific policy issues, missing vertical links to the national economy, major technological constraints, and areas of needed increases in popular participation so that specific ORD actions can make maximum contribution to building a viable, progressive rural society.

D. The Contribution of Applied Research to Rural Development

The collection of information on the rural economy should not be seen as a luxury set apart from the main activities of the ORD. The socio-economic and technical data base is woefully inadequate. The reader will note in the following sections that we frequently underline the lack of adequate information on traditional farming and livestock systems and on the consequences of alternative technical packages and institutional changes. For example, we do not know what combination of cash and food crops should be recommended to farmers to achieve multiple goals of subsistence, increasing cash income and promoting community development activities. We do not know how much of a credit burden a farmer can carry under different sets of technologies and product prices. Nor do we know precisely which crops will provide the greatest benefit to the ORD in terms of meeting a goal such as "auto-financing" through marketing activities. The stress should be on collecting the minimum amount of information needed to achieve specific objectives; it should be a process of "learning by doing". One of the most useful outcomes of this process is the generation of simple socioeconomic indicators of change.

Very little research has been conducted in the Gourma region. Of the few more recent studies, some have provided valuable if limited information about the Gourmantché, their customs, agriculture, land use,

etc.^{1/} Any system of research or information gathering should build on existing materials and on the substantial, but largely unrecorded knowledge of many people of the region. Two basic tasks need to be accomplished. First, the basic scientific understanding of the region should be deepened through a program of baseline studies to supplement and enlarge on existing information useful for the planning and implementation of rural development.^{2/} Second, and most important, a system should be developed for the recurrent collection of agricultural and rural development information for use in making improved ORD program decisions. Specific means of achieving these ends will be discussed in detail in the sections of this report which follow.

^{1/} Among the most useful recent works on the Gourma region are:

- (a) Benoit, Michel, Introduction à la Géographie des Aires Pastorales Soudanaises de Haute-Volta, ORSTOM, Ouagadougou, 1974.
- (b) Cartry, Michel, "Clans, Lignages et Groupements Familiaux chez les Gourmantché de la Région de Diapaga," L'Homme, Vol. 6, No. 2, Avril-Juin 1966, pp. 53-80; and "Attitudes Familiales chez les Gourmantché," L'Homme, Vol. 6, No. 3, Juillet 1966, pp. 41-67.
- (c) Rémy, Gérard, Yobri, Etude Géographique du Terroir d'un Village Gourmantché de Haute-Volta, Maison des Sciences de l'Homme, Mouton & Co., Paris, 1967.
- (d) Société Africaine d'Etudes et de Développement (S.A.E.D.), Conditions de Diffusion du Crédit Agricole et de Mise en Oeuvre d'Activités Communautaires dans le Ressort de l'ORD de l'Est Fada N'Gourma, Sous-secteurs de Namounou et Diabo, Ouagadougou, September 1975.

^{2/} A useful beginning is contained in S.A.E.D., Etudes d'un Programme Regional de Développement Rural de la Région de l'Est, Fada N'Gourma, Juin 1974.

II. INFRASTRUCTURE DEVELOPMENT

A. Geographical Note

Before turning directly to the top priority need for road improvement, a few general observations on the geography of the Eastern region may be useful. First, the overall population density of this large region is low relative to other parts of Upper Volta. Large parts of the ORD have less than one inhabitant per square kilometer.^{1/} There are numerous reasons for this; frequently mentioned are the lack of reliable year round water supplies, severe rainy season flooding due to very flat land and poor drainage, and disease infestation, particularly Onchocerciasis or "River blindness", which is quite severe in the southern parts of the region.

Second, large segments of the population live in small, widely scattered villages. In 1968 it was estimated that 57 percent of the Gourmantche population lived in villages of 250 persons or less which may have implications for the formation of village groups and provision of inputs and services.^{2/}

Third, the uneven distribution of population further complicates the ORD's logistical problems. For example, major population concentrations occur around Bogangé north of the Sirba River, around and south of Comin-Yanga along the ORD western border to the Togo frontier, around and to the West of Panchari along the Niger border, and to the South of Diapaga, particularly on both sides of the Galmangou plateau (see map on page v). In effect, the population is concentrated along the borders of the ORD with much of the center of region having little or no habitation.^{3/}

^{1/} See Saventot, George, Atlas de Haute-Volta, Carte des Densités de Population Centre Voltaïque de la Recherche Scientifique, Ouagadougou, 1968.

^{2/} Ibid., p. 9. In contrast, other major population groups are more concentrated. For example, in the same year only 21 percent of the Mossi population lived in these smaller villages.

^{3/} A total census of population was being conducted in the Eastern region in early December 1975, and should provide an extremely useful demographic data base for planning, drawing representative samples, etc.

The fact that a number of these areas are more physically and economically tied to other ORD's or even to other countries offers particular logistical and program implementation problems to an organization which has much of its resources located in Fada N'Gourma. This can be illustrated for example by examining a few of the implications of geographic dispersion on the development of ORD marketing programs. One, it may make economic sense for the Eastern ORD to support infrastructure developments which link parts of the ORD to other sections of the country rather than to Fada N'Gourma. This is particularly true for the Bogandé area and for the villages to the west of Fada. This would imply that it might also make economic sense to try and develop cooperative marketing arrangements with the ORD's to the west of Fada, i.e., Koupele and Kaya. The political sense of this idea, however, may be more difficult to realize than the economic. Second, given the geographic isolation of certain parts of the ORD along the Niger, Bénin and Togo borders, it may be wise to explore the possibilities of direct export to these neighboring countries for products with pronounced price differentials.

Third, since the Eastern Region has among the largest areas of underpopulated, potentially usable land in Upper Volta, the ORD has a unique opportunity to assist in the planned development of future areas of settlement and agricultural production. The creation of new roads and farm/market centers should be planned in relationship to agricultural production potential (both in terms of crops and livestock) of the region. Clearly this is a long-term proposition and will have to wait until more basic research on the area has been completed and the capacity of the Bureau of Economic Analysis and Planning of the ORD has been strengthened. However, the pressure to engage in such planning is mounting with the growth of the WRO (mohocatchiasia) central and associated resettlement programs which have been estimated at potentially relocating up to 10 percent of the country's population, primarily from the Mossi Plateau to southern riparian areas.^{1/}

^{1/} An important geographical feature which has been largely overlooked to this point is that much of the southern portion of the region contains national park and game reserve areas. There will be an almost unavoidable conflict between attempts to preserve these natural areas and possible resettlement, agricultural and infrastructure activities. Again, this should be taken into account in overall regional planning.

B. Road Improvement

The improvement of the road system in the Eastern ORD is, without question, the top development priority. Wherever the MSU team traveled in the region, whomever we talked to, from ORD Director to encadreur, from the cereal-growing peasant behind the Gohsougou mountain chain to the yam growing farmer in the Madjoari area and peanut growers in Bogandé, from the remote villagers to the traditional Chief of the Gourma, the answer to our question was unanimous: the number one problem is, by far, that of roads. In fact, several government officials felt that if foreign assistance did nothing more than improve part of the road system that this alone would be a major contribution to the development of the region.

Only two roads in the region are open most of the year, the main Ouagadougou - Fada N'Gourma - Niamey road and a secondary road which links Kantchari to the important international market of Namounou south of Diapaga. Almost all others are completely closed for at least four months during the rainy season and when open are passable only with great difficulty. The lack of road transportation has multiple and inter-related negative effects on the possible development of the region. First, it discourages competition among private traders leading to local monopoly buying and selling. The ORD's ability to provide some countervailing market influence is also severely constrained. The situation has been so bleak that the government has been forced to provide special transportation subsidies in order to induce marketing activities in certain areas. Second, the provision of inputs to farmers becomes sporadic and unreliable. Most parts of the ORD receive little or no fertilizer or pesticides; key replacement parts for animal traction equipment are often unavailable in the rainy season when they are needed most. Third and most critical, the very success of campaigns to introduce new crops, new production technologies and to substantially increase total output may be jeopardized by the interrelated negative effects of poor transportation. New production technologies need a reliable supply of improved inputs and timely evacuation and sale of increased output which will provide incentives to the farmer and permit him to repay credit accorded to him. Finally, the lack of good roads also greatly increases

the difficulty of providing other complementary government services such as health and veterinary care.

This situation can probably be best illustrated by one example. The MSU team visited the Gohnangou area (in the Southeast corner of the ORD) in late November. To the south of the Gohnangou "chain", a rocky plateau bordered by sharp cliffs about 60 kms. in length and from 3 to 10 kms. wide, lies fertile land receiving substantial rainfall (enough to permit cultivation of yams, manioc and corn) which slopes gradually toward the Pendjari river and northern Bénin. In contrast to much of the eastern region this is an area of high population density which may contain 8 to 10 percent of the entire population of the ORD. The track which crosses the region is so infrequently used that in some places it disappears in tobacco and grain fields. Missionaries, using hand methods, have chipped several "roads" over the chain which are barely passable by truck. This is confirmed by the fact that most villages in the area are visited by three or four trucks owned by traders each dry season. Needless to say these traders can largely dictate the price they pay for agricultural goods. The MSU team saw lemons and other citrus fruit and vegetables rotting on the ground and was told that grain had recently been purchased for 6 CFA/kilo while the buying price in the Namounou market--a distance of about 50 kms. on the other side of the chain--was 12 to 15 CFA/kilo (the official government price was 18 CFA/kilo). The team came to the tentative conclusion that the region, using traditional methods, was producing more output than it could consume and market under current conditions. Similarly, recently formed vegetable gardening cooperatives in Logobou are largely limited to selling their output to a game-reserve resort complex in Atly, open only during part of the dry season. In sum, there is very little reason to introduce a new production package and credit program behind the Gohnangou because of the effective demand constraint. Thus, we would strongly support giving top priority to a limited feasibility study of upgrading one of the "missionary roads" over the Gohnangou.

1. Alternatives in a Program of Road Improvements

The public provision of productive infrastructure, such as roads, is an extremely complex area fraught with political as well as economic and technical considerations. Here we can only point to some of the major decisions which must be made and factors which should be taken into consideration when reaching those decisions. The basic problem is to decide what kind of road improvements will best meet explicit short and long run development goals given available resources. Presumably an overriding goal is the maximum stimulation of rural economic activity in the ORD. Given this goal, what kind of road investment will contribute most to this process? The possibilities range from spending a given amount of money improving a few roads to international, all-weather standards to making strategic improvements in a larger number of secondary roads to increase the number of months during the year they are usable. In the latter case only the most troublesome sections (points noirs) where the road crosses swamps, small rivers, etc., would receive improvements such as a dike-road (yadjé) or a small bridge.

While simpler road improvements have much intuitive economic appeal we should be mindful that goals, means, and technology are in constant evolution and that what might be the optimal investment in the short run may not prove to be so in the longer run. For example, paving of the Ouagadougou-Niamey road as far as Fada N'Gourma is slated to begin in October 1976 and there is mounting pressure for the completion of the Fada-Niamey section due to decreased truck traffic to Niger through the Popular Republic of Bénin. The paving of this major road would alter the economics of improving secondary roads leading from it. Political factors may also play a substantial role in modifying the feasibility of various types of road improvement. If, for example, a substantial program of public works using village labor were to be encouraged this would certainly alter the overall cost of improving secondary and feeder roads in a particular region.

An important set of alternatives involves the spatial location of road improvements with respect to the effect they have in meeting various ORD goals. To simplify matters we will consider two goals, improving the ability of the ORD to operate efficiently as an organization and increasing the supply of inputs, the evacuation of output and the level of producer incomes.

In some areas there is no conflict between these two goals, but, as was pointed out earlier, several important regions of the ORD are more closely linked with other parts of Upper Volta than they are to Fada. Let's take the peanut producing region of Bogandé as an example. The Fada-Bogandé road is in very poor shape with the result that supply of the Bogandé sector from Fada must go by a round-about route through the Koupela and Kaya ORD's. The cost of improving this road would be substantial partially due to the fact that a long bridge must be constructed over the Sirba River.^{1/} The Bogandé region has traditionally received its inputs from Ouagadougou and these have been transported by various roads via Kaya or Pouytenga. Almost all of the valuable cash crop output also moves on these routes on its way to Ouagadougou and eventual export through the port of Abidjan.^{2/} It is clear that the simple economic interests of the Bogandé region farmers would be most efficiently served by improving the road links into the Kaya and Koupela ORDs. However, some have contended that the added economic costs of upgrading the Fada-Bogandé road might be outweighed by the positive political impact it would permit in strengthening ORD logistical and organizational structures.^{3/}

Further, while short-run considerations might argue against the improvement of all of the Fada-Bogandé road, the situation could change in the longer run. If there were a major upgrading of the Fada-Rénin road or if changing patterns of foreign trade would cause more input/export traffic to flow over the recently paved Koupela-Togo road this could radically alter the economic sense of various road links into the Bogandé sector. Finally, the possibility of engaging in various types of road improvements is always contingent on the nature of funding available, often earmarked for specific types of projects.

^{1/} See Memorandum on the Fada N'Gourma-Bogandé-Bani Road from Frederic Bergier, Regional Engineer, REDSO/WA, to John Hoskins, CIO/Ouagadougou.

^{2/} Recently, a new road has been opened connecting Pouytenga directly to Piela which offers fairly direct access to the region.

^{3/} On the other hand, if the major problem is simply improving communications the proposed radio-communications component of the AID project, discussed below, might be adequate with improved transport flowing to Ouagadougou by the most direct route.

The most rational way these various alternatives can be evaluated is with multi-faceted criteria developed within the context of overall planning for population settlement, land use and transportation system development in the ORD. This would provide a framework within which individual efforts could be placed, such as the current AID proposal to improve a number of secondary roads in the Eastern ORD.

2. The AID Road Development Project^{1/}

In the documentation for the general AID funding of the Eastern ORD project the need for complementary improvement of secondary roads was heavily stressed.^{2/} This, combined with previous road proposals,^{3/} has led to the current AID proposal to provide about \$2 million to equip a road brigade and provide construction costs for the improvement of three secondary roads.^{4/}

Due to the preliminary nature of this proposal our comments will be fairly brief. Any criticism of the proposal is directed towards the areas of planning and implementation and not toward the need for road improvement. A number of recommendations we will propose apply to the next phase of project design.

First, the basic approach of funding a road construction and maintenance brigade which would work on the upgrading of secondary roads seems to be

^{1/}One member of the MSU team devoted part of his time to examining proposals for road improvement in the Eastern ORD. This included some work with a two-member REISO road team, and discussions with the REISO project manager, the Eastern ORD director, the AID Project Manager and officials of the GOUV including the Deputy Director of Public Works and the Head of SERS (Service d'Entretien des Routes Secondaires).

^{2/}See the Eastern ORD integrated Rural Development Project paper.

^{3/}For example, GOUV proposal of July 1, 1975, for improvement of Fada N'Gourma-Bogande-Bani Road, Memo from Frederic Bergier, AID-REISO, in response; and major studies for the paving of primary roads in the Region: Wilbur Smith and Associates, The Entente States Highway Feasibility Study: Task 1, Upper Volta-Niger, Fada N'Gourma-Niamey (December 1970), Task 2, Dahomey-Upper Volta, Dassa Zoumé to Fada N'Gourma (October 1970). Lyon Associates, Inc., Economic and Preliminary Engineering Design Studies for the Fada N'Gourma-Niamey Highway Link, 1974.

^{4/}USAID, Eastern ORD Rural Road Construction (Project Review Paper), Washington, December 19, 1975.

a sound one. Due to financial constraints only three roads were to be improved and maintained:

- (1) Fada-Bilanga (7.2 km.),^{1/}
- (2) Ouagadougou-Nassougou (30 km.),
- (3) Diabo-Comin-Yanga (50 km.).

All these secondary roads depart from the Ouaga-Niamey road and serve more densely populated areas (22,000 people for the first, 3,000 for the second and 15,000 for the third). This is one of the justifications for the selection of these particular roads for improvement. Other factors are: Fada-Bilanga is mentioned as the OHD's top priority for road improvement, the other two segments are in AID-funded intensive zones and should complement other development activities in those areas, and all segments are reasonably close to Fada where the brigade would be based.

Two conclusions are drawn from this. First, the criteria for selection of roads for improvement seem vague and woefully incomplete. If more precise criteria were used they are not made explicit in available documentation. Second, the upgrading of these particular roads do not seem to be part of a coherent overall plan to develop the Eastern OHD transportation system. This again points up the need for a regional plan for infrastructure development including a road network linked to the development of hierarchy of farm market centers and logistical collection and distribution points. Such a plan would not preclude the possibility of giving special consideration to roads into intensive zones or to those connecting community development villages, however, it would help clarify the relationship between these more specific actions and the wider development of the region.

The AID proposal contains two options concerning the formation and control of the road brigade and operational implementation of the project. Either the OHD would manage and administer the project as well as overseeing the actual construction or it would retain overall administrative control while channelling the operating budget and equipment to a SEDS^{2/} unit which conducts the road improvements. Whichever alternative is

^{1/} This is the first section of the Fada-Bogande Road (south of the Birba River) which is described above.

^{2/} SEDS (Service d'Entretien des Routes Secondaires), the new rural road construction and maintenance arm of Travail Public is funded by the World Bank and slated to begin operation in October 1976.

selected it is critical that the ultimate control of the machinery provided be carefully specified to avoid any possible conflict between the ORD and SERS/TP. If SERS were given operating control of the project it might seem very reasonable to transfer the machinery to other regions of the country once AID/ORD operating funding ended. Further, the question of machinery repair and maintenance must be studied very carefully since the ORD has no current capacity to service large engines, particularly diesel ones. If the FAO project provides the ORD with an experienced diesel mechanic in the near future this could solve the problem but this should not be taken for granted. Finally, the continued maintenance of the improved secondary roads was not adequately treated in the project proposal and explicit provision for this should be worked out.

C. Other Communications and Marketing Infrastructure

A number of infrastructure investments complementary to the improvement of roads have been proposed or are actually in the process of implementation. None of these was examined in great detail by the MOU team so our comments will be brief.

First, a proposal to establish an ORD operated radio-communications system has been advanced to the point that the equipment to be employed (same as that used in the GOV administrative radio system) has been specified and the required frequencies have been requested from the Government.^{1/} This is a relatively inexpensive investment which is strongly supported by this team since it should greatly facilitate general ORD communications and should be very useful in the conduct of specific program activities such as the product buying campaigns discussed in the Agricultural Marketing section which follows.

