

DSHANG UNIVERSTY CENTRE

DEPARTMENT OF AGRICULTURAL ECONOMICS

BUDGETING METHODOLOGY FOR MAJOR AGRICULTURAL ENTERPRISES IN CAMEROON

PRODUCED FOR THE AGRICULTURAL AND RURAL DEVELOPMENT OFFICE
OF USAID/CAMEROON
AND
CAMEROON AGRICULTURAL POLICY AND PLANNING PROJECT

by

Joseph Nkwain Sama (Ph.D), Principal Investigator
Francois Kamajou (Ph.D), Prof. & Department Head
J.P. Ayissi Mbala (Ph.D), Team member
Emmanuel Foko, Team member

December 1992

*Produced with technical assistance from Washington State University
and the Consortium for International Development under
funding from USAID/Cameroun Contract No. 631-0059-C-00-9015-00*

**BUDGETING METHODOLOGY
FOR MAJOR AGRICULTURAL¹ ENTERPRISES
IN CAMEROON**

INTRODUCTION

Budgeting constitutes an indispensable tool in the economic and financial analysis of all enterprises. Because of the geographically specific character of farm enterprises, budget studies developed in given countries cannot be easily transferable. Cameroon agriculture, especially its food subsector, is characterized by mixed cropping. The implications of the prevailing mixed-cropping systems on input cost accounting and on yield estimation need to be critically examined in both the cost and the returns sides.

Studies on farm budgets in Cameroon are not only rare but also not really adequate for projections or policy analyses. This latter limitation is explained by the unreliability of the data base and by the considerable variation observed in the methodologies used in these studies.

The present study is undertaken partly to fill the gap of reliable data for farm budgets and to develop a standard methodology so as to facilitate comparative profitability studies among farming enterprises (including both sole and mixed cropping, and livestock operations). This study is useful and timely as the Cameroon government's new agricultural policy emphasizes the development of a dynamic private sector.

This report is a presentation of the methodology the research team put forward for discussion in a workshop on Nov. 16th 1992. It is therefore the result of several group discussions after reading several documents (mostly on Cameroon) on this topic. The report incorporates the contributions of the workshop.

¹The word agriculture has to be understood in this document in its large meaning which includes crops and livestock enterprises. It will therefore be used interchangeably with farming.

A list of the documents reviewed is presented as an annex to this report. The list comprises few studies carried out in other countries and therefore not quite relevant to Cameroon. They are included because they provided information that seem appropriate for the understanding of farm budgets.

SUMMARY OF OBSERVATIONS FROM REVIEWED LITERATURE

From reading the numerous documents gathered from different sources, it appears clearly that most of these studies were not designed specifically to address the issue of farm budgets. Rather, farm budgets were developed in those studies as a necessary step to achieve the major objective(s) of the studies.

In general, as already indicated in the introduction, the results of most studies in Cameroon show marked variations with regards to either the inclusions or exclusions of certain important costs and/or returns elements or to the valuations of these elements. Because of these variations as well as the variations observed in the methodologies, the cost of production and the returns for the same enterprises in the same region and using nearly the same technological package vary substantially.

On the cost side, variations have been noted in the treatment of such items as the opportunity cost of family labor, farm land, capital and the cost of other family-owned inputs (planting materials, feeds, buildings and equipments made of local materials, etc.). The following are examples of such variations.

In a study carried out by Kamajou and Nkwanou (1987) to show the evolution of the cost of production of cocoa and coffee, the cost of land and capital were simply ignored on the basis that the farm land in most regions have a zero opportunity cost and the farmers usually invest little financial capital on cocoa and coffee farms. The validity of these hypotheses is questionable in regions like the West, Northwest and part of the Littoral provinces. Wyeth (1989) estimated the cost of production of Arabica coffee by including the cost of capital at 5% of the "establishment" costs and did not include the cost of land.

Sama (1978) in a study on the determination of the cost of egg production in the ENSA school farm in Nkolbisson did include the opportunity cost of land and capital. Nelson et al. (1973) in a cost analysis of broilers in the same farm, included the costs of land, operator (management) and the opportunity cost of capital.

