Report No. 6



# Rapid Rural Appraisal in Central Bandundu, Zaire


**Nutrition in Agriculture Cooperative Agreement**

University of Arizona
University of Kentucky
January 1989

Supported by:

USAID/Kinshasa and U.S. Department of Agriculture, Office of International Cooperation and Development, Nutrition Economics Group, and the Bureau of Science and Technology, Office of Nutrition

# RAPID RURAL APPRAISAL

# IN CENTRAL BANDUNDU, ZAIRE

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## Executive Summary

A rapid rural appraisal was carried out in eleven collectivités in the central Bandundu region of Zaire during August and September 1988. Forty-four villages were surveyed and household interviews were conducted with one hundred farm families. The primary objective of the study was to collect information on the regional system of agricultural production and the other major components of the rural economic system: fish farming, animal husbandry, off-farm employment and marketing. General inquiries regarding consumption patterns and specific information on household diet were included in the survey. The information from this rural appraisal is intended to help PROCAR/USAID 102 define constraints on development and identify potential interventions on two levels: in terms of the project area as a whole and in terms of the key characteristics of each of the eleven collectivités.

The major components of the regional rural economic system are agriculture, fishing, animal husbandry and commerce. The system of rotating, slash and burn agricultural production is practiced in both the forest and savanna areas. The production of major crops (manioc, corn, rice, peanuts, squash seed, coffee) is destined for both consumption and commerce. Fish farming in the region's numerous water sources and fishing in the rivers is the secondary, complementary economic activity; this product also is for both consumption and commerce. Animal husbandry generally is limited to small ruminants although cattle are raised throughout the region, particularly in the eastern and northern areas. The system of free grazing does not complement agricultural production, but in general the size of village herds is not large enough to constitute a serious constraint on agricultural production. The intra-regional differences between the northern zone of Kutu and the area south of the Kasai River are mainly in the former's emphasis on coffee production, fishing and riverine commerce.

The commercialization of agricultural products is of primary economic importance to the rural population. Sales are the major source of cash income for the villagers and they are seeking profitable commercial crops to add to their crop mix. Alternative activities for the off-farm generation of income are extremely limited for both men and women, which reinforces the importance of agricultural production and marketing.

At the same time, the region's transportation and commercial systems pose critical constraints on marketing that directly affect the population's standard of living. Poor roads and bridges and the distance between dispersed villages in the region make transportation difficult and expensive for buyers from the major urban market, Kinshasa. These conditions also limit the supply of essential consumer goods such as medicine and agricultural inputs brought in to the rural areas. These factors effectively limit the villagers' selling and buying capacities, and constitute a significant constraint on regional development at the village level.

## ACKNOWLEDGEMENTS

The team leaders extend their thanks to Director Nkoy Baumbu, David Olson, Walter West, Toby Vaughan and Wendy Ascher of PROCAR for their excellent logistical support and help in organizing both the RRA workshop and the fieldwork. Walter West and Wendy Ascher deserve an extra thanks for their help in designing and pretesting the questionnaires; we also thank Mr. West for identifying the research sites and visiting the RRA teams in Kalanganda to maintain logistical support. We, and the field staff, thank Mr. Bob Hall for teaching the workshop and participating in pretesting the questionnaires.

The team leaders extend their thanks to the people cited below who participated in the RRA fieldwork and those who tabulated the data from the questionnaires. Interviewers: Luzolo Swani, Inyangi Bokinda Mbile, Kaziama Kamary, Kingadila Mwaba Daba, Kalolo Kaleman, Kapita Minsele, Kawanda Epala, Makuku Ndong Intiar, and Makunda. Interpreters: Lumeka Akonda, Masasi Moskitit, and Pombo Nzalama. Data tabulators: Isengi Mburampay and Ansel Angesak. Drivers: Misinga Ikwoy, Ugonda Malosa, Muyayu Tamabulu, Manzangu Mbaku, Kahito Kilundu, Tshishimbi Mukadi and Ndaba. Cooks: Venant, Ndala, and Mafui.

We thank also Robert (Mufonkolo Ansionda) of PROCAR who spent long days and a few Sundays duplicating our questionnaires. Finally, we wish to thank the farmers who were interviewed in this survey.