Second, there is a pressing need for the construction of ORD storage facilities, particularly smaller facilities at the village level which can be used to stock production inputs and marketed surplus waiting for evacuation to exterior markets or for local resale to help minimize interseasonal

^{1/}For more detail see letter from AID/CBO, Ouagadougou to GOV Permanent Secretary of the Rural Development Coordinating Committee.

price fluctuations. The current FDR village warehouse program does not appear to have been very successful with only a small percentage of scheduled warehouses actually having been built. The nature, amount and location of storage facilities will depend on the extent and method of operation of ORD marketing activities and the state of the road system in various parts of the region. Due to the rapid growth of the ORD's marketing capacity, the instability of national marketing policy and problems of coordination among various national grain marketing institutions (all described in the following section) it would be difficult to precisely calculate present storage needs. Suffice it to say that most villages or groups of villages could use some collective storage capacity which could also help promote the formation of various types of village groups. Once it is known what role, if any, OFRACER will play in actual total grain transactions and storage, once the limits of ORD market intervention have been generally defined and once the national policy of price determination has been clarified, it should be possible to plan a minimum hierarchical system of strategically placed warehouses for increasing the efficiency of input distribution and output purchase. It should be noted that such a program for developing regional storage capacity should be linked to a better understanding of the extent and quality of traditional private and commercial storage, the planning of road improvements and the planned development of a hierarchical network of farm market towns, out third and final point.

As a rural region develops there will also develop a system of spatially distributed towns of different sizes to serve the needs of the increasingly productive rural population. This will involve the greater provision of productive inputs, consumer goods and government services, and the bulking and transporting of agricultural surplus in various stages of processing. Since, as was mentioned earlier, the ORD has much of its potential growth in settlement and land use in the years ahead, it also has the opportunity to help channel the provision of infrastructure and government services into a system of towns which will help realize the fullest output attainable from the region's human and material resources. This involves, of course, a long range planning process, but a start can be made even through the careful selection of towns at sector and subsector scale, in the location for distribution and storage facilities and through the selection

of secondary and tertiary roads for improvement.^{1/} It is the belief of this team that all foreign assistance efforts to the Eastern ORD should contribute to this process of rational regional planning.

D. Recommendations

1. Regional Infrastructure Development Plan

The ORD and technical assistance agencies should begin the formulation of a twenty year plan for infrastructure development. This would include the interrelated improvement of primary, secondary and tertiary roads; contributing to the development of an optional pattern of farm market towns; and the location of new subregional ORD infrastructure such as administrative centers and storage and processing facilities. This plan should incorporate, to the extent possible, potential physical productivity of the land and likely patterns of immigration associated with efforts such as the Oncho-control and resettlement programs.

2. Using Available Personnel Resources for Infrastructure Planning

The type of regional infrastructure planning described above is a long term, iterative process. Full advantage should be taken of available personnel to develop the major lines and specific components of this plan:

- a. FAD has proposed that a consultant for regional planning be engaged in 1978 to formulate an overall planning strategy. We support this but strongly recommend that it take place as soon as possible, hopefully in 1976. His efforts could be complemented by an AID consultant in regional economics or geography.
- b. The transportation economist requested to assist in the further specification of the AID secondary road project should, as a minimum, contribute a proposal for the overall development of the entire Eastern ORD road network with consideration of the relevant links with other regions and neighboring countries.

^{1/} For very convincing, practical examples of this process, see E.A.J. Johnson, The Organization of Space in Developing Countries, Harvard University, 1970.

- c. In a similar fashion part of the planning for the development of Oncho-free areas should be devoted to further specification of parts of the infrastructure plan.

3. Criteria for Evaluation of Alternative Road Improvements

In conjunction with, and as one of the products of, the sequential process of infrastructure planning, a set of criteria should be developed for the evaluation of alternatives to improving rural roads. These criteria should address both the kind of improvement to make and how to evaluate similar improvements in different regions. Various measures of economic input should be added to the current consideration of population density and intensive extension activities; both short and long run factors should be considered and economic links to other regions and countries should receive explicit attention.

4. Refinement of the AID Secondary Roads Project

The MSU team strongly agrees with the proposed AID secondary road project in principle. The proposed structure for this program and focus on secondary and tertiary roads seems most appropriate. However, as pointed out above, the criteria for selecting the three proposed roads seem vague and woefully incomplete. We recommend that the project paper devote explicit attention to

- a. An overall plan for the development of road transport in the Eastern ORO,
- b. Specific criteria which justify the selection of the current three roads and others for future improvement,
- c. The specific terms of ORO ownership and control of project operating equipment (regardless of which implementation plan is chosen) to avoid potential conflicts with SPS/IP over this issue,
- d. The guarantee of sufficient levels of repair and maintenance of project equipment and
- e. A more complete specification of requirements for continued maintenance of improved roads and who is to undertake this responsibility after the termination of direct AID operational support.

III. AGRICULTURAL MARKETING

A. Introduction

The statutes creating the ORD structures have given them virtually unlimited possibilities of engaging in market activities. These activities can play a central role in the future development of both the Eastern ORD organization and the entire Eastern region itself. However, marketing should be given a broader definition than the French term *commercialisation* (the collection and sale of agricultural output). Agricultural marketing in the judgment of the MSU team, should be defined as a system of persons, institutions and activities which provide the agricultural producer with the inputs he can productively employ as well as providing for the sale, storage, processing, handling and transportation of his output. Further, it should include the development of institutions (such as *comités* and *groupements villageois*) and facilitating regulations (such as official crop prices), and the coordination of improvements in transportation and communications facilities.

The precise "boundaries" of marketing activities in the Eastern ORD will depend on the availability of personnel, on official ORD priorities and, most importantly, on the needs of the region. However, our emphasis on a broad definition is to underline the need for specific marketing activities to be functionally developed and coordinated with an overall development strategy for the region.

Within this overall approach to agricultural marketing in the Eastern ORD, the MSU team suggests two major areas which must receive primary attention. The first is improving the ORD's capacity to conduct its current marketing activities such as the scheduling of input purchases and product buying and selling, determining the magnitude and source of operating funds to conduct these operations, maintenance and development of vehicles, and the amount, location and operation of storage facilities. The second area of major attention centers on the identification and development of market outlets for agricultural output from the Eastern ORD. Focus must be on those activities which will aggressively seek markets outlets for increased production of both cash and staple food crops.

Before presenting specific recommendations which address these two basic questions we will briefly review the current status of marketing activities in the Eastern ORD, issues in national marketing policy which have major impact on ORD programs, and priority information requirements for strengthening marketing operations.

B. Current Marketing Operations in the Eastern ORD¹

A complete, detailed analysis of the efficiency and profitability of recent ORD marketing activities is impossible due to the lack of necessary economic data, to non-marginal changes and lack of coordination in pricing and other national agricultural policies, and to rapid changes which have occurred in ORD financial and material capabilities. Thus, what follows in this section will be largely descriptive; it will only briefly illustrate the structure and magnitude of marketing operations in the ORD's 74-75 "campaign" and the current ongoing 1975-76 marketing program, some of the problems which have beset these two efforts and possible directions for future work in the development of a viable ORD marketing strategy.

Table 1 summarizes the amount and value of major agricultural products purchased in the four sectors of the Eastern ORD during the 1974-75 campaign. It reflects figures available in December 1975 and shows that approximately 2,300 MT of cereal (sorghum, millet, maize and rice) and almost 120 MT of peanuts and sesame were purchased. These purchases involved a direct outlay of about 65 million CFA to producers and other collectors as well as approximately 75 million CFA in other ORD marketing expenses such as

¹Some of the material in this section is contained in the following reports but is summarized for the convenience of the reader:

1. 1st and 2nd Quarterly Reports dated 5/22/75 and 9/14/75 prepared by USAID Eastern ORD Project Manager.
2. Rapport Annuel 1974, ORD de l'Est Fada, Mai 1975.
3. ORD memo "Situation Commercialisation au 9/1/75."
4. "Organisation de la Campagne de Collecte et de Commercialisation des Produits de Cere" (Novembre 1975 - Avril 1976) prepared for the ORD General Assembly and dated Fada N'Gourma November 7, 1975.
5. Other ORD documents and conversations with ORD officials.

Table 1. Eastern ORD: Metric Tons of Crops Purchased and CFA Paid Out by Sector, 1974-75 Campaign

Crop		Sectors				Total ^{1/} GRD
		Fada I	Fada II	Buganda	Diapaga	
White Sorghum	MT	477.2	95.5	359.4	436.4	1,316.5 MT
CFA (000) ^{2/}		9,595	2,091	7,743	11,039	30,449
Millet	MT	286.8	282.3	196.4	69.7	835.1 MT
CFA (000)		6,290	6,174	4,285	--	16,739
Maize	MT	26.9	1.2	--	--	28.1 MT
CFA (000)		681	33	--	--	714
Red Sorghum	MT	7.8	10.0	--	--	17.8 MT
CFA (000)		170	210	--	--	380
Paddy Rice	MT	51.1	43.9	3.4	29.6	127.9 MT
CFA (000)		1,776	1,503	101	1,050	4,431
Peanute-Shellied	MT	29.8	--	175.9	--	205.6 MT
CFA (000)		1,135	--	7,431	--	8,566
Peanute-Unshellied	MT	36.6	7.5	47.2	--	86.3 MT
CFA (000)		877	181	1,708	--	2,766
Beans	MT	13.1	--	17.0	--	30.1 MT
CFA (000)		417	--	708	--	1,125
Total CFA (000)		20,911	10,193	21,697	12,649	64,871

^{1/} Certain totals do not add exactly due to rounding.

^{2/} CFA in thousands.

Source: Report Annuel 1974, ORD de l'Est Fada, Mai 1975; and ORD de l'Est Fada, "Campagne de Commercialisation, 1974-75: Situation Comptable".

sacks and needles, the rental of trucks and bonuses to buyers.

It was not possible to completely assign costs to specific batches of purchased products thus obviating the precise determination of the ORD net marketing margin for particular crops by sector. It is clear that the possible margins available to the ORD, particularly on certain cash crops, are, in most years, quite substantial. However, the precise amount and composition of these margins are unclear. For example, estimates of possible net ORD profit on peanuts range from about 15% to 30% of the ORD sale price.¹

The disposition of ORD product purchases comprises the other half of the 74-75 campaign. Due to weak communications, inadequate record-keeping on the flow of commodity stocks and the general confusion of a short buying campaign, it is not possible to completely describe the ultimate fate of agricultural products purchased in various parts of the ORD. However it is useful to consider the possible disposition of a product purchased in a typical ORD subsector. If sorghum or millet has been bought the following are illustrative dispositions which occur in different proportions:

1. Storage in local facilities of varying adequacy and local resale before the subsequent harvest.
2. Timely bulking and evacuation by rented trucks before the rainy season.
3. Storage in ad hoc facilities (e.g., houses, old administrative buildings, etc.), no evacuation, stocks go through rainy season with substantial spoilage.
4. Temporary unprotected storage, no evacuation, grain totally spoiled.

As the NSU team traveled through the ORD it saw and heard evidence of all these possibilities. Local ORD personnel could often recall approximate quantities lost through spoilage (e.g., the bottom two layers of sacks in a temporary warehouse lost due to excessive moisture), sold on local markets,

¹ See USAID Project Manager's "Second Quarterly Report," 7/14/75 for a detailed illustration of possible profits in ORD marketing of peanuts in the Bugandó Sector.

transported out of the area and so forth, but these movements are not reflected in current ORD stock and flow records.

The kinds of information presently collected by the ORD do not permit a complete accounting of product disposition to be maintained and make it difficult to plan minimum-cost transportation routes for product evacuation as well as input delivery. For example, the ORD has figures on quantities of grain purchased by sector, stocks in central warehouses from month to month and amounts delivered to major purchasers. From these figures it is possible to calculate amounts of "theoretical stocks" which should exist at the local level in the ORD but which were not evacuated to Fada. Some of this grain is in local warehouses, some is stored in the homes of encadreurs, while the rest spoiled during the rainy season while in inadequate storage or left in the open. Due to the lack of accurate information it was necessary at the end of November 1975 to send a member of the ORD central staff on a month-long tour of the ORD to ascertain the amount and condition of actual stocks which had not been evacuated in the previous season.

Another partial view of the complex disposition question is provided by Table 7 which presents an overview of major ORD commercial sales of agricultural output. A number of observations can be drawn here. First, by December 1975, the ORD had not been paid for over 80 percent of the sorghum and millet it had delivered, specifically all sales to the other major participants in national grain marketing, OFNACER and the Sous-Comité. This prevented the ORD from repaying BND seasonal credit which jeopardized its credit position for 1975-76. Second, the timing of sales is also instructive, as it replicates an overall trend which prevailed in Upper Volta, the ORD's hoping for the best possible prices, delayed their sales to OFNACER and the Sous-Comité until June 1975 and later (note that about one-third of all F. ORD grain sales came in late September 1975), contributing to acute logistical, storage and financial problems at both ORD and national levels. Third, the value of peanuts and sesame sales when compared to amounts expended for product purchase and marketing services indicate, again, the possibilities of very substantial marketing margins or profits for the ORD.

Table 2. Eastern OED: Disposition of Major 1975 Product Sales as of December 1975

<u>Product</u>	<u>Date</u>	<u>Buyer</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total CFA</u>	<u>Disposition</u>
Sorghum-Millet	4/15/75	World Food Program (PAM)	90.0 MT	30,000 CFA/MT	2,700,000	PAID
Sorghum-Millet	6/28/75	OSRD	235.5 MT	30,000 CFA/MT	7,059,000	PAID
Sorghum-Millet	5/7/75	Cereal Bank-Bilanga	18.8 MT	25,700 CFA/MT	483,000	PAID
Sorghum-Millet	6/23/75	OPRACER	351.5 MT	28,450 CFA/MT	10,000,175	NOT PAID ¹
Sorghum-Millet	9/23/75	OPRACER	488.4 MT	28,450 CFA/MT	13,894,980	NOT PAID ¹
Sorghum-Millet	9/23/75	Sous-Comité	145.0 MT	26,000 CFA/MT	3,770,000	NOT PAID ¹
Sorghum-Millet	7/7/75	Sous-Comité	600.0 MT	26,000 CFA/MT	15,600,000	To be delivered
Shelled Peanuts	6/25/75	Stabilization Board (Caisse Stabilisation)	211.52 MT	85,000 CFA/MT	17,979,200	PAID
Sesame	6/24/75	Contract	22.599 MT	99,000 CFA/MT	2,237,301	PAID

Source: Eastern OED accounts.

¹As of December 1975 the Eastern OED had not received from OPRACER or the Sous-Comite 43,365,155 of the total 53,527,155 CFA it was due for grain sales. Note that one of these transactions, 600 MT of grain, was simply an obligation on the part of the Sous-Comite to purchase this amount and that the grain had not actually been delivered.

C. The 1975-76 Campaign

As will be discussed below, the ORD must work within the limits defined by national price policy. The three-level price system defines these limits. For the 1975/76 buying campaign, the Ministry of Commerce and Industrial Development reduced official grain prices to 18 CFA/kilo for the producer, 22.5 CFA/kilo for industrial consumers (breweries, etc.) and 30 CFA/kilo for the retail consumer.^{1/} There was no regional differentiation in official grain prices (except for some special regional transportation-subsidies) and no economic justification of the implied marketing margins.

The organization and planning for the 1975-76 buying campaign reflected the ORD's experience in the previous year, its growing operational sophistication, and new equipment. Marketing targets were set in two ways. First, for grains, the national capacity of OFNACER to handle, store and distribute cereals determined, in consultation with the ORDs, a global purchase target which was rather arbitrarily allocated to the ORDs which in turn allocated quotas to their sectors. Second, Eastern ORD cash crop targets were set either as percentage increases over the previous year or more simply (and probably more realistically) left open to be determined by market possibilities. For both grain and cash crops one is struck with the lack of economic analysis which went into the selection of targets even though they seem intuitively very plausible. This is an area which will hopefully be strengthened in the future.

The ORD should be greatly assisted in the current campaign by the additions which USAID has made to its motor pool and equipment stock. The ORD truck fleet (beyond one-half-ton pickups) has risen from 2 tons (one truck which spent most of 1975 in the garage) to 51 tons (8 trucks). However, the usefulness of these vehicles could be rapidly compromised since there is currently no mechanic to service them in the ORD. Further, lack of operating funds and coordination in optimal routing could further diminish their usefulness.

^{1/} Actual market prices continue to vary substantially from these official prices. See next section for more details.

The overall buying strategy for 1975-76 will use village organizations to assist official ORD buying agents and teams.¹ This policy is consistent with overall Upper Volta Community Development strategy and seems to work reasonably well. Supervision of buying is assured by sector chiefs and a roving team from Fada which will have substantial logistical support. Weekly written reports dealing with finances, materials and stocks purchased flow upwards from the encadreur level to Fada after being summarized by sector chiefs. A major weakness in this system seems to be a lack of provision for systematic analysis and interpretation of this collected information at the Fada level so it can be used in a timely fashion to reallocate resources if necessary during the course of the buying campaign. Further, there seem to be no means of regular communication with OFNACER in Ouagadougou.

Stocks of grain are to be held at the village level until the quantities are large enough to be evacuated by truck to Fada. In contrast to the past campaign, all grain stocks are to be transferred to OFNACER by May 1976 in order to avoid overly large stocks at the sector level or stocks trapped in the villages by the first rains. This, coupled with the new operating agreement worked out with OFNACER by which it simply gives funds to the ORDs to buy cereal in its name, will hopefully reduce some of the problems encountered last year.

The plans for the 1975-76 campaign look quite encouraging; however, by early December 1975, the Eastern ORD had only bought yams to be sold to schools in Fada. Neither the cereal nor the cash crop programs had begun because no funds had reached the ORD which in turn was leery of using its own limited funds due to the risky nature of most of the agricultural markets it faces. For cash crops (peanuts and sesame), BCAFU loans were approved but the first payment to the ORD was blocked by the BND due to the ORD arrears from the 1974-75 campaign (which were caused by OFNACER and the Sous-Comité not having paid their ORD bills). For cereals, a BCAFU operating capital loan to OFNACER had only been verbally approved by December 10, 1975, and thus the

¹ During the 1974-75 campaign, 76 groupements villageois (multipurpose rural development associations), 118 comités villageois (special ad hoc committees formed to purchase agricultural products), 17 AC clubs and 11 "isolated intermediaries" acted as buying agents for the ORD.

ORDs had not received funds needed to purchase grain. This means an even later start (if at all) in cereal buying than the previous year which coupled with insufficient funding had led to a good deal of farmer disenchantment detailed in other reports.

The above events forced the ORD director in December 1975 to send an official letter to all sector heads temporarily cancelling all major buying activities. As a result the status of the ORD will be further eroded in the eyes of the region's farmers and the ORD will lose valuable sources of self-financing. The present paralysis of the buying program can largely be attributed to incoherent agricultural policy and the continued lack of cooperation among government agencies engaged in national grain marketing. Thus, to what extent the Fada ORD can salvage something from this year's campaign remains to be seen.

It became clear to the MSU team as it attempted to assess the performance of ORD marketing programs during the 1974-75 and 1975-76 campaigns that there were a number of major problems in national policy areas which were placing severe constraints on the ORD's ability to operate effectively. These problems have to be addressed before attention can be focused on the pressing problems of improving logistical and operating efficiency and beginning the collection of base-line data on the production and marketing of basic crops.