Variations have also been observed in the prices of inputs in the same region as some studies use subsidized input prices while others use market prices. This variation and others are used to distinguish between what some people (Wyeth) call "financial and economic costs". Family labor has been valued in most cases in terms of the wage rate in person-day units (Sama, Nelson et al.) although some studies have costed labor using the hourly wage rate (the rate being different for different farm

operations such as tilling and weeding (Fotzo, 1977) and some have presented the labor cost per some unit area such as a hectare (Mbipeh, 1986).

In the studies reviewed, some products have been valued at farm gate prices and in some cases at urban prices. Retail or consumer prices have been used in some cases while some level of wholesale prices are used in other cases.

On the returns side and especially with respect to yields, variations as observed relate first to the sources of data and to quantity estimation methods. Some authors have used secondary data (yields from experimental stations, census, textbook or other forms of published data) while others have used on-farm measurements of yields. With regard to Arabica coffee for example, the yields utilized in the various studies have ranged from a low of 250 kg/ha in the West province (De Graff, 1986) to 750 kg/ha in the North-West (MIDENO, 1985) while for Robusta, coffee yields vary from a low of 425 kg/ha to a high of 625 kg/ha (Kristjanson et al., 1990). Kristjanson et al. conclude that the cost of production of Arabica (455 CFA/kg) was unprofitably above the producer price (370 CFA/kg) while Robusta coffee production was profitable with the production cost of 275 CFA/kg and the producer price of 350 CFA/kg.

Quantity estimations did not adequately address the problems of home-consumed output, and output distributed as gifts and/or used as rent. As expected from our previous knowledge, post-harvest losses and marketable byproducts did not receive an adequate treatment in the estimation of yields. Some studies simply ignored these two items while others have used the yields obtained at harvest (McHugh, 1990). The yields recorded for rice in Ndop for example ranged from about 4 640 kg/ha for the undeveloped systems to 5 000 kg/ha for the developed system (Mbipeh) while the yield in SEMRY averages about 8 000 kg/ha. Some studies did make an attempt to estimate home consumption and post harvest losses. For reasons of necessary standardization, a definite stand was needed on these issues.

Budgets studies for mixed-cropping systems as we anticipated are nearly absent in the literature. The complexity involved in the estimation of budgets for individual crops within the mixed-cropping systems largely explains this deficiency. Proposals have been made relating especially to the allocation of joint costs. It has been suggested by some authors that the different costs be allocated equally among all the crops of the system while others maintain that the allocation should be based on some weight to be defined for each crop of the system.

BUDGETING METHODOLOGY

All the above explain to a large extent some of the differences observed in the results obtained by various studies for the same enterprises. From the discussions following the analysis of the different studies we have gathered and from additional discussions during the workshop in which an earlier version of this report served as a working document, the following proposals were retained for use in future budget studies. They maybe updated as more information becomes available.

1. Production Unit:

One hectare shall be the study unit for all crop enterprises as this is a convenient standard unit which most works have adopted. Multiple crop enterprises shall be identified by the recognized principal crop of each mixture. For livestock enterprises, a minimum number of heads shall be used as a production unit for each specific enterprise. Naturally, such a minimum number will vary with the kind of enterprise (for example, 500 birds per poultry unit, 30 pigs per piggery unit, etc.). Where information is not readily available, technical departments in the provinces concerned shall be contacted to determine this unit for each livestock enterprise.

2. Prices:

The approach taken in this study is first and foremost to determine the real economic costs to the entrepreneurs (that is both the explicit and the implicit costs) as long as there is a way to estimate the implicit costs. For the traded or tradable inputs, the cost will be the market price paid by the producer at the farm gate or production site. They should reflect and include transportation costs. In cases where inputs are subsidized and where other financial cost differ from the economic costs, it will be necessary to prepare two budgets, one showing the economic costs and returns, and the other showing financial costs and returns.

Product price shall be the price for a selected unit at the farm gate. Where this is not obvious, the price could be estimated from the urban wholesale price less transportation and handling costs. In general, all unskilled labour including family labour used in production shall be converted into person-days and costed as paid labour using wage rates or any other relevant opportunity cost for unskilled labour. Where labour is charged by activity, such charges shall be applied. Whatever the case, the method used should be clearly stated.

The treatment of land shall vary by region as some regions have opportunity cost for land, some buy and sell land, some rent land, while in others land is either abundant and free or it is socially not tradable. Where it has a cost, such cost shall be incorporated as part of the establishment costs discussed below.