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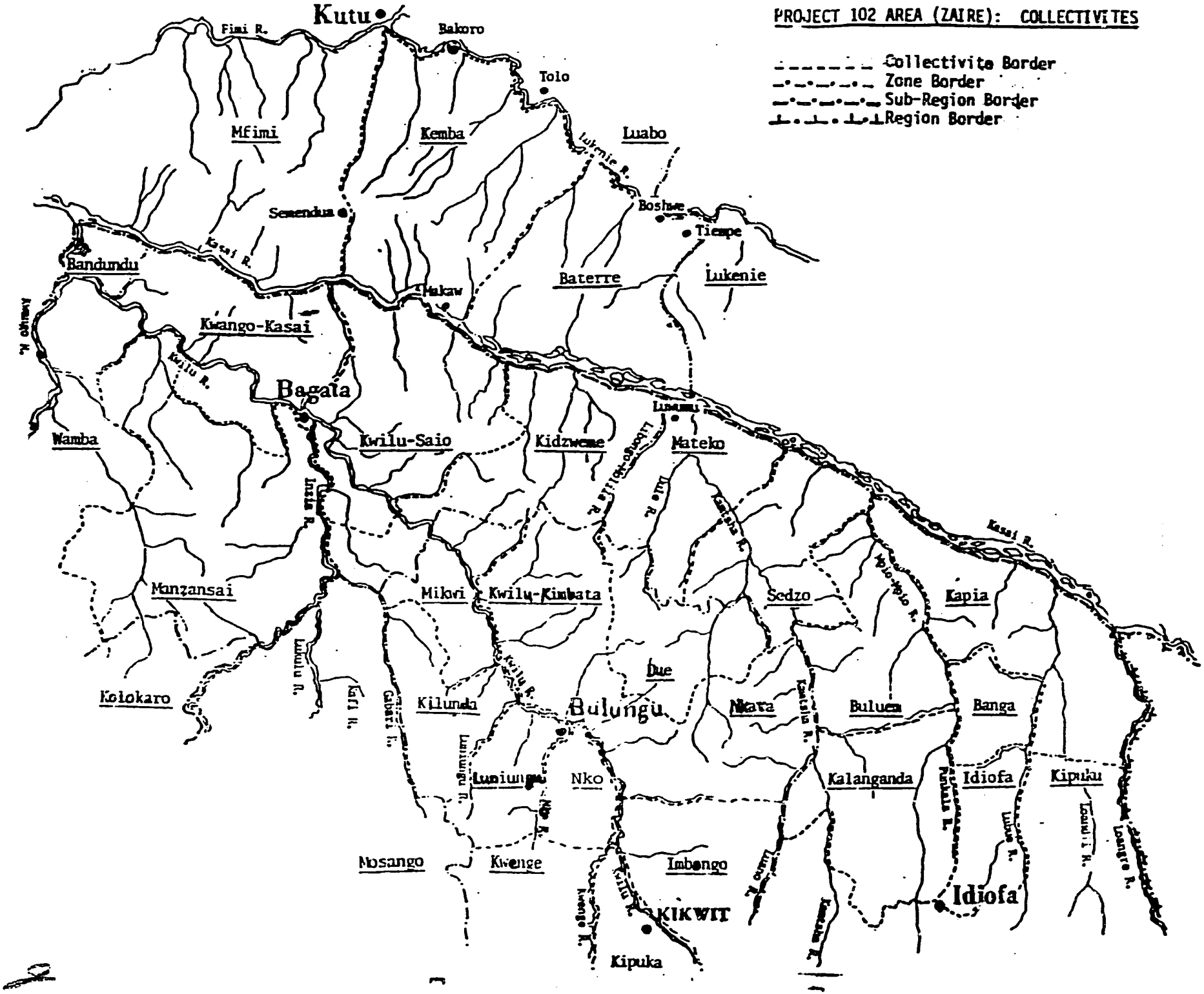
PROJECT 102 AREA (ZAIRE): COLLECTIVITES
Collectivite Border
Zone Border
Sub-Region Border
Region Border
Kutu
Fimi R.
Bakoro
Tolo
Mfimi
Kemba
Luabo
Lukenie R.
Boshue
Tiempe
Senendua
Kasai R.
Bandundu
Bateree
Lukenie
Makaw
Kwango-Kasai
Kwilu R.
Bagata
Wamba
Kwilu-Saio
Kidzweme
Mateko
Inzia R.
Kasai R.
Manzansai
Mikwi
Kwilu-Kimbata
Sedzo
Kapia
Kolokaro
Lukulu R.
Kasai R.
Kilunda
Due
Bulungu
Ntara
Buluem
Banga
Lumiungu
Nko
Kalanganda
Idiofa
Kipuku
Mosango
Kwenge
Imbongo
KIKWIT
Idiofa
Kipuka