D. Major Problems in National Marketing and Pricing Policies and Their Impact on ORD Programs

Since most of the region's marketable surplus in both cash and food crops flows into markets outside the region and, in some cases, outside the boundaries of Upper Volta, it is of fundamental importance that Eastern ORD marketing activities be viewed within the context of national marketing trends and the market intervention, pricing and export policies of the Government of Upper Volta. Basic government decisions on rural development, on the formation of groupements communautaires and on market intervention will set the general limits within which the ORD will operate just as the setting of official buying and selling prices for cash and food crops will define the economic possibilities for producers, for the ORD and for the commercial sector which may or may not follow those price guidelines. The economic importance of these outside pre-conditions is reflected in an ORD marketing planning document for this year where three major uncontrolled factors limiting ORD options are stressed: the

financial and storage capacities of OFNACER to receive and liquidate stocks, the timeliness and adequacy of available BCEAO/BND operating funds, and world prices for exported cash crops.¹ These coincide with the following list of national policy areas which we feel will have significant bearing on ORD programs:

1. There are a large number of organizations engaged in agricultural marketing in Upper Volta and they often are more competitive than cooperative in their operating behavior. In the area of grain marketing and price stabilization, two governmental bodies and one international organization have played significant roles in addition to the ORDs. First, OFNACER (the Office National des Céréales) is legally charged with the operation of grain price stabilization activities through its storage and resale operations and the transfer of grain from surplus to deficit regions. In addition, a special Sous-Comité operated by the military was established for the distribution of emergency grain shipments during the recent drought years. This organization is still in existence and possesses substantial resources in terms of vehicles and storage facilities which could perhaps more profitably be used by OFNACER or the ORDs. Finally, OMSO² bought and distributed substantial amounts of grain in Upper Volta as well as other Sahelian countries during the drought and is still in operation. A major conclusion of the MSU team is that there is a serious lack of policy coordination among these various groups and that this lack of coordination has hampered grain marketing activities in Upper Volta. Further, the absence of a unified national grain policy and coordinated institutions will place major constraints on the Eastern ORD's food production programs and its ability to participate actively and effectively in grain marketing. The events of the latest two buying campaigns forcefully demonstrate this lack of coordination and its

¹ORD de l'Etat, "Organisation de la Campagne de Collecte et de Commercialisation des Produits du Cru (Novembre 1975-Avril 1976)," p. 7.

²A UN/FAO drought relief operation.

adverse effects on the provision of credit and the resale, transfer and storage of food grains.

While the situation in the cash crop area is better than for grains, buying programs still suffer from late arrival of funds and lack of institutional coordination. In the past the various ORDs were grouped into a semi-formal cooperative in order to increase collective bargaining power and obtain more favorable forward contracts with both exporters and with foreign clients. In the past two harvest seasons this organization has largely been abandoned with each ORD fending for itself.

2. The most striking result of the lack of national-level coordination among government agencies dealing with agricultural development deserves a special mention of its own and that is the untimely provision of credit for financing the ORD's buying programs. We have seen that the BND, playing the role of a prudent banker has withheld funds from the ORD because of unsettled accounts which have resulted largely from institutional conflicts. The careful planning of buying activities and the confidence of the rural population both have been eroded by this practice which should be reasonably costless to eliminate.
3. There are three closely related policy questions which all deal with the degree to which the ORDs should intervene in agricultural markets:
 - a. The most important of these is undoubtedly the much-debated monopoly grain-buying position given to the ORDs in 1974. The practical results of the 1974-75 buying campaign have been reviewed here and in other reports and it scarcely needs repeating that the ORDs were not able to successfully fulfill this monopoly role. It was clear to the RSC team that the Eastern ORD does not have the personnel or the physical and financial means to operate the total monopoly to which it is still legally entitled. The operational policy for the 1975-76 campaign is now referred to as a monopole de principe with the realistic admission that the ORDs will be acting in competition with private traders. In fact, numerous officials indicated

that the monopoly policy really represented the government's intention of playing a meaningful stabilization role in the market, of protecting the interests of major producer and consumer groups from price exploitation, and of generating some portion of ORD operating revenues.

- b. A related policy is the official commitment to the policy of "auto-financing" by which ORDs generate part of their operating revenues through commercialisation activities. Opinion is divided on the likelihood of the ORDs being able to effectively implement this policy within the immediate future.¹ The chances for auto-financing are currently negligible given the lack of an overall agricultural marketing policy, ORD difficulty in obtaining buying-campaign operating funds, and pricing policies which seem to contain little if any systematic economic analysis. Beyond this question of practical feasibility another important question must be raised: what proportion of the agricultural surplus or marketing margin should go to the producer to benefit and encourage him directly and what proportion should go to the ORD to benefit the producer indirectly? We must be careful to stress that the MSU team fully supports the decentralized nature and operations of the ORDs and the basic idea of encouraging local autonomy in the financing and control of development. The real question is how should total terms of trade be set to promote optimal development. We raise this question because there are some persuasive arguments that much of the agricultural surplus should be taken and reinvested by modernizing institutions, such as the ORDs, because unorganized farmers would tend to "waste" these benefits on nonproductive consumption.² We feel that this question of the optimal division of the agri-

¹For example, there are two contradictory points of view in the following reports: USAID, Upper Volta Integrated Rural Development Project, Washington, D.C., Oct. 1974, pp. 7 and 29.

²See, for example, Gerald Helleiner, Peasant Agriculture, Government and Economic Growth in Nigeria, Richard Irvin, 1966; and USAID, Development Assistance Program: Upper Volta and Niger, Washington, D.C., March 1975.

cultural profit margin is an empirical one which can be answered if development goals are carefully defined and the needed information is collected.

- c. Underlying the viability of both the policies of monopoly buying and auto-financing is the problem of setting agricultural product prices to serve multiple goals. The ideal would be to have official prices for cash and food crops which provide incentives to producers, which are acceptable to consumers and which give the OAD a margin which will more than cover its marketing expenses. The difficulties of finding such "perfect prices" should immediately be clear. However, we feel that given a clear specification of development goals and an improved information base it should be possible to spell out some of the implications of the adoption of different official prices. Policy-makers often must make decisions using inadequate or out-of-date information. The action research proposed for the Eastern OAD should help resolve this problem in Upper Volta.

4. The ability of Upper Volta rural development institutions to develop new internal and foreign market opportunities is a major challenge to policy-makers and "action researchers." Possible examples are numerous but two will suffice. First, the Multidonor Committee on Food Aid in Niger has estimated that Niger faces a global grain "deficit" of 100,000 metric tons in 1976. The projected deficit includes substantial quantities of grain to build up emergency reserves and seed stocks, etc.¹ In contrast the 1975 Upper Volta harvest has probably resulted in a grain surplus which, when added to existing government stocks, would make it reasonably easy for Upper Volta to make at least 10,000 tons available for export to Niger. The official grain-buying price for the 1975-76 season is

¹ UNDP/Republic of Niger, "Rapport Provisoire de la Mission d'Evaluation FAO (ONAO), Campagne Agricole 1975," Niamey, 29 October-8 November, 1975.

18 CFA/kilo in Upper Volta as compared with an official price of 25 CFA/kilo in Niger. Actual market prices in Upper Volta were 12-15 CFA/kilo in December of 1975. Therefore, it is quite possible that Upper Volta and especially Gourma farmers could benefit if Upper Volta sold 5,000 to 10,000 tons of grain to Niger. Although more precise data on the supply and demand for grain in Upper Volta (e.g., carryover grain reserves at the farm level) has to be generated, the possibility of Upper Volta becoming a grain exporter has important implications for the Eastern ORD. If Upper Volta does not export or find other profitable uses for grain it is possible that grain prices to Gourma farmers could fall to 10-12 CFA/kilo, a price which would severely constrain the introduction of the Eastern ORD's present technical package of improved seed and animal-powered mechanization.

A second possible opportunity for profitable commercial development involves the production, storage, transport and exportation of a number of varieties of niébé ("cowpeas") grown in the Eastern Region. Very little is known about the amount of niébé produced, the demand for the product and the possibilities for long-term storage. We do know that prices for 100-kg sacks normally rise from about 1600-1800 CFA/sack to up to 4000 CFA/sack or more within a six-month period, that fairly large quantities of this product are exported to northern Togo and Bénin, and that it may be possible to prevent insect infestation through storage in airtight plastic bags.¹ Beyond this little is known about the economics of cowpea production and marketing in Upper Volta.²

¹ Research is currently underway on this technology in the Koupela ORD in Upper Volta.

² It is estimated that Niger will export 50,000 tons of niébé to northern Nigeria in 1976. For research on niébé in Nigeria see IITA's project, "The Economics of Cowpea Production in Nigeria," by D.J. Nangju and J.C. Flinn, IITA, Ibadan, Nigeria. Also, a Nigerian doctoral student in agricultural economics at Cornell--Raphael Ejigbo is undertaking his Ph.D. dissertation research on "The Economics of Cowpea Production and Marketing in Northern Nigeria." Ejigbo's research will be completed in 1977.

In addition to development of export markets to other parts of Upper Volta and to neighboring countries, the possibilities for investment in intermediate agricultural processing industries in the Eastern region such as small mills for producing crude peanut oil and cake and shea butter should be investigated. These and other tentative suggestions for market development emerged from the MSU team's discussions with ORD officials and extension workers, farmers, various other experts and from brief visits to adjoining agricultural production regions in Bénin and Niger. These are summarized in the following table and must be taken as largely speculative at this point.

5. The formation of village groups and cooperatives is, as we have seen, one of the cornerstones of ORD and national rural development strategy. A major challenge to the ORD is to channel aspects of various programs into locally initiated community development activities. Experience across Africa indicates that simple product and input marketing tasks are often the most successful initial activities for such groups¹ and this conclusion is supported by preliminary results in the Eastern ORD. The task now becomes one of reinforcing the initial successes of marketing and other community development activities with additional policy measures which will foster local participation, popular selection of development activities, and provide incentives for vital needs such as public works and increased agricultural production.

B. Need for Action Research: Improved Information for Marketing Program Implementation and Planning

To improve the operation of existing marketing programs and the identification and development of new market outlets, applied, practical research must be undertaken which will produce minimum necessary information. The information needs are, however, different for the two purposes. To

¹Uma Lele, The Design of Rural Development: Lessons from Africa. John Hopkins, 1975, Chapter 6.

Table 3. Potential Market Outlets for Crops Grown in the Eastern ORD of Upper Volta

Crop	Production Area	Market Possibilities	Other Comments
<u>Food Crops</u>			
A. Millet	Entire ORD	--Possible exports to neighboring countries	
B. Sorghum	Entire ORD	--Export possibilities --Use of red sorghum in traditional beer should be investigated	
C. Maize	Southern regions of ORD	--Feed supplements --Beer production with new brewery in Ouagadougou?	
D. <i>Mûhè</i> ("Cowpeas")	Southern, Eastern Regions of ORD	--Export and domestic markets	--Very little is known about marketing and storage of this crop --Nutritional value and consumer preference for different varieties should be explored
E. Chickpeas ("peas de terre")			--More information needed
F. Tams	Southern border region of ORD	--Interesting possibilities of contracts to major institutional consumers such as schools plus normal market sales, particularly in Ouagadougou	
G. Vegetables and Fruit	All sectors of ORD have some potential	--Onions from Dakiri area --Irrigated vegetable production	--Kongoussi experiment should be studied carefully
<u>Cash Crops</u>			
H. Peanuts	All sectors but particularly the Bogandé area	--Crude oil processing	--Oil prices are quite interesting
I. Sesame	All sectors but particularly the Bogandé sector	--Export	--Fluctuating world prices
J. Cotton	Southern part of ORD	--New govt. cotton markig. agency	--Labor bottleneck
K. Shea Nuts	-----	-----	--Wild crop which limits production

improve the management of current programs much of the information needed is available in the ORD headquarters (e.g., trucking capacity, number of personnel, budget size and restrictions, etc.) and much of the rest could be obtained through the upgrading of existing encadreur, sous-secteur and secteur reporting procedures. For example, each chef de sous secteur must prepare a Rapport Mensuel (monthly report) which contains market price information as well as quantities of products bought and inputs provided to farmers. This coupled with modification of planning documents already in use and the introduction of a proposed radio reporting/communication system would probably provide enough information to permit substantial improvements in the operating efficiency of the current system.

The information needed to effectively identify and develop new or improved market outlets and a wider ORD participation in new marketing activities is more complex because of the lack of detailed scientific understanding of traditional and private commercial marketing activities, farmers' response to price variations, and the type and quantity of on-farm storage, etc. As a result there is a need to undertake applied research to collect information on the functioning of the present marketing systems. In addition to data on prices and quantities and a limited number of other variables which would hopefully be collected over time on an extensive basis, sample survey techniques will be required to derive more detailed market system information. A complete listing of the types of information to be collected and the analyses to be performed will have to await the specification of micro-level market research studies to be conducted in representative locations of the Eastern ORD. However the main objectives of this "action research" should be to obtain a basic, detailed understanding of the following components of the marketing system:

1. A description of actual marketing systems for major food and cash crops, including the number and type of market participants, nature of the market channels, local institutions and cultural patterns.
2. The nature and economic structure of the market systems which link village food and cash crop producers to major groups of urban food consumers and to the major purchasers of cash crops (e.g., exporters, processors, industrial users, etc.) and to potential markets in neighboring countries.

3. The extent of marketable surplus in food production for different regions, crops and family structures. Estimates for all of Upper Volta put the percentage of food grain production which reaches the market between 10 to 15 percent and 20 to 30 percent.¹ The Eastern ORD region is traditionally known as a net exporter of cereal. Are these percentages of surplus higher in some Couma regions? This information will help to estimate the amount of production potentially available to marketing campaigns but would also be useful in calculating regional and subregional needs for regulatory and emergency stocks of grain.
4. Marketing margins at various points in the marketing channels and their relationship to marketing costs, including factors such as the bearing of risk by market participants. This information will help to determine whether market intermediaries are exploitive and will help isolate specific ORD interventions to reduce marketing margins. It is essential that cost data be collected in such a way that it can be "assigned" to the marketing of a specific crop from a given region to its ultimate rural or urban consumer. Only then can the extent of market margins be determined accurately, be they for private or governmental intermediaries.
5. The nature of on-farm and private commercial storage, particularly of grains and more perishable products such as cowpeas and other kinds of beans. It is often stated that farmers, in normal times, will store from one to two years of grain for family use in addition to grain for seed. To what extent does this hold for all sectors of the Eastern ORD? What are the costs of traditional farm-level and commercial storage particularly the losses by season? This should help answer some basic questions about the economic returns to alternative farm- and village-level storage facilities and the degree

¹ These figures were mentioned respectively in J.A. Becker, An Analysis and Forecast of Cereals Availability in the Sahel and Faticke States of West Africa, USAID, Washington, Jan. 1974 and USAID, Upper Volta Integrated Rural Development Project, Washington, Oct. 1974 (the Eastern ORD Project Paper).

to which seasonal price movements can be attributed to storage costs.

Two overriding questions can be addressed through micro-level market research. One is a systematic understanding of the interaction of farmer production and marketing decisions. What kind of market opportunities does he face and how does he react to them? The second is to be able to assess the degree of integration, competitiveness and efficiency in various marketing systems. Both should provide guidance to the ORD in choosing market intervention strategies which will contribute to the multiple goals of increasing production, consumer incomes, marketing efficiency and self-generated ORD operating capital. Recent work on the grain marketing and storage in Northern Nigeria points up the potential for this kind of applied research to improve current marketing systems and provide suggestions for market intervention.¹

It should be stressed again that the information needed to strengthen the current marketing activities of the ORD should be part of one overall plan of applied socio-economic research.

If programs for the collection of agricultural statistics are approved for the Eastern region it will be imperative that the market research be coordinated with these efforts.

7. Recommendations

The following is a set of suggested activities for the development of marketing programs for the Eastern ORD:

1. Rapid ORD Reaction to National Marketing and Financial Policy Decisions

An important lesson which must be drawn from both the 1974-75 and 1975-76 marketing campaigns is that decisions taken on national market policy and on the availability of operating funds have often

¹ See particularly, H.N. Haya, The Marketing and Storage of Food Grains in Northern Nigeria, Bamoru Miscellaneous Paper 50, Institute for Agricultural Research, Bamoru, Ahmadu Bello University, Zaria, Nigeria, 1975.

come at the last moment and have made the realization of the planned program very difficult at the ORD level. The ORD with the aid of available technical assistance should try to incorporate contingency planning into its projected commercialization campaigns. Provision should be made so that some priority and/or high-return activities can be continued even if the size of the overall campaign must be curtailed. It is clear that the disruption of buying campaigns is very costly to the ORD both in financial terms and in support of the farmers of the region. This type of contingency planning would have to be done very carefully in order to minimize any possible financial risk but it should be possible to improve on the operating fund "record" of the past two campaigns.

2. Rationalization and Improvement in Marketing Management, Logistics and Financial Operations

It is imperative that the ORD marketing activities at least break even and that credit extended for a particular buying campaign should be repaid on schedule. Part of this "guarantee" can be met through the use of contingency planning as outlined briefly above. Another means of increasing efficiency is to conduct a systematic review of the entire operational structure of the marketing program. This procedure could be begun by simply describing the actual functioning of the marketing programs from initial planning to the final delivery of products and accounting. These activities, once documented, could be charted and analyzed with recommendations made for the elimination of bottlenecks in operational structures and procedures, and for the simplification of financial management and bookkeeping procedures.¹ This would also facilitate closer supervision of cash-flow in the system and the possible shifting of resources to areas where commercial activity is more intense and the need for ORD intervention

¹ For a good review of the types of practical market improvement activities which can be undertaken, see Harrison, K. et al., Improving Food Marketing Systems in Developing Countries: Experiences from Latin America, Research Report No. 6, Latin American Studies Center, Michigan State University, 1974.

may be greater. This analysis of the commercial activities of the ORD should be done with the full participation of relevant ORD and technical assistance personnel and might be facilitated at a critical point of analysis by using the services of a consultant in operations analysis.

The capacity and functioning of the current input delivery system must be simultaneously studied and evaluated along with the product marketing capacity.

Improved means of assessing future input demands must be devised that will channel effective farmer demand for inputs to the ORD direction level. This must be carefully coordinated with the expansion of new technical practices and the extension and rural education systems.

3. Developing New Market Outlets: Strengthening Effective Demand

The development of new markets is fundamental to the long-run growth and success of the ORD and must be timed and coordinated with the development of new production technologies and extension activities. The key here is setting up a general strategy to be used in the identification, evaluation and development of these new markets. The problem should be approached both from the production and marketing points of view. A new or expanded crop must fit into a realistic model farm. The farmer should be able to incorporate this crop into his production system while meeting subsistence food needs and keeping his level of risk at a tolerable level.

A variety of market coordination mechanisms such as contracting, use of cooperative assembly and market bargaining should be investigated as means of reducing risk to market channel participants, to enhance the efforts of the ORD, and to promote profitable new systems of mixed farming in the Gourma region. A list of possible market opportunities to investigate was presented in the previous section.