In any case, where necessary as mentioned above, for purposes of estimating gross and net margins, annual financial and economic costs and returns shall be shown side by side for a typical production year selected where peak production levels up. Annual gross and net margins as well as break even prices shall then be determined for each of the two situations.

3. Selection of enterprises and estimation of unit costs of production:

The principal crop and livestock enterprises in each agro-ecological zone shall be determined with the assistance of the technical departments of the ministries concerned. For each principal crop and livestock in each of the zones, the unit cost of producing a product shall be determined for an enterprise under the current state of the art. However, where there

is a clear distinction between traditional and modern technologies, a separate budget should be prepared for each technology. For each principal crop in an ecological zone, and whenever applicable, separate budgets will be drawn for pure stands and for mixed-cropping in which that crop is recognized as the principal crop. However, unit costs shall be estimated only under a pure stand assumption and only for the principal product. In the case of mixed cropping, budgets will be prepared to show production costs as well as gross and net returns per hectare of the entire crop mixture.

4. Estimation Procedure:

The various production systems and processes will be determined for each enterprise by ecological zone. For all the enterprises selected as indicated above, the establishment and development items shall be identified and costed as well as all the annual production operations related to the enterprise. For each enterprise all the products and byproducts shall also be identified and valued.

For each enterprise budget, in order to facilitate calculations using a computer spreadsheet program, a costing table shall be established as shown in the format of Table 1.

Table 1

Products or units	Lifespan	Price/unit	Values by year of items	N	o r y r s
		p r o d t n	& f o r		
<u>Products/byproducts</u>					
-		-	-	-	
-		-	-	-	
-		-	-	-	
<u>Tools/equipment</u>					
-		-	-	-	
-		-	-	-	
-		-	-	-	
-		-	-	-	
<u>Labour-requiring operations</u>					
-		-	-	-	
-		-	-	-	
-		-	-	-	
<u>Other inputs</u>					
-		-	-	-	
-		-	-	-	
-		-	-	-	

From such a table, various cost and returns components are easily calculated with the aid of formulae and a computer spreadsheet program. The costs are broken down to Installation, Establishment, Development and Operating Costs which are defined and discussed below. All other budgeting results are then easily estimated. A hard copy example of such spreadsheet calculations is provided for a coffee production enterprise. As more accurate, more reliable and more up-to-date input-output data become available, they are used to substitute less reliable and outdated data on the spreadsheet to obtain better results instantly. It is also easy to conduct sensitivity analysis at that stage.

(a) Establishment Costs (EC)

These are costs incurred during the installation and development phases of an enterprise up to when the first commercial products are obtained. EC is the sum of Installation Costs (IC) and Development Cost (DC) and is considered as capital investment on which an opportunity cost is charged.

i) Installation Costs

These are the initial costs incurred during the installation phase up to and including planting for crop enterprises or up to and including the installation of initial stock in the producing unit for livestock enterprises. They include the cost of feasibility studies and the costs of land preparation, planting, planting material (for perennial crops), initial stock (for permanent livestock), buildings, equipments, and other farm structures.

ii) Development Costs (DC)

These are all the usual maintenance costs (cost of labour, fertilizers, pesticides, insecticides, herbicides, etc., for crops; and cost of labour, feeds, drugs, fuel, water, etc., for livestock) incurred during the establishment phase of production. They include the cost of capital.

The establishment phase covers a period of n years between the installation and the first commercial yield of the enterprise. For a long cycle enterprise, the Establishment Costs are distributed over N years (its productive life span) as annualised establishment costs. The annualised establishment cost thus obtained represents a fixed cost (FC_1) which is a part of the annual production cost (APC). After the development period an interest rate (opportunity cost of capital) is charged on the entire establishment cost for a period long enough for the enterprise to recover the establishment cost. After such a period, the opportunity cost of EC is zero.

(b) Total Operating Costs (TOC) and Annual Operating Costs (AOC)

TOC is the sum of all the operating costs covering period N . Operating Costs comprise

both the Fixed and Variable Costs [(FC₂)² and VC] related to maintenance, harvesting, processing, marketing (in some cases), depreciation, and capital investment. Establishment Costs in the cases of crops and livestock which have waiting periods of more than one year, are considered as capital investment.