## METHODOLOGY

### Training Workshop and Questionnaire Pretest

Preparation for the RRAs began with an eight day training workshop taught by USDA consultant Mr. Bob Hall. All of the interviewers and interpreters attended the workshop. The overall objectives of the workshop were to make the participants familiar with the objectives of PROCAR, allow them to review some of the studies done in the project area, learn about the links between agricultural production and consumption and become familiar with the questionnaires and field techniques used in this RRA. The interpreters made a glossary in Kikongo of the key terms in the questionnaires, in order to improve the uniformity of data collection in the field. The interpreter who worked in Kemba and Batere added the key terms in Lingala and Sakata, the local languages.

Pretesting the three questionnaires was part of the training. All the participants, Mr. Hall, the team leaders, Walter West (PROCAR) and Wendy Ascher (PROCAR) participated in the pretest. Three villages in Nkara, a collectivité in the project area, were used as pretest sites: Busongo, Mikingi and Musai. The next day the participants and team leaders met to discuss the revisions to be made in the questionnaires. The questionnaires were pretested once more and then final revisions were made.

### Questionnaire Design

After consultation with Mr. West regarding the pertinent topics for investigation for PROCAR, topical guides were designed by Dr. Adelski. These were later converted into questionnaires for two reasons: a great amount of general information on the project area already was available, so it was decided to collect more specific data; and the interviewers available for the RRA were not capable of conducting research with topical guides.

Three questionnaires were designed: one to collect data on village infrastructure and mens' economic roles, another to collect data on women's economic roles and consumption patterns and the third to collect more specific data on household agricultural resources and production, other economic activities and consumption patterns. The first two questionnaires consisted entirely of open-ended questions to be discussed with a group of men or women. The third questionnaire consisted of both open and closed questions and was designed to interview a farming household.

### Research Sites and Fieldwork Organization

Four villages in each of the eleven collectivités were chosen as the research sites for the RRA. Table 1 lists the research villages by collectivité, the team leader who directed the research in each collectivité and the dates of the fieldwork. The first half of the fieldwork covered six collectivités (Banga, Kalanganda, Bulwem, Due, Nkara and Sedzo) and was conducted from August 23 through September 4, 1988. The second half of the RRA covered five collectivités (Kidzweme, Mateko, Luniungu, Batere and Kemba) and was conducted from September 9 through 21, 1988.

Some of the villages surveyed in the Small Farmer Study (G.J. Eale and L. Newtom, 1984) were included in the RRA (Banga: Punkulu Lankwon, Punkulu Iwungu; Bulwen: Imbim Dzou; Kalanganda: Mayungu, Lakubu I, Ikubi Kanga and Impasi Moulu). The Small Farmer Study used a proportionate sampling strategy based on the population of the project's collectivités so their research sites tended to be clustered in the areas with large populations. The research villages for the RRA were identified by the PROCAR staff and the administrative heads of the collectivités, the chefs de collectivités, choosing villages that represented the variation within each collectivité such as different ecological, ethnic and economic characteristics.

The RRA was done by three teams, each consisting of a team leader and three interviewers. Team members were exchanged between the teams after each week of fieldwork. The teams spent one day in each village to complete the interviews. In addition to the questionnaires, a short form was designed as a guide for interviewing the collectivité chief about the cooperatives and projects in the collectivité, the type of "fermiers registres," and his priorities for local development. Another form was used to record field notes for each village.