4. Begin Baseline Studies of Present Marketing Systems for Basic Cash and Food Crops and the Recurrent Collection of Basic Market Information

It is vital to gain a greater understanding of traditional market systems as a foundation for improving the Eastern ORD's marketing

program. Three basic activities should begin as soon as possible. First, market prices, estimates of marketable surplus and quantities marketed, etc., must be gathered on an extensive basis, probably through the revamping of the existing encadreur and chef de sous-secteur Rapport Mensuel. In order to transmit this information rapidly to ORD personnel a system will have to be devised to record, tabulate and analyze these data and quarterly reports of basic data should be followed by monthly reports as the quality of staff improves. Second, a team of enumerators and supervisors should be chosen, trained in basic interview techniques and set to work collecting data on product flows, numbers of participants, prices and the destination of various cash and food crops. The selection of areas for intensified study--both in micro-production and marketing--should be done so as to be able to represent major ecological and cropping zones of the region and serve the information needs of the USAID intensive zones as well as the overall development strategy of the ORD. Third, as improved information increases basic knowledge of market channel flows and behavior, a set of simple socio-economic indicators of change should be established. The major point here is that the data requirements and costs for these indicators should be as low as possible yet provide useful measurement of market system change and evaluation of ORD and foreign assistance activities.

IV. AGRICULTURAL PRODUCTION

A. Introduction

The overriding characteristic of agriculture in the eastern region is its heterogeneity. Annual rainfall varies from 500 mm. in the north to 1,200 mm. in the southern part of the region. Short cycle drought-resistant millets and peanuts are grown in the north while root crops, corn and longer cycle sorghums are prevalent in the more humid regions in the south. Given the wide diversity of both physical and economic conditions the MSU team strongly endorses the Stacy Mianon's recommendation of developing an improved production package for each of the four intensive zones: Fada I, Fada II, Bogande and Diapaga.

B. Current Situation

The following table represents an attempt to describe, at least superficially, the distribution of farms, farmland and farm population. The wide variability of farmland estimates makes the ratios in Table 4 quite suspect. This is inevitable when regional data are disaggregated in order to gain estimates of agricultural organization and practices at the farm level. The only farm-level survey the MSU mission is aware of is the 1975 SAED survey in Namounou and Diabo sub-sectors which was undertaken for UNICEF and the Eastern O.R.D.^{1/} The estimates of farm size for both Namounou and Diabo differ significantly from the estimates shown in Table 4. SAED's estimates of farm size in their 1975 study^{2/} are 4.2 hectares, while in the 1974 SAED study the average for the region is

^{1/} SAED, Conditions de Diffusion du Crédit Agricole et de Mise en Oeuvre d'Activités Communautaires dans la Région de l'ORD de l'Est Fada N'Gourma: Sous/Secteurs de Namounou et Diabo, Ouagadougou, Septembre 1975.

^{2/} SAED did not have the time nor resources to measure fields in order to estimate farm size. SAED estimated area under cultivation by multiplying the amount of seed used by a fixed coefficient (i.e., 7.5 kg. of seed per hectare of sorghum).

Table 4. Farms, Farm Land and Farm Population in the Eastern ORD, 1974

Sector	Farmed Land (Ha.)		No. of Farms		Ha./Farm		Pop./Farm		Ha./Pop.	
	ORD ^{1/}	SAED ^{2/}	ORD	SAED	ORD	SAED	ORD	SAED	ORD	SAED
Fada I	50,825	45,541	7,626	5,245	6.6	8.6	10.4	12.5	0.63	0.66
Fada II	57,910	34,198	3,938	5,426	14.7	6.3	17.2	12.3	0.85	0.56
Bogande	81,191	41,646	6,692	4,738	12.1	8.8	13.3	15.4	0.91	0.57
Diapaga	154,868	35,228	4,691	6,523	33.0	5.4	16.5	13.0	2.00	0.41
Total ORD	344,794	156,614	22,947	22,454	15.0	7.0	13.6	12.7	1.10	0.55

^{1/} O.R.D. de L'Est, Programme d'Activités: Campagne 1975-1976, Fada, Avril, 1975.

^{2/} SAED, Etudes D'un Programme Régional de Développement Rural de la Région de L'Est Fada, Juin, 1974.

7.0 ha., 5.4 ha. for the Diapaga (Namounou) sector and 6.3 ha. for Fada II (Diabo). The field visits by MSU team members support the smaller farm size estimates. In the Diabo sub-sector, the local agent for the extension unit (Unité d'Encadrement) of Tanga is working with 33 farmers, who collectively grow 7.36 ha. of cotton, 20.06 ha. of peanuts, 106.08 ha. of millets and sorghums, 12.00 ha. of corn, 1.40 ha. of rice and 1.785 ha. of soybeans. The average farm size of these 33 farms is 4.50 ha. Discussions with farmers and extension agents in other subsectors also informally supports the smaller farm size estimates. Nevertheless, analysis and planning of agricultural production at the farm level cannot be carried out on such a weak micro-data base.

Millets and white sorghums are the predominant crops throughout the region. As expected, peanuts are very important in the Bogande sector accounting for 22 percent of Upper Volta's production. The two northern sectors, Bogande and Fada I, account for 75 percent of the region's peanut production. Rice and cowpea production are concentrated in the two southern sectors, Diapaga and Fada II. A small amount of cotton is grown, primarily in the Diapaga sector where CFI was most active. No information is available on the importance of yam production in the southeastern part of the region. Peanuts are the only commercial crop of any importance in the region.^{1/} The eastern region is a surplus producer of staple food crops. The size of the marketable surplus is unknown.

The Eastern OED extension program has promoted a package including improved varieties, planting in lines and mineral fertilizers. In 1974, the 43 local level extension agents (encadreurs) were assisting 1,575 farms or 7 percent of the total number of farms in the region and about 37 farms per encadreur. The OED figures in Table 5 illustrate the limited impact of the extension services on farming in the region.

^{1/} SAED's 1975 survey in the Namounou and Diabo sub-sectors revealed that less than 0.2 ha. of the average farm was planted in cash crops.

Table 5. Eastern ORD: Improved Farming Practices by Sector, 1974.

Sector	Farms Supervised	Farmland Supervised	% Total Farmland
Fada I	610	591	1.2
Fada II	490	1,227	1.5
Bogande	224	686	1.6
Diapaga	251	809	2.1
Total	1,575	3,313	2.1
Sector	Hectares Plowed	% Farmland Supervised	% Total Farmland
Fada I	114	19.3	0.2
Fada II	647	52.7	1.9
Bogande	165	24.1	0.4
Diapaga	112	13.8	0.1
Total	1,038	31.1	0.6
Sector	Selected Seed (Ha.)	% Farmland Supervised	% Total Farmland
Fada I	190	32.1	0.4
Fada II	285	23.2	0.8
Bogande	224	32.7	0.5
Diapaga	170	14.5	0.1
Total	869	24.2	0.5
Sector	Sown in Lines (Ha.) ^{1/}	% Farmland Supervised	% Total Farmland
Fada I	1,461	285.9	7.6
Fada II	478	19.0	1.4
Bogande	882	128.6	2.1
Diapaga	69	8.5	0.1
Total	4,892	342.6	3.1
Sector	Hectares Fertilized	% Farmland Supervised	% Total Farmland
Fada I	7	1.2	0.02
Fada II	22	1.8	0.06
Bogande	21	1.4	0.06
Diapaga	1	0.1	0.003
Total	51	1.6	0.003

Source: ORD de l'Etat, Rapport Annuel 1974, Fada, Mai 1975.

^{1/} A large number of hectares sown in straight lines may mean that in some areas traditional techniques of planting in straight lines were counted as "sown in lines". This does not mean that the recommended spacing of plants was respected which is the primary reason for planting in lines.

The use of draft animals is perceived as the major vehicle of increased agricultural production in the region. To date animal traction has had a chequered history. The ORD, Maurice Colas, Roman Catholic and Protestant missionaries and the LESIEUX DES HOMMES have introduced and disseminated a wide range of draft animal equipment in different regions over the last decade. According to available information, 463 minimum tillage hoes, donkey plows and oxen plows and 260 carts had been disseminated as of 1974.^{1/} In 1975 a total of 282 sets of donkey equipment, 7 oxen plows and 50 carts were provided to farmers.^{2/} The MSU team encountered many examples of abandoned equipment. For the legoubou extension unit, 8 of the 10 donkey plows were not being used because they had no plow points. The extent of this non-use is difficult to assess but it does appear to be significant.

With the USAID and UNFAO inputs, the ORD will now have the financial liquidity, equipment, personnel and technical expertise to undertake a major agricultural production campaign in the region. The basic unit of production in the region is the family farm.^{3/} However, it should be remembered that the family farm is simultaneously a production, processing, marketing and consumption unit. These interrelationships will be stressed in the following discussion of a number of major issues in the design and implementation of an integrated program for the transformation of agriculture in the ORD.

^{1/} ORD de l'Etat, Rapport Annuel 1974, Yade, Mai 1975. N.B. The 1974 figures in Programme d'Activites, Campagne 1975-1976, Avril 1975, differ significantly from those in the annual report.

^{2/} 1975 figures acquired from ORD accountant.

^{3/} Family farm is loosely translated here as people living in the same concession.

C. Major Issues

1. Lack of a Profitable Production Package

On the basis of available data the MSU team concludes that the ORD does not yet have a profitable production package to extend to small farmers at present official prices of grain. Therefore, there is a danger of overinvesting in extension, logistical and administrative support relative to the investments needed to develop a viable technological package--both biological and mechanical--for small farmers. We realize that the absence of farm management research has made it difficult for the ORD to develop farm level guidelines for each of the four sectors. Since the ORD's improved package is primarily an animal equipment package at present, there is a need to develop farm prototypes for alternative equipment packages. Animal power can theoretically increase yields either through improved seedbed preparation, more timely planting and weeding, or better moisture conservation. IRAT in Upper Volta has documented the yield effect of oxen plowing for sorghums.^{1/} Animal power can also expand farm size. However, there are no hard data on the average effects of donkey or oxen plowing in the Eastern ORD. Information gathering activities (descriptive, agronomic and economic) should be initiated to determine the resource constraints, differences in debt carrying capacity and cash flow requirements and differences in the economic profitability of traditional and proposed crop and livestock systems. This data generation and analysis should create an ORD capacity to design and implement a range of farm prototypes for the improvement of agricultural production and farm reorganization. The resulting prototypes should not be seen as models to be imposed, but rather as a set of guidelines which can assist local extension agents in helping farmers improve their farming practices.

^{1/} IRAT, Données Actuelles sur l'Association de l'Agriculture et de l'Élevage en Haute-Volta, p. 13, Haute-Volta, Mai 1969.

2. Agronomic Research for Developing Improved Cropping Systems

Improved local varieties and new varieties are a major component of any production campaign. However, improved local varieties of sorghum and millet have not been field tested in the region. Also, most of IRAT's research on new varieties in Upper Volta has been done under conditions of optimum fertility. IRAT's assumption that small farmers can supply the level of inputs necessary to create optimum fertility conditions for maximum yields seems unrealistic. Farmers are primarily interested in varieties that produce reliable yields under adverse growing conditions. In 1976 the FAO agronomist in Fada plans to initiate a field trials program for local and improved crop varieties by sector. Where feasible, variability in crop calendars, input use, seeding densities, land preparation and crop weeding techniques should be included in these field trials.^{1/} The ICNISAT agronomist in Upper Volta will introduce hybrid sorghum varieties from India in 1976 and 1977. If the hybrid varieties are promising then they can be introduced on farmers' fields on a limited scale. The 1976 results should provide some tentative recommendations for cropping systems in each of the four sectors and by 1978 fairly firm extension guidelines should be provided. It is important that the economists and agronomists collaborate in this research program.

3. The Need to Standardize Agricultural Equipment

At least eight different models of animal-drawn equipment are now in use in the region. The MSU team observed two models of donkey-drawn minimum tillage equipment, three models of donkey-drawn plows and three models of oxen-drawn plows. This duplication has many drawbacks. First, since each model performs a field operation in a different manner, it may be necessary to adjust plant spacing for weeding or the timing of land preparation and planting (i.e., deep plowing vs. minimum tillage).

^{1/}The variety recommendations and fertilizer doses presented in the Stacy Mission Report, pp. 29-40, should be field tested.

These adjustments may require a great deal more work by the extension agent. Second, duplication exacerbates the provision of spare parts. Third, blacksmiths need to be proficient in the fabrication, repair and maintenance of as many models as there are in the area. Fourth, different models have different life spans and different prices and, as a result, it is difficult to develop a uniform credit program. Finally, the administrative costs of record keeping and supervision are increased.

The MSU team supports the movement to standardize animal traction equipment on a national basis. For a number of years, a government sponsored cooperative, Atelier Regional de Construction de Materiel Agricole (ARCOMA), has been refining and manufacturing the HV2A and HV2B equipment.^{1/} The HV2A and HV2B equipment will be introduced in the ORD in 1976. If the HV2A and HV2B equipment are satisfactory under the wide range of conditions in the region, there are a number of advantages to standardizing their use.

ARCOMA, a training school called the Centre National de Perfectionnement des Artisans Ruraux (CNPAR) and a supply system called the Service d'Assistance, Conseil et Soutien (SACS) represent a national effort to produce agricultural equipment locally, train craftsmen in the production and maintenance of the equipment and install and supply local artisans with raw materials, tools and technical advice. The major advantages of a standardized line of equipment are potential scale economies, both financial and administrative. It should be possible to reduce the cost of imported steel through bulk purchase as well as to guarantee the quality of steel used. Artisans trained by CNPAR will be able to repair and maintain the equipment used by farmers. SACS will insure that all parts are interchangeable and that the quality of work can be maintained.

Two oxen traction should not be viewed as the optimum type of mechanization but as only one of a number of alternative draft animal schemes. Agronomic variables, debt carrying capacity and economic feasibility will influence the choice of equipment. The choice between donkey or oxen traction and between one animal or two will depend primarily on two issues. The first issue is technical in nature and has to do with the kind of soils to be worked. For example, the light, sandy soils in the

^{1/} HV2A is for donkey and single ox traction. HV2B is for two oxen traction.

Agende sector should probably not be deep plowed with oxen but rather scarified with donkey equipment. The second is the investment requirement for the various packages and the ability of the farmer to repay the loan. The MSU team observed that many animal traction farmers had either liquidated capital assets (i.e., livestock or stored produce) or secured help from a well-to-do relative (i.e., civil servant or war pensioner) in order to repay his equipment loan. The MSU team does not find any firm evidence that the ODD has an economically profitable oxen equipment package for farmers at this time.

One advantage of the HV2A-HV2B line of equipment is that it can be acquired progressively. The following table outlines a possible scenario of how a farmer can acquire animals and equipment over time.

Table 6. Possible Scenario for the Acquisition of Animals and Equipment

Phase ^{1/}	Activity	Item
First phase: Donkey traction	Buy	1 donkey 1 HV2A set
Second phase: 2 donkey traction	Buy	1 donkey
Third phase: 1 ox traction	Sell Retain Buy	2 donkeys 1 HV2A 1 working ox
Fourth phase: 2 oxen traction	Salvage Retain Buy	1 light plow chassis 1 small donkey plow 1 set handles 1 plow front wheel 1 weeding tool 1 set nuts and bolts 1 working ox 1 heavy plow chassis 1 ox plow 1 ridger 1 peanut lifter if needed
Fifth phase: Oxen Traction system	Buy Sell	2 young replacement oxen 2 old work oxen after 2-3 months finishing diet

^{1/} A timetable for the phase has not been suggested as that should be a function of the income-generating capacity of the current and subsequent phases.

4. Agricultural Credit

The equipment and production package are inextricably linked to the credit system. Credit is discussed in Section V of this report. The general guidelines for the national medium-term agricultural credit program are a five-year scheme with one year's grace and a 5.5 percent interest rate. These guidelines seem to allow enough latitude for the Eastern ORD to develop a sound and flexible credit program.

D. Recommendations

1. During the 1976 season the AID production economist should collaborate with the ICRISAT field officer and FAO agronomist in the execution, monitoring and analysis of variety field tests for food and cash crops in each of the four sectors. Tentative extension recommendations should be available in 1977 for using local and improved varieties in diversified cropping and rotation systems. By 1978/79 more concrete recommendations should be available for the major cropping systems.

2. During 1976 MV2A and MV2B equipment should be introduced into each of the four sectors on a demonstration basis and the performance of the equipment should be closely monitored and evaluated. The potential demand for repair services and spare parts should be estimated in order that artisans can be identified for training (or retraining). A program should be established for a mobile SACS unit to deliver raw materials and technical advice to the network of artisans. During the 1976-1977 dry season the draft animal equipment requirements for the 1977 season can be estimated, new artisans can be installed and the SACS mobile unit can begin its activities.

3. A farm management survey should be taken on about 25 farms in each of the four sectors as the foundation for the development of typical farm budgets for the major cropping systems in each sector. The survey should take an inventory of the stock of land, labor, equipment, livestock and other capital assets. Flow information (input/output data) should be collected on these sample farms throughout the production and marketing season. The stock and flow information and the information supplied

by the agronomist and credit adviser will be used to develop farm budgets for encadreurs for each major cropping system. The farm budgets will also help identify constraints on the introduction of the improved production package as well as provide guidelines for farm reorganisation and further technical research. As the above information becomes available, extension personnel should be trained in the application of these guidelines (see Section VII).

4. The farm management survey should be used to help evaluate credit requirements and debt repayment capacity by sector. A modest number of loans based on the five-year scheme should be extended in areas where extension services are satisfactory. These loans should be primarily for the acquisition of HV2A and HV2B equipment.

5. The monthly crop and input reporting form used by local agents should be modified to stimulate the upward flow of information. The report forms should give the extension agent an opportunity to evaluate the performance of the GAD's services at the local level, his assessment of local agricultural problems and his projection of demand for inputs, credit and marketing services. These reports should be synthesized by the sub-sector chief and the sector chief and then analyzed in Fada (see Section XII).

V. AGRICULTURAL CREDIT^{1/}

A. Introduction

Before turning to credit in the Eastern ORD, it is important to point out that a wide range of small farmer credit schemes have been tried in other parts of Upper Volta and in Africa. These experiences should be harnessed in the formulation of an expanded credit program for the Eastern ORD. We shall first briefly review the history of a USAID financed small farm credit scheme in Kenya and then move to Upper Volta and an analysis of the Matourkou and Volta Valley Authority (AVV) programs and then to the Eastern ORD.