Average Annual Operating Cost is obtained (in the case of perennial crops and permanent livestock) as TOC/N.

C) Total Production Cost (TPC)

The sum of the Establishment and Total Operating Costs make up the Total Production Cost for the entire life of the enterprise.

$$\text{Eq.1. } \text{TPC} = \text{EC} + \text{TOC}$$

Total Production (TP) and Average Annual Production (AAP)

Total production (TP) is the sum of annual yields of a given enterprise during its productive life N. It is the total yield including all the products and byproducts of an enterprise over period N. AAP is obtained as TP/N and when the AAP of any specific product or byproduct is multiplied by its unit price, its average annual revenue (AAR) is obtained.

DETERMINATION OF COST/UNIT PRODUCT

The cost/unit product in a single product enterprise is its total production cost divided by the total production (TPC/TP). It can also be obtained as the Average Annual Cost (AAC) of production divided by the Average Annual Production (AAC/AAP). AAC is the total production cost divided by N (TPC/N). The sum of FC₁ and AOC also gives AAC.

$$\text{Eq.2. } \text{Cost/Unit} = \text{TPC/TP (OR AAC/AAP)}$$

Determination of Break-even Price, Gross Margins, Net Margin

The cost/unit of a given product is also the break-even price of that product. Gross Margin (GM) is the difference between total revenue less variable costs. The Annual Gross Margin is the difference between AAR and the Average Annual Variable Costs (AAVC). The net margin (profit) for any given year is the difference between the total revenue and total cost for that year. The average annual net margin is the difference between AAR and AAC.

² FC₂ are fixed costs incurred during the productive period of the enterprise, which are not included in FC₁.

Other Considerations

All costs and returns are initially calculated on an annual basis before aggregating to cover the life span of the enterprise.

EC is used as the basis for estimating the cost of capital. It represents capital investment. The cost of capital for any given year j during the development period n ($j = 1$ to n) is calculated as the opportunity cost of the sum of installation and preceding years' development costs. After the development period, the cost of capital is estimated as the opportunity cost of EC (the capital invested during the development period). This is estimated only for the number of years representing the period required to recover the establishment cost.

The number of farm tools and equipment are estimated for the whole farm and their cost must therefore be divided by the number of hectares constituting the farm in order to obtain their costs per hectare. It shall be assumed that the average farm for which tools are bought is two hectares.

ESTIMATING THE COST/UNIT PRODUCT OF A PERENNIAL CROP (e.g. Coffee) IN PURE CULTURE

This is obtained as $(EC + TOC)/TP$ and as given by Eq.3

$$\text{Eq.3.} \quad \text{Cost/Unit} = (X_0 + \sum X_{1j} + \sum X_{2i}) / \sum Y_i$$

Where X_0 = EC or the cost of tools, seedlings, and of land preparation and planting.

X_{1j} = The j th year Development Cost ($j = 1$ to n and n is the number of development years).

X_{2i} = The i th year Operating cost ($i = 1$ to N and N is the number of productive years beginning from year of first harvest).

Y_i = The i th year yield.

ESTIMATING THE COST/UNIT PRODUCT OF AN ANNUAL CROP (e.g. maize) IN PURE CULTURE

This is estimated on an annual basis as the sum of EC (annualized) and Annual Operating Cost (AOC) divided by Annual Production (AP). This is given by EQ 4.

$$\text{Eq.4. Cost/Unit} = (X_0/N + X_1)/Y$$

Where X_0 = EC or the cost of tools plus initial cost of land preparation and planting.

X_1 = Annual operating cost

Y = Annual yield

N = Estimated period (in years) for producing the crop on the prepared land.

ESTIMATING THE COST/UNIT PRODUCT OF A LIVESTOCK ENTERPRISE

i) For a given batch of a short cycle or temporary livestock such as broilers, hogs, and rabbits,

$$\text{Cost/unit} = X/Y$$

Where X = Annual cost of production

Y = Annual production or total number of units of product produced in one year.