Data Tabulation

After the first half of the fieldwork was completed, codebooks were made by Dr. Adelski and two people who had attended the workshop were hired to begin tabulating the data. When the field teams returned to Kikwit they participated in the tabulation also. The time limit for writing up the report allowed only basic calculations such as frequencies and percentages but the questionnaires and codebooks have been left with the project for further analysis.

Table 1. Research Villages Surveyed in the RRA

| Village | Collectivité | Team Leader | Dates of Fieldwork |
|---|---|---|---|
| Momulom | Banga | Lumbuenamo | August 24-27 |
| Punkulu Lankwon | Banga | | |
| Punkulu Iwungu | Banga | | |
| Mbwim | Banga | | |
| Mayungu | Kalanganda | Mayombo | August 24-27 |
| Ikubi Kanga | Kalanganda | | |
| Impasi Mbulu | Kalanganda | | |
| Lakubu I | Kalanganda | | |
| Intsueme Lokwa | Bulwem | Adelski | August 24-27 |
| Oveke I | Bulwem | | |
| Imbim Dzou | Bulwem | | |
| Lokwambila | Bulwem | | |
| Nkara | Nkara | Lumbuenamo | Aug. 30-Sept. 2 |
| Mayala | Nkara | | |
| Mbala Mbele | Nkara | | |
| Ekubi I | Nkara | | |
| Fumunzoko | Due | Mayombo | Aug. 30-Sept. 2 |
| Kibebebe | Due | | |
| Kiyanga | Due | | |
| Musiele | Due | | |
| Mateko Fioti | Sedzo | Adelski | Aug. 30-Sept. 2 |
| Mana Mana | Sedzo | | |
| Panu Nsumbu | Sedzo | | |
| PioPio | Sedzo | | |
| Mushie | Kidzweme | Lumbuenamo | Sept. 11-14 |
| Bwakana | Kidzweme | | |
| Kipata Kidzwem | Kidzweme | | |
| Tshimbane | Kidzweme | | |
| Kindey II | Mateko | Mayombo | Sept. 10-13 |
| Nsong | Mateko | | |
| Kimpanga Mpunkulu | Mateko | | |
| Kimbanda | Mateko | | |
| Kinzamba | Luniungu | Mayombo | Sept. 15-18 |
| Bwatundu Munsie | Luniungu | | |
| Yungu Kissala | Luniungu | | |
| Kina | Luniungu | | |

**Table 1 cont. Research Villages Surveyed in the RRA**

| Village | Collectivité | Team Leader | Dates of Fieldwork |
|---|---|---|---|
| Kebina | Batere | Adelski | Sept. 11-15 |
| Mbeko | Batere | | |
| Mpanda | Batere | | |
| Likwangola | Batere | | |
| Motangila | Kemba | Adelski | Sept. 16-19 |
| Kempimpi | Kemba | | |
| Mokila | Kemba | | |
| Manganga | Kemba | | |

## CONSTRAINTS ON REGIONAL DEVELOPMENT and POTENTIAL INTERVENTIONS for PROCAR

This section of the report is set in the context of the project objectives presented in the proposal and the results of the research conducted on regional NGOs/farmer cooperatives by the fourth team (see the complementary report by Hall et al., 1988). It is based on research conducted at the village level and therefore represents the perspective on development needs reported by the rural population. As the following sections on felt needs and current sources of technical assistance show, the villagers have a definite set of priorities for local development and very limited assistance. A primary objective of this section of the report is to address those local priorities, taking into account the findings of the fourth team. Women are an important target group as they are the primary agricultural producers, are actively involved in marketing and traditionally work in groups.

### Aggregate Levels for Project Interventions

The most practical aggregate levels for the project interventions presented below are the collectivité and groupement. Groupements generally comprise ten or so villages, a number that comprises sufficient people and geographical area to support a local cooperative or technician. Organization at the groupement level thus would involve reasonable distances for the villagers to transport goods and obtain technical advice. In the more sparsely populated areas it may be necessary to make interventions at the subregional level by aggregating groupements. The objective in both cases is to limit the distance between the villages and the project's assistance, given regional transportation conditions. The groupements within a collectivité could be linked to a cooperative or NGO for collectivité-level organization with the project. The result would be an intervention network based in the villages, organized at the groupement level and linked to the collectivités or existing cooperatives as headquarters for project administration.