1. Common Pitfalls in Small Farmer Credit Programs in Africa

Although it is often asserted that credit is a constraint on small farmer development in Africa, the continent is littered with credit schemes that have failed--especially small farmer credit schemes for food production. As one analyzes the history of credit schemes in Africa it is obvious that prior farm management research at the local level has rarely been available to serve as the foundation for establishing the credit program. For example, Harman and Zalla^{2/} reviewed the credit component of the USAID financed Special Rural Development Program in Vihiga District in Western Kenya and found that no prior farm management research had been conducted to determine whether credit was needed for an expanded maize production program in the Vihiga Project. The program got underway with extension agents subjectively ranking farmers on their credit worthiness (their perceived ability to repay loans, and whether they were "progressive farmers"). The maize program made 63 loans to "credit worthy" farmers in 1971 and the number increased to 323 in 1972, 920 in 1973, but fell to 320 in 1974. The repayment rate fell from 82 percent in 1971 to 68 percent in 1972, 28 percent in 1973 and 17 percent in

^{1/} Much of the report, particularly this section on Agricultural Credit, benefitted from the dedicated assistance of John Leichte, a Peace Corps volunteer who served in the Namounou area of the Eastern ORD for two years.

^{2/} Edward D. Harman and Tom Zalla, "A USAID Sponsored Evaluation of the Vihiga Special Rural Development Project, Kenya," October 7 to November 24, 1974, USAID Mission to Kenya, Nairobi, 1974.

1974. Harman and Zalla reported that although the maize credit program provided some credit education seminars and information about farmers' attitudes toward credit the "crucial area for any credit program is repayment".

Harman and Zalla recommended in 1974 that the maize credit program in the Vihiga Rural Development Program be dropped and replaced with a crop demonstration grant program for seed and fertilizer. Harman and Zalla's overall evaluation of the AID financed credit program in the area was as follows:

From the experimental point of view the first three years of the Program contained nothing new with respect to credit administration in Kenya. Any number of books available in 1970 would have contained examples of the failure of unsecured credit programs similar to that of the Vihiga Special Rural Development Program. That the program was able to continue for so long without change was largely a matter of circumstances. The 1971 program was pushed through in a hurry. No attention was paid to repayment, and a deadline for repayment was not even specified. In any case, since a great deal of attention was paid to selecting credit worthy farmers, most of whom did not need credit, the repayment rate was not such that it caused much alarm.^{1/}

The Vihiga credit experiment has been duplicated by similar failures of credit programs for food production in Western Nigeria and in many other African countries. The MSU team believes that credit schemes for small farmers in tropical Africa are doomed to failure if they focus only on food crops. A cash crop is needed in the rotation. Also, an improved technological package, supervision, training, etc., are all important components of a credit program. Unless credit is analyzed as part of the total farming system the analysis will turn out to be superficial. Finally, it should be realized that the real costs (both direct and indirect) of a supervised small farmer credit program are high—about 10 to 25 percent per year.^{2/} A profitable technological package, good market outlets, training, supervision, all need to be present if the aim of achieving a 90 to 95 percent repayment rate is to be maintained over time.

^{1/} Harman and Zalla, ibid.

^{2/} This includes 6 to 10 percent interest rate, 5 to 8 percent loan default, and 9 to 10 percent supervision cost.

2. An Overview of Agricultural Credit in Upper Volta.

The National Bank of Development (BND) provides seasonal and medium-term^{1/} credit on a nation-wide basis to the agricultural sector. The Eastern ORD had no access to BND funds until its General Assembly and Executive Council were established in May of 1974. The BND conditions of medium-term credit for animal traction equipment are:^{2/}

- a) Farmers desiring credit must join a credit collective (groupe-ment de crédit).
- b) Members must contribute a membership fee of 1000 CFA for medium-term credit and 200 CFA for seasonal credit in order to create a loan guarantee fund.
- c) Agricultural equipment loans are available on a five-year basis at 8% with no period of grace.

Through a USAID Relief and Reconstruction Program, a medium-term revolving credit fund (65,000,000 CFA) was established within the BND in 1974 to provide animal-traction equipment loans on a national basis. This scheme has a one-year grace period and four annual payments. It is administered through the Permanent Secretary's Office (Ministry of Plan and Rural Development), the Rural Development Fund (FDR) and the ORDs. This program helped establish the Bilanga animal traction center in the Eastern ORD and provided credit for 19 sets of such equipment in the Community Development villages where supervision can be insured. The Government of Upper Volta has requested funding of an additional 395,000,000 CFA from the Entente Fund's Food Production Program in order to expand the animal traction program begun with the USAID R & R program.^{3/}

3. Lessons From the Natourkou and AVV Credit Schemes.

Two of the important credit schemes in Upper Volta are the Natourkou Project program and the Volta Valley Authority (AVV) scheme. Although

^{1/} Medium-term refers to 3-5 year credit programs.

^{2/} SAED "Conditions de Diffusion du Crédit Agricole. . .," p. 46. Ouagadougou, September, 1975.

^{3/} Secrétariat Permanent du Comité de Coordination du Développement Rural, "Avant-Projet: Développement de la Culture Attelée en Haute-Volta par la Concession de Crédit Supervisé aux Petites Paysans Encadrés par les ORDs," République de Haute-Volta, (no date).

these schemes were designed to respond to the capacities and constraints of a specific problem area there are some interesting and relevant aspects of these programs which should be studied--but not quickly copied--by the Eastern ORD.

The Matourkou program is a seven-year program with no down payment, two years grace, five equal payments and 5% interest. It is designed to accompany a particular production package including two oxen, an animal insurance plan, a plow with ridging and weeding accessories, a seedrow tracer, yoke, chain, ropes and one harrow for two farmers. The following tables illustrate the composition of the total debt and a schedule of repayments for an equipment loan for one farmer:

Table 7. Matourkou Animal Equipment Package

Item	1975-1976 Prices
Two Oxen	49,000
Insurance	1,500
Plow and Accessories	27,000
1/2 Harrow	6,000
Seed Row Tracer	2,000
Yoke, Ropes, Chain	6,500
Subtotal	<u>92,000</u>
Administrative Costs	<u>1,000</u>
Total Debt	<u>93,000 CFA</u>

Table 8. Repayment Schedule, Matourkou

Year	Credit	Interest	Total Due	Payment	Balance
0 ¹	93,000	0	93,000	0	93,000
1	93,000	4,650	96,750	0	96,750
2	97,650	4,650	102,300	0	102,300
3	102,300	4,650	106,950	24,000	82,950
4	87,950	4,148	87,098	24,000	61,098
5	61,098	3,155	66,253	24,000	42,253
6	42,253	2,111	44,366	24,000	20,366
7	20,366	1,018	21,384	21,384	0

Sources: "Systeme de Crédit et de Remboursement," Matourkou, 1975.

¹Year -0- refers to possible down-payment.

The Matourkou program resettles farmers on 8 ha of new land close to their current residence. Farmers are given loans with a two-year grace period because two years are needed to clear new land for oxen traction. The other argument for a grace period which is also relevant to the Eastern ORD is that it requires at least one year for farmers to learn how to effectively utilize oxen traction. The animal insurance scheme guarantees the replacement of oxen which die or are incapacitated through no fault of the farmer. Although the Matourkou credit system was initiated on a small scale in 1969, the terms of credit were formalized for participating farmers in 1971. The farmers receiving credit were close to the Project Headquarters and the credit programs were closely supervised by project personnel. Finally the Centre Agricole Polyvalent (CAP) of Matourkou enjoyed a financial position which allowed it to carry a significant proportion of delayed payments.

In a 1974 study on the first five years of the Matourkou program (1969-73), 1/2 of the farms were behind in their payments.^{1/} In many cases these delays were for understandable reasons (poor rainy season, accumulated seasonal loans, and animal losses in the middle of crop operations which Matourkou could not quickly replace). It should be stressed that Matourkou, located in the Moba Dioulasseo area, has an excellent road system, a favorable climate and market outlets unparalleled in Upper Volta (a peanut oil factory, a cotton factory and a brewery). None of these conditions are present in the Eastern ORD.

The AVV program is a major resettlement scheme of 400,000 to 600,000 people on land cleared of river blindness by the WHO onchocerciasis program. The AVV credit scheme is designed to complement a particular production package. The package includes one pair of 1-year-old oxen, an animal-drawn hoe, a yoke, chain and ropes in the first year and one pair of 16-24-month-old oxen, a plow, a harrow and a cart in the second year. The credit terms are no down payment, two years of small payments and five years of equal payments at 1.5% interest. Tables 9 and 10 illustrate the cost of the package and the schedule of payments.

^{1/} E. Lindborg, "Le Système de Crédit Matourkou: Analyse des Résultats après 5 Ans de Fonctionnement," Matourkou, le 20 Aout, 1974.

Table 9. AVV Animal Equipment Package

Year	Item	Cost
(1)	Two oxen, 3-years-old	45,000
	1 animal-drawn hoe	15,000
	1 yoke, chain, ropes	<u>5,000</u>
		65,000
	Interest payments for 8 years	<u>20,000</u>
	Subtotal	85,000
(2)	2 Oxen, 18-24 months old	25,000
	1 Plow	15,000
	1 Narrow	6,000
	1 Cart	<u>35,000</u>
		81,000
	Subtotal	81,000
	Interest Payments for 8 years	<u>24,000</u>
	Subtotal	105,000
	Total Debt	190,000

The AVV program is obviously an expensive package. It involves opening new agricultural land, major investments in regional services and infrastructure and a rotation system beginning with the first year. These investments in close supervision, catchment, infrastructure and land clearing should figure in an assessment of the real costs of the program. Of interest to the Eastern ORD is the explicit inclusion of the income-earning potential of oxen from the very beginning of the program. Although the buying price of 25,000 CFA for two 2-year olds is substantially lower than anything the NSU team observed in the Eastern ORD, it does seem reasonable that two 6-year olds weighing out at 500 kg. each after 7-1 month finishing diet would be sold for 75,000 CFA. The explicit recognition that oxen appreciate in value while donkeys depreciate should be incorporated in any analysis of animal traction programs. The AVV credit program has been in operation only two years and cannot yet be evaluated.

Table 10. Repayment Schedule, ATV

Year	Debt Balance		Payments		Total Payments	Cash Oxen Transactions		Cash Earnings Needed From Crops
	(1)	(2)	(1)	(2)		Sell Old	Buy Young	
0								
1	85,000							
2	87,500	185,000	2,500		2,500			
3	90,000	100,000	2,500	5,000	7,500			
4	64,000	80,000	16,000	20,000	36,000	75,000	25,000	-14,000
5	48,000	60,000	16,000	20,000	36,000			36,000
6	36,000	40,000	16,000	20,000	36,000			36,000
7	24,000	20,000	16,000	20,000	36,000	75,000	25,000	-14,000
8	0	0	16,000	20,000	36,000			36,000
9						75,000	25,000	

Source: "Le Crédit Agricole Qu'il est Près d'instaurer." ATV. (no date)

B. Agricultural Credit in the Eastern ORD.

1. Background.

The Eastern ORD has heterogeneous agricultural conditions. This heterogeneous pattern applies not only to rainfall and soil types, but also to the mix of crops grown, farm size and the size of the farm family. The implications of this diversity are that credit needs and repayment capacity of farms will differ significantly within the region. The ability of the ORD to integrate the major elements of an improved production and marketing program will have a direct impact not only on the functioning of a credit program (i.e., repayment rates) but also on the demand for credit itself. For example, the MAU team found that the lack of market outlets behind the Gohangou mountains has constrained the desire of farmers to increase production and consequently the demand for credit. Also SAED and ORD data reveal that there is very little cash crop production in the Fada II sector^{1/} and in the Nampouou and Diabo areas.^{2/} This lack of cash-earning activities weakens the capacity for repayment.

In summary, agricultural credit in the Eastern ORD represents one constraint on production which should be evaluated not only in terms of the heterogeneous farm conditions in the region but also in relation to other constraints on production such as availability of market outlets, opportunities for crop diversification, etc. Action research (farm management) and a trial-and-error philosophy should guide the expansion of the ORD's credit program over the next four or five years.

2. Credit Programs in the Eastern ORD.

Seasonal loans are made before the crop season to payans encadrés, village collectives and 4-C club projects and are recuperated after harvest. They are designed to cover seed, fertilizer, seed treatment chemicals and storage insecticides. For improved seed, farmers receive the seed in

^{1/} ORD de l'Est, "Programme d'Activités: Campagne 1975-1976," Fada, Avril, 1975.

^{2/} SAED, "Conditions de Diffusion du Crédit Agricole. . .," Ouagadougou, Septembre, 1975.

kind and return 150% of the amount received. Other inputs on credit are given to farmers in kind and repaid in cash at harvest. The major function of seasonal credit continues to be the provision of selected seed. Seventeen tons of improved varieties were provided on seasonal credit in 1974.^{1/} Seasonal credit is also available within the framework of special projects such as groupement or 4-C club activities. The OKD agent is usually present for such a project at the time of commercialization and can thus help ensure repayment.

There is no information on the repayment rates of seasonal loans. The MSU mission was informed that this had been a problem because farmers did not understand their obligations. As a result of the repayment problem credit for pesticides and fertilizer was discontinued in 1974 and access to seasonal credit for seed was restricted to paysans encadrés. Also, since the demand for seasonal credit by farmers was becoming so large, the OKD could not finance it out of its operating funds. Restricting credit to paysans encadrés was one means of reducing the amount of credit demanded.

Medium term credit for agricultural equipment has been dictated primarily by the financial position of the OKD rather than the credit requirements for an equipment program. Because of its inability to obtain BND medium-term funds, the OKD has been forced to use operating funds for its credit programs. From 1969 through 1973 the OKD offered a two-year, three-payment credit package for equipment. One-third of the total was required as down payment at the time of ordering the equipment, and one-third paid during each of the following two commercialization periods. No interest was charged but a fee of 1,000 to 2,000 CFA was assessed on each loan depending on the size of the total debt. Beginning with the 1974 season, the OKD was forced to tighten its terms for medium term credit because it could not support the increasing amount of credit being requested out of its operating funds. A one-year, two-payment system was instituted in 1974 with 40-70% as down payment depending on the price of equipment and the remainder paid during the following commercialization period. No interest was charged but a fee of 2,000 CFA was assessed on credit packages valued between 10,000 CFA and 30,000 CFA and a fee of 1,000 CFA on the 31,000 CFA donkey cart.

^{1/} OKD de l'Est, "Rapport Annuel 1974," p. 42, Fada, Mai, 1975.

Mr. Maurice Colas, who manages a small equipment shop in Fada N'Gourma, provided credit for animals and equipment based on the two-year, three-payment scheme from 1972-1975. He did not, however, charge any interest or fees. Most of his funds came from philanthropic organizations in Europe but he also received funds from the BND in 1973/74. The following table outlines the medium-term credit made available by Mr. Colas:

Table 11. Number of Medium-Term Loans Made Available by Maurice Colas, 1972-1975

Item	1972-73	1973-74	1974-75	Total Loans
Carts	-	5	-	5
Kirpy Plows	-	1	1	2
Fada Hoes	4	12	11	27
Water Cisterns	-	1	1	2
Seed Row Tracers	1	1	-	2
Yokes	-	5	-	5
Oxen	2	29	89	120
Donkeys	-	2	2	4

Source: ORD de l'Est, "Rapport Annuel 1974", p. 43, FAOA, Mai, 1975.

Mr. Colas is reported to have experienced some difficulty in recovering credit from farmers in the Diabo area. According to Colas and the sector chief, this was due to a lack of extension personnel and a breakdown in coordination between Colas and the ORD. The Diabo sector chief added that most of the problems involved donkey equipment since those who had taken oxen equipment had outside sources of financial assistance (a related relative or livestock which could be liquidated). Mr. Colas' failure to charge interest on his loans is reported to have contributed to his financial crisis in 1974-75 and his operations are now integrated into the ORD's credit programs.

The 1975-76 credit program of the ORD for animal traction equipment outside of the Community Development villages has become, in fact, a short-term scheme of one year and two payments. The following table gives the disposition of animal traction equipment credit since 1973/74 and the projected demand for 1976/77.

Table 12. Eastern ORD Equipment Loans and Projected Demand for 1976/77

	1973/74	1974/75	1975/76	1976/77
	-----CFA-----			
Donkey Plows	107	74	282	180
Oxen Plows	32	15	7	100
Donkey Carts	84	19	80	120
Estimated Total Value	3,000,000	1,700,000	5,000,000	9,000,000

Source: Equipment totals from "Rapport Annuel 1974," PADA, Mai, 1975 and projected demand from "Estimation de la Demande d'Equipements Traction Animale En Haute Volta," by A. Rocher, UN/FAO, Ouagadougou, Octobre, 1975.

There seems to be no explanation for the large increase in the orders placed by the ORD for animal equipment between 1974-75 and 1975-76. The increase exceeds the demand estimated by Rocher. It should be noted that the 1976-77 projections will double the credit load for the ORD and if the ORD sells all the equipment it has ordered (400-500 plows and 225 carts) it will be more than tripled. This will likely require a level of extension supervision which exceeds the ORD's projected capacity.

In 1975, the ORD initiated a five-year credit scheme with USAID R & R funds for the Community Development villages. The terms include a 20% down payment, one year grace period followed by four equal payments at 5.5% interest. This scheme financed the purchase of nineteen plows and 24 pairs of oxen during the 1975 season.

3. Major Issues in Developing an Expanded Credit Program for the Eastern ORD.

The office of the Permanent Secretary of the Ministry of Plan and Rural Development is attempting to standardize the major guidelines for medium-term credit for the entire country. The proposed terms of credit are a 5-year program with one year of grace, no down payment and a 5.5% interest rate. The CREA and USAID interventions, particularly the USAID revolving credit fund of \$950,000, have drastically changed the credit position of the Eastern ORD. The ORD is now in a position to design an agricultural credit program on a regional basis which conforms

to national guidelines and is relevant to the needs and capacities of farms in the region.

(a) Have the Preconditions Been Met?

For a credit program to function effectively, the production and marketing systems should be closely coordinated. The interrelated nature of production, marketing, credit and equipment has been underlined throughout this report. The MSU mission's emphasis on the heterogeneity of farming systems points up the need to develop farm prototypes for each of the four sectors. Farms with different equipment packages and different cropping systems will generate different income streams. The repayment requirements of a credit program should be tailored to these varying income streams.

Another precondition for the installation of a credit program is the need for adequate extension and supervision services. The credit program will involve introducing the farmer to a new production package. He will have to learn how to use the new technology, know the proper and varied uses of the equipment, how to maintain his equipment, how to manage his animals' care and feeding, which crop system is best suited to his farm and his equipment, and how the various crops should be grown using his equipment. These requirements have two implications. First, this learning process takes time and the full benefits of a production program should not be expected in the first year. Consequently there is strong support for a grace period and/or a low first annual payment. The second implication is for extension services. The primary guarantee of repayment will be the farmer's ability to implement the production package. The low level of extension personnel suggests that the new credit program should be undertaken on a demonstration basis in the first year.^{1/} Medium-term credit should be allocated in areas where the necessary level of extension supervision can be guaranteed (intensive zones and Community Development villages).