It is also possible to prorate calculations to fractions of a year. For example, the cost of producing a broiler can be estimated from one batch produced in 10 weeks instead of from four or five batches produced in one year.

ii) For a given batch of a permanent or long cycle livestock enterprise such as egg, weaner, day-old-chick, beef cattle, and dairy production,

$$\text{Cost/unit} = \frac{\text{Total cost of producing the batch}}{\text{Total number of units of product produced}}$$

This is obtained as the sum of establishment and total operating costs divided by total production and as given by Eq. 5.

$$\text{Eq.5. Cost/unit} = (rX_0 + \sum X_{1i})/Y$$

Where X_0 = Establishment cost

r = Coefficient representing a fraction of EC to cover N the life span of the batch.

X_{1i} = The i th year Operating cost ($i = 1$ to N).

Y = Total number of units of product produced by the the batch

Establishment costs of a livestock enterprise include the cost of buildings/equipment, the cost of initial stock of permanent livestock, the cost of feasibility studies, and the cost of capital while operating costs include the cost of feed, medication, labour, water, fuel, electricity, other production materials and the cost of capital.

ACKNOWLEDGEMENT

The proposal for this research project was developed by the the Department of Agricultural Economics of the University Centre of Dschang and submitted to CAPP in 1990 for possible funding. After some modifications CAPP accepted to finance it through a contract (USAID project 631-0059). The conclusions arrived at are those of the authors and are not necessarily held either by the CAPP or USAID.

The authors acknowledge with thanks all those who have in any way contributed to this report. We specially thank all those who actively participated and made very useful comments and suggestions during the workshop that examined and discussed an earlier version of the report on Nov. 16th 1992.

REFERENCES

1. ABDOULAYE SERNO. Evaluation d'un Projet Agricôle: Cas du Projet KENAF. ENSA, Dschang, 1982.
2. Bahm. Andrea The Economics of Intensive Cattle Fattening in West Africa.
3. AFCA-CAMEROUN. The Development of Oil Palm Plantations in the Menchum Division. Yaoundé, 1986.
4. Cros Bernard. Promotion des exploitations agricoles de moyenne importance. Etudes des modalités de financement de Programme EAMI. MINAGRI, Yaoundé, 1989.
5. Cros Bernard. Promotion des Exploitations agricoles de moyenne importance. Etudes des modalités de financement du programme EAMI (annexes), MINAGRI, Yaoundé, 1989.
6. BOUBAKARI MANA. Determination de la Rédévance et du Revenu du Riziculteur dans le Perimetre S.E.M.R.Y. I. ENSA, Dschang, 1984.
7. Canevas pour la présentation des projets d'exploitations Moyenne Importance. Agricoles de
8. CDC. Estimate Summary Costs, Small-holders Development Scheme Costs of Establishing one Hectare of Rubber/Oil Palms, Tiko
9. CDC. Missellele Rubber Estate 1984-85, Budget Summary, Missellele.
10. CDC. Missellele Rubber Estate 1987-88, Budget Summary, Missellele.
11. CDC. Mondoni Palms Estate 1984-85. Budget Summary, Mondoni
12. CDC. Mondoni Palms Estate. 1987-88, Budget Summary. Mondoni
13. CDC. Mukonje Rubber Factory 1984-85, Budget Summary, Mukonje.
14. CDC. Mukonje Rubber Factory 1987-88, Budget Summary, Mukonje.
15. McGowan Claude H., Godfrey A. Nurse, Stephen Leong. A Production and Economic Evaluation of three Breed

Types of F¹ Kids, Florida.

16. Cost and Returns in Egg and Spent Layer Production.
17. Von Bailey Dee, Douglas W. Eck, Terrence F. Glover. An Evaluation of Cost of Production Information Usage by County Agents. Utah State University.
18. McHugh Dermot. Maize-Based Farming Systems in the Bui Highlands of N.W. Province of Cameroon, (A Farm Resource Monitoring Survey), IRA, Bambui, 1990.
19. McHugh Dermot. The Effect of Storage Loss Rates on the Valuation of maize stored in farmers' and removed periodically for food, feed, or sale in Cameroon. Bambui, 1990. traditional stores
20. DIMITHE Georges. Une Analyse de la Structure des Coûts de Production de l'Huile de Palme: Cas de la Plantation SOCAPALM de Dibombari, ENSA Dschang, 1986.
21. ECONOFITECH LTEE. Etude des Perspectives de Developpement de l'Industrie Nationale du Cacao et des Produits Chocolates au Cameroun. Montreal, Canada, 1988.
22. Etude d'un Projet de Creation d'une Plantation de Maize et d'igname à Mezam.
23. Etude sur le Coût d'Exploitation des Plantations Paysannes de Robusta dans la Province de l'Ouest. Café Arabica et
24. TANKOUA F. Une Evaluation du Projet des Plantations Villageoises de la SOCAPALM: Cas du Secteur de Dibombari, ENSA, Dschang, 1984.
25. FOAGUEGUE Augustin. Etude Economique de la Production de l'ananas dans le Departement du Moungo. ENSA, Dschang, 1983.
26. Rohrman Francisco, Jose Alvarez. Sugar Cane Budget Generator. Florida Cooperative Extension Services, IFAS, University of Florida, Gainseville, 1985.
27. Schaefer-Kelat, Hans-Christoph, An Economic Analysis of