### Constraints on Development and Potential Interventions

**I. Improve marketing and transportation.**

**Primary constraint: inadequate regional system of marketing and transportation.**

The evacuation of agricultural products and supply of consumer goods in rural areas are both constrained by the region's inadequate system of transportation and marketing. Poor roads and bridges and dispersed villages make transportation difficult and expensive, which limits commerce with the major urban market of Kinshasa as well as regional markets. The merchants make major purchases following harvest; after that period the opportunity to sell products and buy consumer goods is limited. The villagers' access to cash and consumer goods, including food items, thus is irregular and limited. The poor roads and marketing system also limit their access to health care, medicines and the inputs necessary to improve agricultural production and animal husbandry.

**Potential intervention:** local marketing cooperatives that have storage centers and stores.

Marketing cooperatives could be organized at the groupement level (about ten villages) or by organizing several groupements into regional centers, based on geographical location. The purpose of the marketing cooperatives would be to improve the quality and quantity of marketable agricultural products by providing large storage facilities. This would reduce storage losses, give the merchants access to large amounts of products in fewer locations and give the farmers some leverage in setting prices. The cooperatives also could serve as distribution centers for consumer goods (agricultural tools and inputs, medicine, packaged foods) brought in by the merchants. The provision of agricultural tools is particularly important to the villagers.

**Potential intervention:** improve the means of local transportation.

Bicycles, pushcarts and/or trucks are necessary to enable the villagers to transport their products. Bicycles are a common form of transportation, especially in the northern collectivités of Kemba and and Batere. Pushcarts are less common but they are currently used to transport goods short distances. The cooperatives' stores could supply the parts necessary for repairs.

Transportation by boat is an alternative in the collectivités of Kemba and Batere, as the Lukenie and Kasai Rivers are major transportation links in that region. The villagers have boats that can accommodate outboard motors. Parts and gasoline could be stocked in the cooperatives' stores. Large boats or barges also could be run by the cooperatives.

## II. Increase household income and agricultural production.

**Constraint:** agricultural production is the primary means of generating cash income.

**Potential intervention:** provide access to the technical assistance and inputs necessary to improve the production of coffee, the principal cash crop, especially in Kemba and Batere. Improper cultivation and storage techniques decrease the value of the regional crop in the Kinshasa market. Precooperatives and cooperatives for coffee production already exist in the region.

**Potential intervention:** sesame is a profitable cash crop that is grown in Kidzweme. Further research is needed to the market demand and to identify other collectivités in the project area where it can be grown.

**Potential intervention:** identify and field test a variety of manioc that produces well under regional conditions and is preferred for consumption in Kinshasa. Manioc is an important cash crop but the local variety/varieties currently produced are not those preferred for consumption in the urban market. This decreases the volume and price of local sales. The whiter varieties of manioc from Bas Zaire are reported

to be preferred in the Kinshasa market.

**Potential intervention:** identify and field test additional crops that produce well in the region and are profitable in the regional and urban markets.

III. Increase the availability of food by improving storage techniques and decreasing the loss of food crops in storage.

**Constraint:** lack of containers and technical assistance for the adequate storage of food crops.

**Potential intervention:** appropriate containers or silos for storing food crops such as peanuts, squash seeds and corn would reduce storage losses from rats and insects. Adequate storage facilities also might reduce the sale of food crops immediately after the harvest and the need to buy them at higher prices later in the year.

IV. Increase the availability of food, ensure good health and nutrition.

**Constraint:** irregular supply of protein.

**Potential intervention:** improve the production of fish in household fishponds by providing improved species of fingerlings and technical advice.

**Potential intervention:** identify and field test a variety of beans that produces well under local conditions. Limited quantities of earth peas (voandzou) are cultivated in parts of the project region. Further research is needed to determine whether food preferences and/or ecological conditions limit the consumption of beans.

V. Improve livestock production and increase household income.

**Constraint:** lack of lack of veterinary care and medicines for livestock production.

**Potential intervention:** support the training of selected members of livestock cooperatives as technicians that are capable of providing basic veterinary care such as vaccinations, dipping programs and the diagnosis and treatment of common diseases. The NGOs such as the Catholic Mission in Makaw and Lusekele could provide ongoing training programs, stock medical supplies and provide expert advice for the technicians. Each technician would be responsible for a set of villages. This would establish groupement- or regional-level networks for basic veterinary care.