(b) Repayment Capacity

Now let us review what is known about the repayment of credit at the farm level to the OAP. The Stacy Mission sketched out a budget for

^{1/}This is also the recommendation of Tom Luche, AID Project Manager, in his first quarterly report on the project, p. 5, May 22, 1975.

a typical Gourmantche farm of five people, 3 hectares, two oxen and related equipment.^{1/} However, the Stacy Mission neither had the time nor data to develop farm budgets for each of the sub-sections where USAID would concentrate its resource. Subsequent discussions with Roy Stacy, David Weisenborne and Wilford Morris all pointed up the need to generate farm management and socioeconomic data as an integral part of the implementation and development of alternative packages over time.

The Stacy Mission also recommended that special credit and livestock studies be undertaken in the ORD. In 1975, USAID Ouagadougou commissioned SAED to conduct a credit study in the region and to propose guidelines for the diffusion of credit.^{2/} SAED was only given two months to conduct their study with emphasis on two of the four intensive zones. SAED's findings on farm organization, farm budgets and repayment capacity raise some questions. The typical farms in SAED's sample in Namounou and Diabo^{3/} are smaller than SAED's earlier study^{4/} suggests and much smaller than reported by the ORD.^{5/}

SAED also found that a very small amount of cash crops are grown in the two intensive zones.^{6/} Since the repayment of equipment loans will depend heavily on earnings from cash crops, further action research should examine how cash crop acreage and yields can be expanded.

For limited policy recommendations SAED chose three farm profiles^{7/} from their sample. The central policy finding of the SAED credit study was that 53% of the farms surveyed would not be able to repay a loan based on BND terms.^{8/} However, SAED had only two months to complete

^{1/} USAID, Upper Volta Integrated Rural Development Project, 1974, p. 61.

^{2/} SAED, "Conditions de Diffusion de Crédit Agricole. . .," Ouagadougou, Septembre, 1975.

^{3/} SAED, ibid., p. 13.

^{4/} SAED, "Etudes d'un Programme Régional de Développement Rural de la Région de l'Est." Fada, Juin 1974, pp. 28-29.

^{5/} ORD de l'Est, "Programme d'Activités: Campagne 1975-1976" FADA, Avril, 1975.

^{6/} This finding is supported by ORD data in ibid.

^{7/} SAED, "Conditions de Diffusion de Crédit Agricole. . ." pp. 46-48.

^{8/} See page 54 of this report.

their study and as a result their budgets (prototypes) have to be revised before they can be useful for policy analysis. SAED's sample budgets assume that if a farmer adopted the oxen traction package the only impact would be an increase in yields of 200 kg.^{1/} Furthermore, SAED assumed there would be no hectare expansion effect and that farmers would supply their own oxen. Even in SAED's own sample of 77 farms in the two sub-sectors only 17 owned cattle (23%).

SAED's attempt to evaluate credit repayment capacity highlights two major issues. First, the severe lack of micro-data and the dubious quality of the macro-data is a serious obstacle to the development of a versatile credit program which can be applied to diverse farm conditions and alternative equipment packages. Second, the capacity for repayment should be evaluated with different crop systems, different farm sizes and different equipment packages. A donkey unit primarily growing peanuts in the Bogande sector will unlikely require the same credit package as two-oxen unit in Namounou growing cotton and rice.

(c) Individual vs. Group Credit.

Another issue which requires serious analysis is individual vs. group credit. The ORD extension service has been encouraging the formation of village pre-cooperatives (groupements). The following table shows the number of existing groupements by sector.

Table 13. Eastern ORD: Existing Groupements, May 1975

Sector	No. <u>Groupements</u>	No. Members	Collective Fields (Ha)
Fodal	33	463	60
Fadall	6	22	8.25
Bogande	15	146	(*)
Diapaga	22	281	(*)
ORD Total	76	846	68.25

*These groupements are primarily organized for collective marketing. L'ORD de l'Est, "Rapport Annuel 1974," p. 37, FADA, Mai, 1975.

Source: SAED "Conditions de Diffusion du Cr dit Agricole. . .," p. 36, Ouagadougou

^{1/}This is taken from IRAT/Upper Volta's experiments and is documented for sorghum only. See "Donn es Actuelles sur l'Association de l'Agriculture et de l' levage en Haute-Volta," IRAT, Mai, 1969.

Table 13 shows the modest number of people who have formed groupements. The largest number of groupements are formed in the sector which is almost 50% Moasi, Yada 1. The major argument for extending credit to groups rather than individuals is that the group can provide collective collateral for loans to individual members and that peer pressures will reduce the incidence of default. SAEI describes the high incidence of intra-regional migration in the ORD but concludes that this spatial mobility is not a serious obstacle to collective organization.^{1/} The Stacy report, on the other hand, cites Senegal's findings about the individualism of the Courmantche, the dominant ethnic group in the region, the high turnover in village residency, and points up the difficulty in creating stable collective organizations.^{2/} In some ad hoc field seminars held by members of the original Stacy mission, Courmantche farmers showed no willingness to participate in collective production activities nor any indigenous local groupings within the villages which might guarantee loans.^{3/}

Although it is easy to recommend measures to foster group action by farmers, it should be pointed out that economic analysis has relatively little to offer on questions of developing appropriate organizations for small farmers. The process of facilitating group action by farmers can best be carried out by ORD experiments, ongoing action research by social scientists and the advice of rural development administrators.^{4/}

(d) Credit for Rural Non-Farm Activities.

The major use of credit in the Eastern ORD will be for seasonal loans and medium-term traction equipment to expand agricultural production. Little attention of investigation has been devoted to demand for credit by rural non-farm enterprises. Perhaps the most apparent possibility

^{1/} SAEI, *ibid.*, p. 16.

^{2/} USAID, Upper Volta Integrated Rural Development Project, 1974, pp. 29, 92.

^{3/} Clark, Horowitz, Stacy, Melsenborn, "Field Seminar with Courmantche Farmers," REICO/MA, Abidjan, March 9, 1975.

^{4/} Such as A. E. Ehan, now professor of Agricultural Economics at Michigan State University. For his experience see A. E. Ehan, "Reflections on the Comilla Rural Development Project" Overseas Liaison Committee American Council on Education, Washington, D. C., March, 1974.

is the demand by blacksmiths for credit to purchase tools and raw materials. In an animal traction system, trained blacksmiths will need a modest, though expensive, set of tools. The SACS price for a basic set of equipment (55-kg anvil, vice, and hand-crank forge) is 100,000 CFA. Blacksmiths will need a credit scheme to acquire this equipment as well as to purchase new materials. Moreover, a credit program for small scale rice mills, peanut and shea nut oil presses, flour mills, rice and grain threshers, and even such equipment as welding sets might enable agricultural producers and villages to significantly increase the value of their agricultural output and retain the value-added in the village. These credit programs represent another means of encouraging group action. Several relatively simple studies should be undertaken to determine how to expand small-scale enterprises at the village level in the ORD.

C. Recommendations

1. The ORD should develop and refine a five year, medium-term credit program which is versatile enough to meet the wide range of farming conditions and the needs of farmers in the four sectors with emphasis on incorporating food and cash crops and alternative equipment packages.
2. The MDU mission has noted the diversity of animal traction equipment being used in the Eastern ORD and has recommended that it be standardized (see Section III). We recommend that credit should be extended only for the purchase of the HV2A and HV2B equipment and applied to donkey, single-oxen and two-oxen traction.
3. For the 1976 crop season, medium-term credit should be available to peyans encadrés in the Community Development villages and the four intensive zones. Within the national guidelines, the terms of credit should be determined according to the debt carrying capacity of the farm, the equipment package being used and the income-generating potential of the production program being introduced. We tentatively suggest that the terms of credit should be a down payment equal to the value of the yoke, ropes and traction chain, a first annual payment equal to interest fees at 5.5% followed by four equal annual payments.

4. It is recommended that the OKD and the credit advisor should consider the following questions as they design the specific components of the 1976 credit program:
 - (a) Whether or not a down payment should be required and how much,
 - (b) Whether or not there is a period of grace and how long,
 - (c) Whether or not annual payments should be uniform or variable,
 - (d) What are acceptable conditions for default: drought, flood, fire, animal loss, etc.
 - (e) What type of animal insurance program to include,
 - (f) Whether preferential credit terms might be made available to encourage cooperatives and groupements villageois.
 - (g) Whether or not to deduct the salvage value of old equipment in order to encourage the use of HV7A and HV7B equipment,
 - (h) Whether or not to provide short-term credit for the purchase of replacement animals.
5. Extension checklists should be prepared on how to evaluate the debt-carrying capacity of farmers and collective organizations. Since extension agents will be the primary determinants of who gets credit, they should be trained in simple budgeting techniques and how to use the credit checklists during the 1976/77 dry season.
6. In collaboration with SACs, a credit system for trained blacksmiths should be instituted by the 1976/77 dry season.
7. Technical and economic feasibility studies should be undertaken to determine the possibilities of small-scale agricultural processing activities. Where justified, such credit programs should be instituted for the 1977 harvest season.

VI. PRELIMINARY ASSESSMENT OF THE LIVESTOCK SUBSECTOR IN THE EASTERN ORD

A. Introduction

The Stacy report pointed up the central importance of livestock production, both by sedentary farmers and migratory herders. The interventions proposed in the Stacy Report represent an inventory of the many activities that might be undertaken. Choices will have to be made. A coherent program for the integration of livestock and crop production activities on the farm and for the improvement of migratory practices is still to be developed. The purpose of this section is to update the Stacy Report and point out some major issues which should be pursued when the livestock advisors arrive in Fada.

1. Current Situation

The Stacy mission reported that in 1973 the livestock herd in the ORD was as follows: 280,000 cattle, 300,000 sheep, 400,000 goats, 10,000 pigs, 4,500 horses and 10,000 donkeys.^{1/} On the other hand SAED reports 350,000 cattle, 600,000 sheep, 612,000 goats, 5,000 horses, 15,000 donkeys and 29,000 pigs.^{2/} The livestock Service estimates the cattle herd to be growing at about 2 percent per annum.^{3/}

The livestock Service in Fada is staffed by an African veterinarian, a livestock assistant, seven veterinary nurses and five permanent laborers. There are three other livestock stations in the region: Kantchati, Diapaga and Boganda. The Service has four tractors, one refrigerator, one pickup truck and four motorcycles. The lack of an ice machine in Fada necessitates ordering ice from Ouagadougou for the outlying stations. There are about a dozen vaccination points in the region and a system of twelve wells and twenty-one small dams for animal water supply.

^{1/} USAID, Upper Volta Integrated Rural Development Project, n. 50.

^{2/} SAED, "Etude d'un Programme Régional de Développement...", p. 59, Fada, Juin 1974.

^{3/} Ibid., p. 59.

The following tables list the immunisations and treatments administered by the livestock service in 1973 and 1974. Besides the diseases listed in the following tables, hoof and mouth disease is also endemic to the region. There is also a high rate of infestation by parasites. The fertility of cattle is low with about 15 percent of the cows dropping calves per year and calf mortality (death within twelve months) estimated at 30 to 40 percent.^{1/}

The MSU mission was unable to get up-to-date data on the regional herds and their health. During our visit to Iasbarga the local extension agent informed us of a recent outbreak of charbon symptomatique. The Livestock Service was unable to respond quickly and when the inoculation team did arrive it had less than half of the required medicine. The Livestock Service is underfinanced, understaffed and underequipped to effectively carry out even basic veterinary services such as vaccination. The OKD with the help of Mr. Maurice Colas has been able to field an inoculation team for the treatment of working animals. It appears to be very difficult for Fada to get medicine. Most veterinary medicine comes from Dakar and prices have risen sharply in the last few years. A box of 100 Ithidium tablets (for trypanosomiasis) which cost 5,000 CFA in 1972 now costs 14,000 CFA.

Farming groups primarily raise small ruminants and fowl and while they may also own cattle these will usually be entrusted to herding groups such as the Fulani. The value of manure is exploited by herders and farmers.^{2/} Milk represents a major source of income for Fulani women and it is the major component of the Fulani diet. Calves are generally used to work up the flow of milk but the bulk of the milk is captured for human consumption. As a result calves lose a major source of balanced nutrition which stunts their growth and weakens their health.

^{1/} USAID, Upper Volta Integrated Rural Development Project, p. 58.

^{2/} Small animal manure will be used in gardens and fields near the concession but collection and spreading practices expose it to so much sun that much of its value is lost. For cattle, agreements are reached between herders and farmers to take the herds out on fields, but here again much of the nutritive value is burned off by the sun.

Table 14. Immunizations and Treatments Administered by the Eastern ORD Livestock Service, 1971

Place	Peste Bovine	Peripneumonie	Charbon Sympto.	Pasteurellose	Trypanosomiase
Fada N'Gourma	64,156	69,426	8,444	10,876	--
Bogande	4,750	--	1,388	580	8,944
Total	68,906	69,426	9,832	21,456	8,944

Source: SAED, "Etudes d'un Programme Regionale de Developpement...", p. 57, Fada, Juin 1974.

Table 15. Immunizations and Treatments Administered by the Eastern ORD Livestock Service, 1974

Disease	Cattle	Sheep	Goats	Total
Peste bovine	279,129	--	--	279,129
Peripneumonie bovine	262,807	--	--	262,807
Charbon bacteridien	1,186	513	131	2,030
Charbon symptomatique	4,488	--	--	4,488
Pasteurellose	8,470	--	--	8,470
Trypanosomiase bovine	79,126	--	--	79,126
Antiparasitaire	92	1,690	1,377	3,159
Total	635,898	2,203	1,508	639,609

Source: ORD de l'Est, "Rapport Annuel 1974," p. 48, Fada, Mai 1975.

Export head taxes were recently increased to 6,500 CFA for cattle, 3,100 CFA for pigs, 2,000 CFA for sheep and goats and 500 CFA for chickens.

Herders are already paying head taxes of 200 CFA for 1 to 20 head of cattle; a fee of 2,400 CFA for herds 26 to 50; 4,000 CFA for 51 to 250 and 6,000 CFA for 250 cattle.^{1/} The head taxes are 350 CFA for horses, 50 CFA for donkeys and no taxes are assessed on goats and sheep. There are also slaughtering taxes for all animals and import-export licences for cattle traders.

B. Major Issues

1. Redirecting National Livestock Policy

Livestock production accounted for an average 10 percent of GNP from 1967-1972^{2/} and for 45 percent of all exports in 1971.^{3/} The government has adopted a policy of herd reconstitution to satisfy domestic meat production and to maintain the significant role of livestock production in export earnings.^{4/} The major thrust over the next eight to ten years for the Livestock Service as reported in the USAID DAP is the provision of a small ruminant improvement package and efforts to reduce calf mortality.^{5/}

However, the Livestock Service is currently committing the majority of its funds to digging wells, intensive feeding operations, slaughtering facilities and market trails (57 percent of 1972-1976 five-year plan Livestock Services budget).^{6/} Furthermore, the recent large increases

^{1/} SAED, "Etudes d'un Programme Régional de Développement...." p. 58, Fada, Juin 1974.

^{2/} Robinet, "Situation et Perspectives de Développement de la Production Animale Voltaïque," p. 3, Mission PNUD, Mars 1973.

^{3/} Ibid., p. 41.

^{4/} The estimated losses to the national herd due to the drought are 20 to 25 percent; USAID, "Development Assistance Program/Upper Volta," p. D-36, March 1973.

^{5/} Ibid., p. D-56.

^{6/} The 1972-1976 Plan indicates that only 4 percent of the livestock budget will go to the expansion and improvement of the Livestock Service administration, 16 percent to the improvement of prophylaxis services and only 2.5 percent to baseline investigations. Robinet, "Situation et Perspectives de Développement de la Production Animale Voltaïque," pp. 16-22, Mission PNUD, Mars 1973.

in export taxes will reduce market incentives and dampen private investment in livestock production.

Two ORDs--Yada and the Sahel--are the major breeding areas in the country. For the Fada ORD to exploit its potential as a breeding center, there is a need to develop a more coherent national livestock policy which emphasizes improving basic veterinary services, medicine and equipment rather than concentrating resources on intensive livestock schemes in limited geographical areas.

7. Livestock Diseases and Parasites

The presence of the major West African livestock diseases and parasites in the Eastern ORD is well recognized. There are, however, no micro-data on the relevant importance of these diseases and parasites nor on the distribution of incidence in each of the seven livestock administrative subdivisions^{1/} in the region. Inoculations for trypanosomiasis should be given at least twice a year and preferably three times in the infected areas. In 1974 only 80,000 inoculations were administered in the ORD. According to Benoit the vector is present throughout the ORD with the exception of the Bogande area.^{2/} It is difficult to assess the impact of disease and parasites on the economy because their impact appears in the form of slow weight gains, lower adult weights, lower fertility, more inefficient utilisation of food and general weak health. Another aspect of the disease and parasite issue is the severe lack of equipment and medicines in the region. With current staffing and equipment and the unreliable supply of medicines, it is evident that the present regional livestock service will be unable to implement a coordinated program of disease prophylaxis and parasite treatment.

^{1/} Livestock circumscriptions of Yada, Fane, Conlayanga, Diabo, Kantchari, Diagoa and Bogande.

^{2/} Michael Benoit, an ORSTOM geographer is currently conducting a land use survey north of the Fada-Madaya road in his study, "Introduction à la Géographie des Aires Pastorales Évoluées de Haute Volta," ORSTOM, 1974.

3. Increasing the Supply and Improving the Health of Draft Animals

An objective of the 1972-1976 national plan and the USAID component of the Eastern OMD project is to sedentarize livestock production by integrating draft animals into agricultural programs (see Section IV). The health and care of working animals is of particular importance because of their direct influence on the performance of the agricultural production package. Farmers using draft animals need dependable access to basic veterinary services. Dry season maintenance programs for draft animals should be developed as an integral part of farm prototypes. Feasibility studies should be conducted on the possible local manufacture of feed supplements. IRAT/Upper Volta has some proposed supplements based on bran, peanut cake, salt and ground bone which should be investigated.^{1/} As draft animals are integrated into farm activities, the opportunity cost of animal disease or untapped weight potential rises significantly. Farmers using draft animals can ill afford a case of bleeding sickness during plowing season. In the northwestern province, Atakota, of Senin (Hahomey) Associations de la Culture Attelée (animal traction associations) were initiated by the farmers themselves to stock spare parts and medicine.

The supply of draft animals will quickly become a critical issue in the Eastern OMD. The combined effects of the drought, low fertility, high calf mortality rates and the rising demand for working animals in Upper Volta and in neighboring countries all emphasize the need to expand the supply of working animals. For example, Mr. Maurice Colas accepted the responsibility of buying fifty head for the training centers at Kantchali and Dilanga in 1973. He found it increasingly difficult to obtain working quality animals relative to recent years and feels that supply is a crucial issue. The animal traction program in neighboring Senin, which began in 1969, has recently identified the shortage of bulls

^{1/} IRAT, "Le Bœuf de Travail Voltaïque," (no date).