Cooperatives Promoting Coffee
and Cocoa Production in
Cameroon.

28. Hinman H. R. 1990 Enterprise Budgets Native Scotch Spearmint Cooperative Extension, Washington State University, Washington, 1990.
29. Simpson Ian G.. Planning Profitable Farming Systems. (Five Examples of the use of Linear Programming. University of Leeds, 1964.
30. Simpson I. G.. Economic Aspects of Sheep Production on the Lowland Farn: Results of a Yorkshire Survey. Leeds, 1962.
31. IRZ. Bamenda Annual Report 1983-1984. Mankon, 1984.
32. IRZ. Bamenda Annual Report 1984-1985. Mankon, 1985.
33. IRZ. Small-Scale Layer Production. Yaounde, 1991.
34. IRZ. Small-Scale Broiler Production, Mankon.
35. IRZ. Small-Scale Rabbit Production. Yaounde, 1990.
36. IRZ. Small-Scale Goat Production for meat, Yaounde, 1990.
37. Timti Isidore N. A Proposal for Agro-Industrial Company, Lobe
38. Simpson James R., L. B. Baldwin, F. S. Baker Jr. Investment and Operating Costs for two and three sizes of Florida Feedlots. Florida University, Gainseville.
39. Simpson James R., Liu Shaubo, Xiong Yiqiang, Yoichi Kojimu, Chinese Pig Production Systems and Economics. University of Florida, Gainseville, 1988.
40. Simpson James R., L. B. Baldwin, F. S. Baker Jr. Investment and Operating Costs for two types and three sizes of Florida Feedlots. Summary, Florida.
41. Praloran J. C. L'Avocatier au Cameroun, (Conditions de Developpement de sa culture), IFAC, Paris, 1968.

42. de Graaff J. Economics of Crops in Developing Countries.
Coffee in Cameroon.
43. KANGA. Etude d'un Projet de Creation d'une Exploitation Agricôle de Moyenne Importance à Noun , Delegation Provinciale d'Agriculture de l'Ouest, 1986.
44. Klonsky Karen. Budget Planner Version 2.0. University of California, 1990.
45. Kupper Karl. Rate and Prices paid in Nfonta Rural Training Centre. Nfonta.
46. Schleich Karl, Kurt Steiner. Expert Report on the Project (Promotion of Adapted Farming Systems Based on Animal Traction. GTZ, Bamenda, 1986.
47. KEMGNI Joseph. Etude d'un Projet de Creation d'une Exploitation Agricôle de Moyenne Importance à Fotouni. Delegation Provincial d'Agriculture de l'Ouest. Bafoussam, 1986.
48. Carpenter Kendall S. Beef Costs and Returns on 41 New York Farms, 1951, Cornell University, New York, 1953.
49. KUITCHE Joseph. Etude des Structures d'Approvisionnement en Poussins "Chair" d'un Jour et en Aliments pour Poulets de Chair dans la Province de l'Ouest. ENSA, Dschang, 1986.
50. LOSCH, FUILLIER. Strategies des Producteurs en Zone Cafeiere et Cacaoyere du Cameroun
51. MBIPEH, Pius SHIDIKI. Costs and Returns Analysis in Rice Production to Farmers under the Upper Nun Valley Development Authority Project (UNVDA). ENSA, Dschang, 1986.
52. MEDI MOUNGUI. Technical, Economic and Financial Monitoring and Evaluation of the Cattle Fattening Project (MIDEBOM) at Mbandjock. NASA, Dschang, 1985.
53. MEDI MOUNGUI. Recueil des données Technico-Economiques de Production. Budget de Cultures.