^{2/} Korhes, "Estimation de la Demande d'Équipements Traction Animale en Haute Volta," UN/FAO, Ouagadougou, Octobre 1975; Inche, "First Quarterly Report," Eastern OMD Rural Development Project, p. 9, Ouagadougou, May 22, 1975.

as its major problem.^{1/}

Two of the more important variables influencing the supply of cattle are fertility levels and calf mortality rates. Hypothetically, if there are 100,000 calf bearing cows in the region, only 35,000 will drop calves this year and by the end of the year 14,000 calves will have died. Fertility and the survivability of young animals can be significantly affected by the provision of mineral supplements. IRAT has demonstrated that satisfactory feed supplements can be made from locally available crop by-products.^{2/} Besides improving general health, these supplements will also facilitate more efficient utilization of feed and faster weight gains. Calf mortality can be further reduced by allowing the calf a greater proportion of its mother's milk. Both feed supplements and increased nursing by calves have economic tradeoffs which should be analyzed before such programs are proposed on a regional basis.

After three or four years work, oxen have reached their maximum weight and should be marketed. In northern Benin, a beef marketing program was introduced for old draft animals (*bovins de travail*).^{3/} The animals were weighed in the village and paid for in cash using a reasonable live weight price per kilogram. It was not necessary to buy a great number of animals before private beef traders began exceeding the value of draft animals at a competitive price and paying cash. Demonstrating the better marketability of draft animals with such a program can provide further incentives for farm level livestock production and improved feeding practices.

^{1/}The northwest province (Atakora) had, in November 1975, already received requests for 1,000 head for the 1976 season.

^{2/}IRAT, "Le boeuf de Travail Voltaïque," (no date).

^{3/}A similar program was initiated in southwestern Upper Volta with UNDP assistance in November 1975.

4. Improving Basic Technical and Socio-Economic Data to Support the Livestock Sub-Sector

The inadequate micro-data base is a serious obstacle to the development of effective prophylactic campaigns and efficient treatment services. Bennett's land use study of the northern regions of the ORD should be complemented by similar efforts in the rest of the region. The relative importance and geographic incidence of diseases and parasites should be documented. Perhaps of equal importance, the economics of livestock production at the farm level should be investigated through the collection of survey data. These survey data would be useful in the design of farm prototypes, analyzing the performance of the Livestock Service and in considering the introduction of special projects.

C. Recommendations

Although the MSU team had limited time to analyze the livestock sub-sector, we tentatively conclude that the improvement of basic livestock services should receive priority attention over the next three to five years.

1. For the 1976-77 dry season, equipment (coolers, ice, syringes, needles and medicines) should be acquired to carry out a more effective campaign of prophylaxis.
2. Cash beef markets should be organized in the 1976-77 dry season for old draft animals in order to demonstrate their improved marketability.
3. Pilot demonstrations of feed supplement programs for working animals, lactating cows and calves should be initiated in the 1976-77 dry season. With the farm management data, economic analyses can be conducted on the feed supplement program as well as on the possibility of feeding grains to small animals.
4. Surveys of land use and the incidence of diseases and parasites should be conducted to assist the ORD and the Livestock Service in developing the dry season campaigns of disease prophylaxis and treatment.

5. OED staff should visit the animal traction program in northwestern Dahomey to observe the Animal Traction Associations.
6. As part of the 1976 and 1977 farm management surveys, livestock production and marketing information should be gathered on number, type, age, buying and selling prices, weight, input expenses, diseases, parasites, etc.
7. The livestock advisor should collaborate on the generation of guidelines for farm prototypes and tentative recommendations should be made available to extension agents for the 1977 crop season.

VII. TRAINING

A. Introduction

The following recommendations on training are designed to urge the ORD to include an integrated training program as one of the three foundation stones in the ORD's program of work. The first foundation stone-- implementation of a production and marketing program--is already underway. The second foundation stone--applied socio-economic research and evaluation--has been consistently advanced in this report. We now recommend adding the third foundation stone--an ORD training program emphasizing training within the region. The MSU team endorses the concept of a strong national agricultural training center at Matoukou for the basic training of extension agents. The addition of a training dimension to the ORD can complement the Matoukou program.

The USAID budget allocation for training is devoted entirely to third country and overseas programs.^{1/} The MSU team proposes that this orientation be reversed and that priority be given to developing local institutions, subject matter and materials for training within the region. Only under special circumstances should third country and overseas training be proposed.

B. Major Issues

1. Training ORD Field Staff

The encadrements, sub-sector and sector chiefs are responsible for implementing ORD programs. The ORD has recognized the need for a training program complementary to Matoukou's which is more appropriate to the conditions in the region.^{2/} As the applied research and evaluation activities develop new guidelines for ORD programs, the field staff will need training. The establishment of training facilities and programs at the sector

^{1/} USAID, "Integrated Rural Development. Project Agreement," p. 8, Ouagadougou, December 11, 1974.

^{2/} Matoukou graduates are given a two month course in field before going to their posts.

level can provide a forum in which the field staff can be trained in the findings and recommendations of the Fada ORD staff.

Field staff have the responsibility of implementing a wide range of activities as well as their reporting and evaluation duties. MSU team members have observed the use of extension manuals in some anglophone African countries but not in the francophone countries. A loose-leaf extension manual could provide the following valuable information: base-line information by sector, technical information on crops, traction equipment and animals, instructions for credit evaluation and farm budgeting techniques, guidelines for farm prototypes, recommendations for encouraging cooperative development, etc. As the applied research and evaluation efforts specify various programs or recommend adjustments in others, the loose-leaf format would permit agents to keep their manual up to date.

2. Advanced Training and the Need for Special Skills

Many development programs include ad hoc schemes for the advanced training of project personnel. The high opportunity cost of the absence of project sector staff and the lack of coordination among development programs strongly suggests that such advanced training should be planned at the national level. Some agencies willing to provide third country and overseas training should encourage the national government to develop a national plan for advanced training needs.

With the ORD's expansion, there will be a need for an improved capacity in accounting, transportation logistics, rural engineering and construction, and vehicle maintenance. Specifications of such technical training needs should be undertaken on a regional basis.

The traditional function of counterpart training for capitalist technical advisors should be reviewed. The counterpart format too often results in an instructor-student relationship which can become counter-productive. The responsibility of capitalist advisors should be to assist the ORD in developing training institutions, subject matter and materials in their respective fields.

C. Recommendations

1. The USAID training budget of \$198,000 U.S. should be reoriented toward investments in training institutions at the ORD level.
2. The ORD should establish and equip a low-cost training center in each of the four sector headquarters and in Fada.
3. A program of recurrent workshops at the sector level and an annual seminar should be developed to introduce and review ORD recommendations and guidelines for the implementation of:
 - a. production packages,
 - b. the credit program,
 - c. marketing programs,
 - d. livestock activities and
 - e. cooperative development.
4. An extension manual based on the conditions, problems and programs of the Eastern ORD should be developed as soon as possible for distribution to all field staff.
5. FAO and AID advisors should place a high priority on developing training institutions, subject matter and materials for an ongoing ORD training program.

VIII. ORD ANNUAL PLANNING

A. Current Status

The ORD currently engages in a number of evaluation and planning exercises which are the point of departure for any improvements in the system. First, each year it prepares a Rapport Annuel which reviews program activities and a companion financial accounting Bilan. It then prepares corresponding planning documents for the upcoming fiscal year; principle agricultural activities are contained in the Programme de Campagne and there is also an exercice de budget. Versions of the planning documents mentioned above, along with a number of other documents, largely descriptive of specific functional programs, are submitted for approval to the yearly meeting of the ORD General Assembly.

These documents can be characterized in the following fashion. The annual reports present the year's activities with little reference to the previous year's performance or to any previously set targets or goals. Analysis is very general in nature and does not deal primarily with the factual information presented. Planning documents are largely devoted to a list of targets with little emphasis on the means of achieving those ends. This is quite understandable given the large number of tasks the small ORD central staff is required to do. As a result the documents have limited operational utility.

The timing of these reports presents two major problems. First, all of them are supposed to be prepared on or before April 1st. Second, the distribution of ORD activities over the calendar year, due to the agricultural cycle means that the choice of any reporting date will make it impossible to provide complete information on all major activities. For example, production activities are finished in October or November while the results for the marketing campaign may not be available until May or June. This implies that the planning for different activities must take place at different times during the calendar year. This problem may be resolved by establishing two major components of the annual plan-- production and marketing to be released at six month intervals or to have financial reporting come after the completion of the marketing and input sales--perhaps in September or October. The major constraint is the need for correspondence with national budget planning agencies. The major

point here is that, if at all possible, deadlines for some part of evaluation and planning should come at other times of the year than April one.

Both the AID and FAO assistance programs to the ORN have annual planning requirements. However, much of this planning has taken place independently and there is, at present, no clearly defined mechanism by which overall planning could effectively encompass all three efforts. Further, the two aid projects seem to differ somewhat in their planning strategies with AID stressing greater detail in pre-planning and FAO developing greater or planning detail once its technical assistance personnel are in place. AID requires its projects to use a Project Performance Tracking system for setting out when particular critical phases of project elements are to begin, produce results, change, end, etc. This format seems to be of some use in analyzing a total calendar of program events, particularly to help insure that needed inputs are ordered and arrive on time, new staff are trained, etc. Thus, the suggestion that the ORN incorporate such a "flow chart approach" as a component of its planning activities is sound particularly if the ORN would use it as a general framework within which to incorporate the separate linked aspects of its own activities, the AID inspired activities and those fostered by the FAO program.

As a condition to the provision of financial support, AID has required that the Government of Upper Volta (i.e., the ORN) should "prepare and submit an annual plan of operations acceptable in form and substance to AID."^{1/} A few guidelines were provided to the ORN and the first version of this required document was delivered to AID/Ouagadougou in August 1975. All parties involved agree that this was a hurried effort and that it left substantial room for improvement. For example, there was no discussion in that August 1975 planning document for credit, output marketing, training and applied research activities. Further, innovative sections dealing with special planning for AID intensive zones, input purchasing and a first attempt to produce a PPT type chart of ORN activities were not well integrated into the build of the report which was a variant of the ORN's Programme de Campagne 1975-76. The suggestions we offer below are directed to the overall ORN planning process which should encompass the specific report to AID. The MSU team feels strongly that the

^{1/} Department of State, AID and Ministry of Plan, Rural Development, Environment and Tourism, Upper Volta, "Project Agreement," 12/11/74.

ORD, given its limited resources and staff, should not be subjected to unnecessary report writing; it should engage in one coordinated process of program evaluation and planning which should be of value to the ORD, to the central government as well as to AID, FAO and other assistance programs.

B. General Guidelines for Annual Planning

1. The context of the annual planning process should be kept in mind. We must remember that the ORD is not trying to devise a new development strategy every year; it is or should be, instead, planning the specific implementation of previously set program goals. In order for annual planning to fill this role two types of longer-term planning must exist. First, there must be an overall, medium-term (four to five years) plan for rural development in the region. For the Eastern ORD elements of such a medium-term plan exist in the following sources: (a) ORD documents such as "Plan Cadre de Développement 1972-76" and "Programme de Développement Rural de l'ORD de l'Est-Fada N'Gourma," both of which, unfortunately, are somewhat incomplete and out of date; (b) national policy statements and goals established by the Upper Volta government, such as those revamping ORD structures, establishing the community development strategy, setting product prices and national marketing guidelines, etc.; (c) the longer run planning embodied in the two foreign assistance projects; and (d) the expressed desires of the region's population as conveyed through channels such as the ORD general assembly and its steering committee. Unfortunately these elements have not been completely drawn together in a unified plan of sufficient detail to have much annual application.

A second type of longer run planning is planning for specific functional areas within the ORD's scope of activities. At numerous places in this report we have stressed the need for specific longer term strategies for elements such as infrastructure development, market intervention, the introduction of technical reforms such as an animal traction package, a credit program, agronomic research, etc. These specific programs of work should be laid out before they receive a major infusion of money and/or technical assistance. For example, detailed programs of work should now be established for agronomic research, medium term credit and animal traction. Annual planning would then involve the more detailed

specification and implementation of these programs. For example, a larger credit system calls for a high level of extension and supervision. Therefore, the master credit plan should include the recruitment and training of complementary personnel to support this aspect of the program.

2. Annual planning must make reference to specific functional goals. These goals must be balanced against an analysis of the previous year's performance and an assessment of current circumstances such as the proportion of human, material and financial resources available for the particular program.

3. Analysis is the most critical component of the planning and evaluation process. The evaluation of the previous year's results should be more than a list of figures. There is no need to present complex tables and charts if they are not interpreted or analyzed or if the analysis does not deal with them directly. Similarly, planning must be more than simply a shopping list of sub-projects; it must stress an analysis of the means to reach targets as well as the targets themselves. Let us take a seemingly simple example. Suppose a bas-fond is scheduled to be developed this year in a local area. It is not enough to simply indicate the number of hectares to be improved, say 7.50 ha, this year in the Unité d'encadrement of Yanga or Bilanga-Yanga. It would also be useful to know what kind of problems one would face if he actually undertook the development of this bas-fond. Is the bas-fond traditionally cultivated? If so, what rice varieties are being utilized? What is the current yield with these local varieties? How many hectares are currently being farmed? Are the farmers ready to participate in building the dikes in a more modern development of the bas-fond? How many hectares would be developed? How many families could benefit from the project? Does the encadreur or technical agent of the area have the technical skills to supervise the work? Is the encadrement dense enough to support an increased credit burden in the area? The answers to such questions are critical.

4. Planning should be built up from below with the active participation of the people the project is designed to assist. This point cannot be over stressed. It is critical that farmers play a greater role in planning and evaluation in order that the encadreurs, for example, are as much responsible to farmers for their continued employment as they

are to ORD officials in Fada N'Gourma. An implementation plan which does not take into account the needs, concerns, opinions, ideas and suggestions of the people bears the seeds of its own failure.

Popular participation can be encouraged in the following ways. First, the ORD direction should be encouraged to directly elicit greater popular participation in evaluation and planning down to at least the sous-secteur level. Encadreurs, of course, should do this in popular meetings at the level of the unité d'encadrement at least several times each year in addition to their regular contacts with village chiefs, animated farmers and groupements villageois. The general thrust of these sessions should be to ask, "How did the ORD help you/your village? Which ORD activities were successful; which ones failed? What should be done next year?"

A second means of fostering popular participation is related to the strategy of développement communautaire. Villagers should be encouraged not only to identify their problems and propose solutions but also to develop their capacity to plan collective actions as part of the solution to identified problems.

Third, many of the decisions on ORD activities, particularly those dealing with logistical systems and the distribution of central government monies will inevitably rest at the Fada level. These functions can benefit greatly from popular participation. This can take place through the restructuring and active use of encadreur reporting mechanisms to provide various kinds of information, particularly a more precise estimation of effective demand for technical inputs and for services such as medium term credit, animal training and health care. Here, greater emphasis should be placed on assessing differential local demand and absorptive capacity for these inputs rather than simply proportionately allocating existing supplies to a presumed demand. Mechanisms for this process are described in more detail in the following section.

5. The development of this process of evaluation and planning will take place on an iterative, "trial-and-error" basis. We envision a flexible system which is capable of capitalizing on successful elements and of learning from mistakes by modifying or eliminating other program elements.

C. Mechanisms Necessary for the Planning Process

The MSU team has argued the need for a medium to long term regional plan for the ORD. Within this framework the annual plan assumes its proper role of a yearly technical implementation schedule. Specific mechanisms for data collection and analysis should be instituted to support the annual planning process.

1. Extension Workers' Monthly Reports

With certain modifications, the monthly reporting system currently used by the ORD can be an important source of information and analysis. This will serve not only the overall data and analysis needs of the ORD but also, for a certain range of activities, the planning needs.

The MSU team proposes that the monthly reporting forms be modified to follow the agricultural calendar. The major activities of the ORD are production and marketing campaigns. In order to avoid a serious overburdening of the ORD's analysis and planning capacity at the end of the official agricultural year (March thirty-first), information required of farmers and local agents should be collected as soon as it becomes available. By September, information on crops planted, land preparation, seeding and weeding techniques, seed insecticides, fertilizer, and animal traction use should be available. In the September report, encadreurs should make tentative projections of demand for inputs, animal traction and credit for the next production campaign.

By the end of February when most of the buying campaign should be completed, encadreurs would provide recommendations for buying site selection, and local level logistical requirements (number of buyers, scales, storage, etc.) for the next buying campaign. These two major inputs from the local level plus the evaluation of the input delivery system in July should facilitate the ORD's assessment of the production and buying campaigns and planning adjustments for the next year.

2. Centralized Activities and Technical Services

The more centralized services of the ORD such as infrastructure development, research, training, and livestock service, etc, should provide annual reports and implementation plans to the ORD's analysis and planning body. Each technical service should phase this activity to the

seasons in which it is most active. These centralized planning activities should incorporate their local level data, analysis and evaluation needs into the monthly reporting system.

3. The Bureau of Economic Analysis and Planning (BAEP)

The compilation of data, analysis and the projection of annual targets should be a continuous and iterative process. To assist the Directorate in formulating the annual report and financial statement, the Annual Plan and the Budget, the BAEP will be responsible for assembling the information and projected demands from the extension agents and the various technical services. Its task will be to establish on a regional basis an annual evaluation of ORD activities and services, to compile regional objectives for the coming year and analyze their budgetary implications. Again, a major stumbling block in this process is the ORD's agricultural calendar. The Annual Report, Financial Statement, Annual Plan and Budget are due on April first. Particularly in terms of planning the marketing campaign and the input delivery system, this date is a difficult one to meet. Choosing another date may solve this problem but it will likely introduce others. Consequently the reporting mechanisms and planning activities of ORD technical services and the functioning of the BAEP must be phased within this April first constraint.

D. Elements of An Eastern ORD Annual Plan

As a conceptual framework, it is useful to break down the ORD's activities into a list of functional units and systematically apply a basic set of questions to each group of activities. For the planning process, it first should be determined what information is required, who will supply it, and how. Second, what analysis of this information should be conducted and by whom? Third, how are annual planning objectives specified and by whom? If these three basic questions can be systematically addressed to all ORD activities, they will provide a detailed annual strategy for the ORD which can also satisfy the document requirements of the national government, USAID and UNFAO.

1. Production

The bulk of information required concerns field crop activities. Information concerning area planted, inputs used, the use of animal trac-

tion, and cropping techniques used (land preparation, weeding, etc.) would be provided by the encadreurs in their September monthly report. Yields would be available in the December report. The performance of input delivery systems and the nature and amount of production credit used at the local level could be included in the July report. Those activities related to the care and maintenance of draft animals as well as other livestock activities would be entered in the monthly reports when necessary. An evaluation of the capacity of local animal traction blacksmiths, their activities and their needs would be supplied in the August report.

Through interaction with farmers and local collective organizations, the encadreur would include in his September report tentative projections of the demand for crop inputs, animal traction, production credit and local adjustments to the input delivery system. The BAPP, with the recommendations from the agronomist, production economist and extension supervisor, would evaluate these local level objectives in terms of local level extension capacity and physical and financial resource constraints. By the end of the calendar year, it should then be possible to outline a tentative production campaign for the coming year, place orders for inputs and initiate the necessary training and extension activities.