54. MIDENO. Adaptive Research and Seed Multiplication Section, Bamenda.
55. MIDENO. Extension Service Survey, Maize Packages Adaption. Bamenda, 1984.
56. MINAGRI. Plantation Inter-continentale du Mbam, Exploitation Agricole à Makenene. Douala, 1987.
57. MINAGRI. Projet de Creation d'une Exploitation Agricole de Moyenne Importance à Bonakou. Douala, 1987.
58. MINAGRI. Projet de Creation d'une Entreprise Agricole de Moyenne Importance à Makondo, Douala, 1987.
59. MINAGRI. Situation des Projets Agricoles. Yaoundé, 1973.
60. MINPAT/CEE/FED. Etude pour un Projet de Creation des Perimètres de Developpement Rural Intégré dans la Zone Nord-Est de la Benoué (Tome II). Rome, 1971.
61. MOUSSA, NGUETANG. Une Estimation des Coûts de Production des Semences de Base de Pomme de Terre. INADER, Dschang, 1991.
62. NDJEGNA. Etude d'un Projet de Création d'une Exploitation Agricole de Moyenne Importance à Bangangté, Délégation Provinciale d'Agriculture de l'Ouest, Bafoussam, 1986.
63. NELSON D. C., Rene D. BRANCKAERT, Yves J. BOTTON. A cost Analysis of Broiler Production at NASA. Yaounde, 1973.
64. NGANJE William Evange. Production Analysis of Small-Holder Yam Production, A Case Study in Bonakanda and Malende Zones. ENSA, Dschang, 1990.
65. NGASSA BATONGA. Le Projet Maisier de l'Ouest. Une Reevaluation. 1985.
66. NGOUMDOUM, Demande de Creation d'une Ferme Mixte (Avicole et Porcicole). Batcham, 1990.
67. NKWANOU. Evolution des Coûts de Production et du Prix d'Achat au Production de Cacao et de Cafe. ENSA, Dschang, 1981.

68. NNENGUE née MVONDO Rosalie. Analyse de quelques Facteurs Socio-Economiques liés à la Création des Plantations Nouvelles dans le Secteur SODECAO Nyong-Et-So'o. ENSA, Dschang, 1984.
69. NNOUNG à MBASSA André. Une Analyse de la Structure des Coûts de Production du Sucre: (Cas de la CAMSUCO) de Nkoteng. ENSA, Dschang, 1988.
70. NYIENTEWANG PHILLIP. A Survey of the Technical and Economic Performance of Cocoyam Production and Marketing in Fontem, INADER Dschang, 1989.
71. Pascal TAGNE FOTZO. Resource Productivity and Returns in Rice Production Under Alternative Farming Systems. A Comparative Study in the North-West Province of Cameroon, University of Ibadan, Nigeria, 1977.
72. Patricia Kristjanson, Mark D. Newman, Cheryl Christensen, Martin Abel. African Cash Crop Competitiveness Strategy Study Final Report (Draft), 1990.
73. Peter W. Wyeth. Arabica Coffee and Policy Analysis Matrices in Cameroon. MINAGRI, Yaoundé.
74. Peter W. Wyeth. Policy Analysis Matrices and Arabica Coffee in Cameroon. MINAGRI, Yaoundé, 1990.
75. Provincial Delegation of Agriculture North West. Adaptive Research Briefs 1: Food Crop Varieties, Food Crop cropping patterns, plant populations and planting arrangements, Weed Control Practices. Bamenda, 1990.
76. R. E. L. Greene. Growers Income, Production Cost and Net Returns in Producing and Marketing Broilers under Contract. Live Oak, Florida Broiler Producing Area, 1970-1971. Florida, Gainseville, 1972.
77. R. W. Carkner, D. M. Havens. 1990 Vegetable Crop Budgets for North West Washington. Washington State University, 1990.
78. R. W. Carkner, L. A. Mitchell. Estimated Costs and Returns for

a 100-Head Beef Cow/Calf Enterprise,
Grant-Adams Area, Washington, 1990.