2. Marketing

By the February report, encadreurs would provide information on the performance of the buying campaign and recommendations for adjustments in local level logistics (number of scales, location of buying points, timing of markets, storage needs, etc.). Local level prices should be monitored monthly.

The logistical relationships between buying and transport activities and input delivery activities will, of course, be worked out by the central staff as well as the disposition of OMD purchased commodities (storage, selling, projected emergency needs).

3. Infrastructure

Requests for various investments in infrastructure would come through the monthly reports and a regional plan for road and market center improvement. Encadreurs would be responsible for evaluating local level capacity to make a contribution, but it will be primarily the responsi-

bility of the central staff to integrate local requests into a coherent regional infrastructure development strategy.

Since most infrastructure investments will occur in the dry season and in order to benefit from the previous year's experience, this reporting and evaluation should occur as late in the dry season as possible.

4. Cooperative Organizations

Guidelines for extension activities and the functional activities of various cooperative organizations are largely unspecified in the region. The development and support of local level organizations is less dependent on the agricultural calendar than other ORD activities. As extension guidelines are developed and specific recommendations provided for the organization and functioning of village groups, the reporting, analysis and planning requirements can be established.

5. Applied Research

Each component of the ORD's applied research effort should provide an annual report and projected objectives to the BAEP. The agronomic and production economic research annual programs should be available by December. The marketing, credit and livestock research programs should be available by February. Each research program should explicitly include an evaluation (obtained through the monthly reports and field investigations) of the performance of recommended guidelines already proposed to farmers as well as how new recommendations will be extended to farmers in the coming year.

6. Training

In August, field staff should assess their own needs for supplementary training. With an evaluation of field staff competency and the training needs implied by the new production and marketing guidelines supplied by the ORD's research efforts, an annual training program can be developed by February.

7. Special Activities

There are a range of ORD activities which are limited in scale either because of geographical limitations or because they are quite new programs. Dry season gardening, fruit tree nurseries, reforestation,

provision of basic veterinary services and the introduction of special crops or new varieties at the farm level should all have special monitoring and evaluation information coming in at appropriate times. For example, assessment of dry season gardening would occur in February while the farm-level introduction of a new hybrid sorghum should be evaluated in December.

These elements of an ORD annual plan have been discussed in an abbreviated fashion in an attempt to simply illustrate how the many activities of the ORD could be monitored and evaluated. The central observations of the MSU team are (a) the analysis and planning activities should be phased over the agricultural year; (b) an annual plan is a yearly implementation schedule of a longer-term regional development strategy; (c) local participation in evaluating and planning ORD activities is a prerequisite; and (d) planning for each activity should answer the questions: what information is needed from whom; who conducts what sort of analysis; and how are objectives determined and by whom.

R. Recommendations

1. The ORD should develop a longer term regional development strategy and specific functional plans (i.e., infrastructure, marketing, animal traction, credit, etc.).
2. The annual plan should be developed as a technical implementation schedule within annual resource constraints and with specific reference to an analysis of the current year's activities and to the means with which stated targets will be attained.
3. Those functional elements missing in current planning activities, marketing, credit, logistics, training and research, should be included in the annual plan.
4. The timing of major evaluation and planning activities should be phased to avoid the April first bottleneck.
5. Field staff monthly reports should be modified to reflect the agricultural calendar and to satisfy evaluation and planning needs.
6. We recommend that greater popular participation in planning and evaluation should be encouraged through local public meetings, increased reliance on local level information provided by field staff and experimentation in the five community development and certain intensive zone villages.

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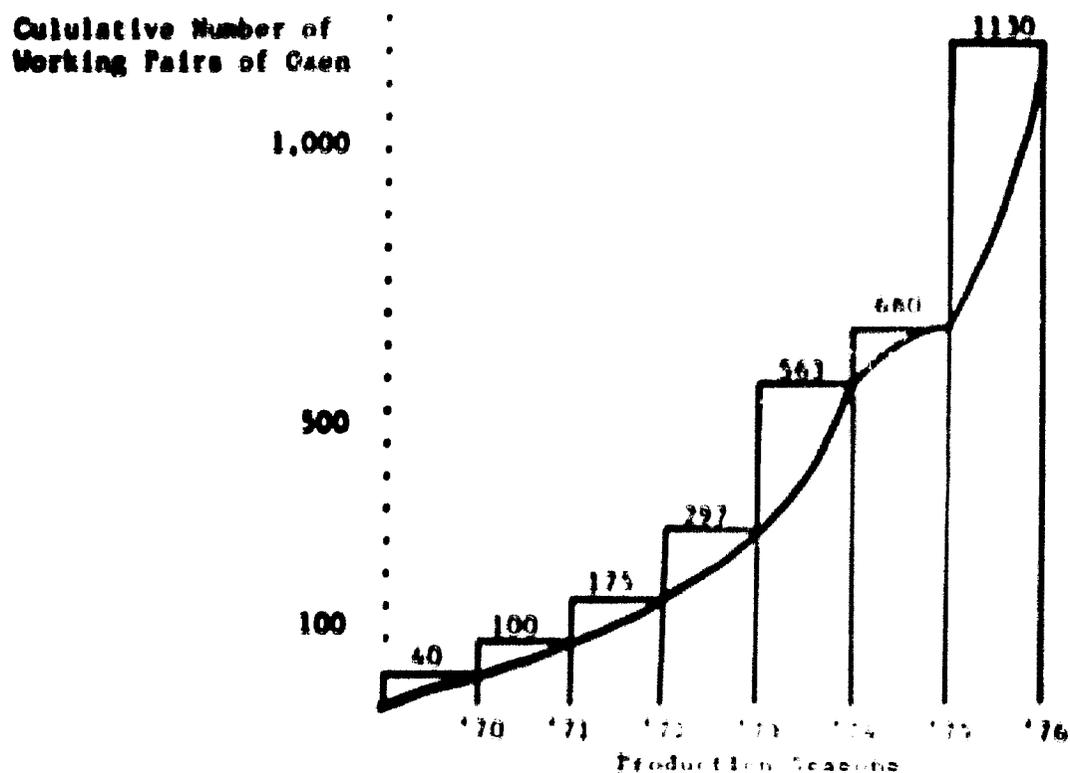
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X. APPENDIX

A. Major Elements and Evolution of the Animal Traction Program in Northwestern Benin

Animal traction was introduced to the northeast province, the Borgou, in 1963. The use of draft animals in the Borgou has been encouraged primarily as a means to increase cotton production. As of the 1975 production season, there were approximately 2,000 working pairs of oxen in the Borgou. In 1969 animal traction was introduced in the Atakora. From its early stages the program in the Atakora worked with the total farm, introducing animal power techniques into food and cash crop field operations. The numerical evolution of the program in the Atakora is represented in the following histogram.

Table A.1. Numerical Evolution of Animal Traction in the Atakora, 1970-1976 a/



^{1/} As of November 1975, requests had been received for 500 sets of new equipment.

Source: Personal records and interviews.

The slower acquisition rate in 1975 coincides with a major reassignment of agricultural extension personnel throughout the country. The large projected increase in 1976 appears to be a direct reaction to the new government agricultural pricing policy of announcing buying prices before the planting season.

The aim of the FAO program in Benin was to improve beef production. It was felt that a necessary precondition to the improvement of beef production was that those people who own cattle should be raising them. In the north, cattle were owned primarily by farming groups but herded by semi-pastoralists, the Fulani. To persuade farmers to initiate on-farm beef production, the presence of cattle on the farm should demonstrate some immediate tangible benefits. It was unrealistic to expect farmers invest on-farm resources in cattle for three to four years before seeing a return on their investment. This background provides the rationale for introducing the use of draft animals on small farms in northern Benin.

From its initial stages, the animal traction program in the Atakota was conceived as an integrated program of crop diversification; medium-term credit; equipment supply, maintenance and repair; basic veterinary care; and farmer and extension agent training. Some of the design elements were results of the slightly older program in the Borgou.

1. Crop Diversification

The use of draft animals can be applied to a number of field operations on a wide range of crops. Serious labor bottlenecks are created when the oxen are used only for land preparation. In terms of possible land expansion effects, draft animal weeding techniques become the major bottleneck. In the Atakota, adjustments in plant spacings were made for millet and sorghum to permit weeding along the rows and across them. Furthermore, local experimentation showed that use of the groundnut lift= or as a weeding tool was quite effective and significantly cheaper than the originally promoted cultivator (three-fifths tooth Canadian). For those crops (primarily groundnuts) grown on ridges, adjustments to the wings of the ridging tool made it a much more effective weeding tool.

The cultivation of rice in flooded bottomlands (bas fonds) was only marginally developed but through the intervention of animal traction primarily for land preparation of the heavy soils and the introduction of

the varieties Gambiaka, Sintane Diafor and IR 22, rice has become an increasingly important cash earner in the diversified crop system. The provincial agricultural service estimates the 1975 regional production at about 8,000 tons of which the government intends to buy 2,000 tons. Regional yields are estimated at 1.1 tons/hectare for 1974 however those fields prepared by oxen show 1.6 to 2.0 tons/hectare. Averages using traditional techniques were 0.5 tons/hectare in 1970.^{1/} In 1971 the Agricultural Service initiated a rice buying activity partly to supply the national urban demand but also to stimulate rice production as well as encourage private traders to conduct buying operations in the Atakora.

Yams are a traditional food crop which could become a very important cash crop. The strong preference for large tubers requires that yams continue to be grown in mounds. This makes the possible interventions of draft animals fairly limited. The initial plowing of yam fields and the breaking up of old mounds after harvest using animal traction have been quickly adopted by yam growers.

In general, a consistent attempt has been made to utilize animal power on all crops wherever possible. The adoption of these techniques has been variable with the use of weeding techniques remaining the most irregularly used.

2. Medium-term Credit

Through 1975, credit for animal traction equipment has been extended to individual farmers on a five year basis at a 5 percent interest rate. The pattern of cattle ownership in the region is such that credit has not been available for the purchase of animals. The farmer's commitment of two bulls was considered to represent a more than adequate down-payment. At the end of the first production season, the farmer was asked to decide if he wished to continue with animal traction. If so, he made his first annual payment. If not his equipment was repossessed at no cost to the farmer. This latter case has occurred very frequently.

As the program developed, farmers became aware of some practical common problems, i.e., the provision of spare parts and basic veterinary

^{1/}SONACO, "Dahomey: Etude de Factibilite pour la 2eme Phase du Projet Zou-Borgou," Avril 1974, p. 332.

medicines. A broken tool or sick animal during the plowing season was very costly and immediate access to a new part or veterinary treatment provided a strong enough impetus for the emergence of animal traction associations. These associations were formed independent of the groupements villageois programs found in Benin at the time and common to much of francophone West Africa. The solid roots of these new collective organizations are currently being transformed into credit institutions as well, and medium-term credit will now be extended to individuals through these associations.

Repayment rates have been maintained consistently at 90 percent but this figure includes justified defaults. The loss of an animal, serious illness, and certain natural catastrophes (i.e., drought, fire, etc.) are considered justified grounds for default.

3. Animal Traction Equipment

The "Arara" model from SISCOA in Senegal has been the only equipment used in Benin. This standardized equipment has permitted the installation of a regional network of supply, maintenance and repair facilities. The "Canadian" cultivator attachment has been dropped as local level experimentation with the ridger and groundnut lifter has proven practical and effective. Dropping the "Canadian" from the equipment package reduces its cost by about 20 percent.

Local level blacksmiths, at least one in each sub-district, have been trained to produce and repair almost all parts. They have access to credit for tools and raw materials. They are supported with a logistics system and technical advice. Those parts which cannot be produced by a village blacksmith are being manufactured in a small government factory in one of the north's cities, Parakou. All the blacksmiths are now linked to each other and to the factory through a cooperative organization.

4. Animal Care

The Benin Livestock Service, as in so many francophone West African countries, is under-equipped, understaffed and has difficulty obtaining adequate supplies of veterinary medicines. Trypanocidal treatments are given to draft animals three times a year depending on the availability of medicines. Basic preventive care and maintenance practices are taught to farmers. The unreliability of supply and the cost of processed

salt licks has encouraged the use of rough "bush" salt from Niger. Groundnut production is encouraged to supply hay for the dry season. In general, farmers are now able to maintain their animals' weight through the dry season without the usual 25 percent weight loss.

One strong motivation for this improved care of animals on the farm was a modest beef marketing program. To pressure private beef traders to pay fair live-weight prices and to pay cash, a truck and mobile scales were used to come into a village, weigh a farmer's animals and pay cash on the spot. After three years' work, six-year-old animals have consistently doubled in market value from their original purchase price. This is due in part to the influence of the marketing program, to the rise in demand for beef on the coast, and to inflation. Nevertheless, draft animals generally ran 50 to 100 kilograms heavier than traditionally herded cattle and are visibly healthier.

5. Farmer and Extension Agent Training

In the early years of the program, Peace Corps volunteers were assigned to sub-districts as counterparts to the agricultural officer, the moniteur, and responsible for the introduction of animal traction in the sub-district. This usually meant working in an area of 20 to 30 villages and with 2 to 3 village extension agents, encadreurs. In the first years, animals were trained in the central village of the sub-district during the dry season. The farmers themselves did the training and were expected to move more than one pair of animals. This also permitted the agricultural service to demonstrate an on-farm stable and maintenance practices. Training required two to three weeks and follow-up supervision and advice was provided by the volunteer and encadreurs.

Periodically short practical workshops and seminars were organized on a sub-district basis for the training of encadreurs in animal traction techniques, the administration of the credit program, and farm management counseling. As the program developed, experienced farmers trained animals and new farmers throughout the sub-districts. With the phasing out of Peace Corps volunteers, extension agents with supplementary training in animal traction were given the responsibility of the program at the sub-district level.

This brief discussion of the program's major elements and evolution suffers from lack of detail. The program has been poorly monitored and very little documentation exists. Nevertheless some tentative general observations can be made. The program has addressed the small farm as a cash crop, food crop and livestock producer in which all these activities are interrelated. The patience to allow the emergence of a collective consciousness among individual farmers and to encourage it in practical ways has developed strong foundations for collective organization. The local level provision of spare parts and repair services has greatly increased the reliability of the package.

From a preliminary study conducted by Carolyn Sargent^{1/} on 40 farms, it appears that farmers must farm at least 3 hectares of which at least 2 are cash crops in order to meet loan requirements and still have remaining disposable income. Successful farmers were heads of families, about 40 years old and unschooled. They were well established in their villages and resident for more than 10 years. None had previous experience with draft animals but had heard of such an idea.

B. Implications for the Eastern ORD Integrated Rural Development Project

The lack of any systematic data base makes the transference of lessons learned in Benin to other areas of West Africa fairly risky. Some notions are put forward here on a tentative basis and primarily as issues which should be addressed in designing and implementing animal power schemes.

The ownership and availability of animals is an important parameter to any animal traction program. The distribution of ownership has direct implications for the nature of the credit program. The very rough estimates of cattle ownership in the Eastern ORD indicate that 20 to 30 percent of the farmers own cattle. Providing credit for cattle doubles the debt burden and increases the administrative and logistic demands on the agricultural service. Mechanisms should be developed to encourage farmers to bring out their own cattle.

^{1/}C. Sargent, "Animal Traction in the Atakora, 1971-72," Report to ODA, UN/FAO and Peace Corps, Cotonou, June 1972.

In the Atakora, a major constraint that has emerged as the program expanded is the supply of working size animals. For 1976, there is already an expressed need for 1,000 head of three-year-olds and local officials are very skeptical of their availability. Programs which confront calf mortality and the off-take of young males should be initiated as an integral component to the introduction of animal traction.

From the Atakora experience, it seems apparent that there is a significant lag between the time the package is acquired and when it is effectively utilized. In order that farmers gain a fair understanding of what an animal powered mechanization scheme involves, it appears that at least one year's experience is necessary. This is directly relevant to the issue of a down payment, its level or the level of the first annual payment. There is strong evidence that a high down payment is an unrealistic obstacle and that it would seriously limit who had access to the program.

The common practice of tying the introduction of animal traction to a specific cash crop usually for reasons of credit repayment not only misses the broader role an economic utilization of animal power should have but also does not seem to be supported by the Atakora evidence. Credit repayment was not deducted from the cotton or groundnut harvest. Farmers made repayment from gross farm revenues. The utilization of animal traction should be planned for all food and cash crops. The increase in production and expansion of farm size are closely related to the application of animal traction techniques wherever possible. The deeper and more uniform plowing, the improved timeliness of land preparation, planting and weeding and more effective groundnut harvesting result in higher and more reliable yields and release land and labor for the expansion of cash cropping and the introduction of new crops in the farm system.

Besides the issues of credit for animals and the provisions for a down payment, an important implication of the Atakora program is the need for an evolutionary approach to group credit. The past techniques of imposing collective organizations (*groupements villageois*) because centralized decision makers believe that a need exists and that they can design the appropriate institution have had little success in Benin. This approach has been used throughout francophone West Africa and has

rarely progressed further than providing a market assembly point for cash crop commercialization. A patient approach to the emergence of a collective consciousness of common problems and possible solutions appears to have created a stronger foundation for the formation of collective organizations. An important mechanism in fostering this aspect of the program was the use of plowing contests. Organized on the sub-district level, these three day affairs brought animal traction farmers together in the atmosphere of a county fair. A judging panel of local agricultural and livestock staff and village notables evaluated the health of the animals, the condition of the equipment, the plowing of a piece of land, and the obedience of the animals. The prizes awarded were directly linked to the animal traction program ranging from the waiver of one annual payment to various spare equipment parts. The previous evening, a meal and local beer was provided for animal traction farmers and local agricultural staff. For a group of farmers from different ethnic groups, different villages and different age groups, the major topic of conversation was understandable, animal traction. The atmosphere created during these affairs was an important precursor to the emergence of animal traction associations.

The establishment of a rural network of blacksmiths trained to produce and repair equipment, the village level training of animals, and the animal traction associations have significantly reduced farmers' dependence on centralized services. Under such conditions, problems encountered in the Eastern ORD such as the need to retrain animals at the end of the dry season or the large numbers of unusable equipment are minimized. Furthermore, the administrative and logistical burden on the central agricultural service is significantly alleviated.

The beef and the rice buying activities in the Atakora have demonstrated how important selective market interventions can be. Part of a farmer's decision to increase production is directly linked to his expectations of market outlets and market prices. The government of Benin has recently adopted a policy of announcing official buying prices for agricultural commodities before planting season. For 1975, a price of 40 CFA/kilogram was announced for unshelled groundnuts. It is estimated that groundnut production in the Atakora doubled in response. Though there may be some question as to Benin's ability to maintain such a price, the influence of not only this pricing policy but the other market interventions mentioned above has been decisively demonstrated in the Atakora.

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