79. Rom Alderman. FASTFIVE: Five Year Feasibility and Financial Statement Analysis Program, University of Florida, Gainesville, 1988.
80. Rom Alderman, Kevin Parrish, Tim Hewitt. ALTCROP Alternate Crop Budgeting. Florida Cooperative Extension Service, IFAS, University of Florida, Gainesville.
81. Ronald P. Muraro, Edgar D. Holcomb Jr. Budgeting Costs and Returns for South West Florida Citrus Production 1988-89, Florida.
82. Ronald P. Muraro, G. Tim Hesner, Jr., Thomas W. Oswald. Budgeting Costs and Returns: Central Florida Citrus Production 1988-89, University of Florida. Gainesville, 1989.
83. Ronald P. Muraro, Stephen J. Futch, John W. Hebb. Budgeting Costs and Returns, Indian River Citrus Production, 1988-89 Report 259, Florida.
84. SAMA J. NKWAIN, A Cost and Return Analysis of the Egg Production Unit of NASA, Yaounde.
85. SAMA J. NKWAIN. An Appraisal of Public Aid to Young Farmers in the North West and South West Provinces. Dschang University Centre, 1990.
86. Simplicie BATIMBA, Georges MINDJIE MEWOAND. Etude du Secteur National de l'Aviculture au Cameroun, MINEPIA, Yaoundé, 1992.
87. SOCAPALM. Actualisation du Projet pour la Plantation de Palmiers de Dibombari. Dibombari, 1977.
88. SOCAPALM. Avant Projet 4.000 Ha. de Cocotiers à la Région de Mouanko. Dibombari.
89. SOCAPALM. Etude de Factibilité de l'Installation des Jeunes

du Service Civique sur les Plantations Villageoises
de Palmier à Huile. Dibombari.

90. SOCAPALM. Projet de Developpement de la SOCAPALM. Fascicule 2: (Coûts des Facteurs de Production), Annexes, VIeme Plan Quinquennal. Dibombari, 1989.
91. TAKAM, Etude d'un Projet de Creation d'un Exploitation Agricole de Moyenne Importance. Delegation Provincial d'Agriculture de l'Ouest, Bafoussam, 1986.
92. TCHEULACHUIE Jean. Evaluation d'un Programme Agricole Regional: Province de l'Ouest Cameroon (Fascicule I). ENSA, Yaounde.
93. TCHEULACHUIE. Evaluation d'un Programme Agricole Regional: Province de l'Ouest Cameroun. (Fascicule II). ENSA, Yaounde, 1977.
94. TCHINDA. Etude d'un Projet de Creation d'une Exploitation Agricole de Moyenne Importance à Bamenyam, Delegation d'Agriculture de l'Ouest, Bafoussam, 1986. Provinciale
95. TCHUENTE, Enquete Technique (Exploitation Agricole et Elevage de Yogam "Exagrey". Bayangam.
96. Tchuente; Etude Technique, Projet de Creation d'une Ferme Mixte, Bayangam. Avicole
97. Timothy G. Taylor, Patrick A. Antoine, Scott A. Smith, Estimated Costs of Production for Specialty Crops produced in the OECS. Florida University, Gainseville.
98. Timothy Taylor, Scott A. Smith. Production Costs for Selected Florida Vegetables 1987-88, IFAS University of Florida, Gainseville, 1988.
99. Timothy G. Taylor, Scott A. Smith. Production Costs for Selected Vegetables, 1989-90, University of Florida, Gainseville, 1990.
100. Van denr Benrgl. Bamenda Dairy Cooperative Society (BDCS) Report. Bamenda, 1989.

101. Wendell Earle, John Rogalla. Costs and Returns From the Sheep Enterprise 60 Central New York Farms, 1956, Cornell University, New York, 1957.
102. WOUEMBE, Enquête Technique (Ferme Avicole de Batoukop), Bafoussam, 1990.
103. YONGUE SIMOU Frédéric. Etude Comparative des Coûts de Production du Cafe Arabica et Robusta dans l'Ouest. Université de Yaoundé, 1985.
104. YONKE Pauline. Etude d'un Projet de Creation d'une Exploitation Agricole de Moyenne Importance à Bangangté, Delegation Provinciale d'Agriculture de l'Ouest. Bafoussam, 1986.