**VI. Provide access to credit to improve production and marketing.**

**Constraints: lack of access to credit and the fact that agricultural products are the villagers' major resource for repayment.**

**Potential intervention:** support the organization of credit cooperatives that have storehouses and accept agricultural products to repay cash loans. These groups then could function as local marketing centers, as described above. Mateko Mission in Sedzo provides a model for this type of credit cooperative.

**VII. Reduce the amount of women's labor invested in processing food and increase food availability.**

**Constraint: lack of mills for processing food grains.**

**Potential intervention:** provide mills in the villages. The women could organize village cooperatives to run the mills and use the fees charged for milling to maintain the machines.

**VIII. Raise the standard of living in rural Bandundu.**

**Constraint: lack of wells in the villages.**

**Potential intervention:** build wells in the villages and accept payment in agricultural products that can be sold by the local marketing centers. Mateko Mission in Sedzo provides a model for this intervention.

Topics for Further Research

In the course of collecting general information on the rural economic system, the RRA identified several areas of potential interest to the project that require further, more focused research. These topics are:

1. Fish farming. Fishponds are a household economic resource throughout the project area but the methods of raising fish cover a broad continuum, from elementary to modern. Further research is necessary to determine the relative importance of fish farming in the different collectivités of the project region and its potential for improvement.

2. Manioc rot. Manioc rot was reported as a problem throughout the project region. The villagers cannot define the source of the problem and have no remedy for it.

3. Storage losses. Quantitative information on the quantities of food crops stored and storage losses was not obtained during the RRAs. As these problems may be linked to the sale of food crops immediately after the harvest, further research on storage techniques and problems is necessary.

4. Bean production. The production of earth peas (voandzou) and a variety of bean (haricot vinya) is limited in the collectivités surveyed. Given the need for protein in the diet, further research is necessary to determine whether it is ecological conditions or food preferences that limit bean production.

5. Population pressure on land. In contrast to the Small Farmer Survey of 1984, the RRA found that the villagers have access to sufficient arable land. But quantitative data regarding changes in field size or distance to fields was not collected. The question of pressure on land therefore is still open.

6. Seasonal migration for wage labor. The RRA indicates that short-term migration for wage labor is not a common strategy in the project area. But this topic requires further research at the household level, especially in those areas near regional urban centers.

## The Role of the Regional Non-Government Organizations

The RRA was conducted in conjunction with the fourth team's research on non-governmental organizations (often referred to as IMOs) in the project area. The RRA was designed to collect information on NGOs and farmer cooperatives at the village level; that is, to identify which agencies and cooperatives presently are functioning in the region and to obtain the villagers' evaluation of these programs and their priorities for technical assistance/development projects (see Technical Assistance and Current Projects, following) The RRA report thus provides the rural perspective on NGOs and cooperatives; the complementary infrastructural-level analysis of these groups and recommendations for their potential roles with PROCAR are presented in full in the report by Hall et al., 1988. Detailed information on the region's functional farmer cooperatives is found in the latter report as they are not located in the villages surveyed in the RRA.

There is significant overlap in the findings of the two reports. Both point out that the missions do not have active programs for agricultural development and that the collectivité-level extension personnel need training. Both sets of researchers also identified similar constraints on development in central Bandundu and potential interventions for PROCAR. The constraints on development identified at both the village and NGO levels focus on the need to improve the regional marketing system, including the need to analyze the critical economic factors of agricultural commodity processing and transport; the need for adequate storage facilities and research on appropriate storage techniques; the possibility of developing the production of metal goods such as agricultural tools; and the need to explore appropriate technologies for milling and transportation. Combining the research findings of the two reports thus provides PROCAR with the basis for identifying and planning the project's interventions.

## THE VILLAGERS' PRIORITIES FOR LOCAL DEVELOPMENT

Separate groups of men and women in each village were asked to list all their needs for improving life in the village, and then to prioritize these needs. This information is summarized in the four tables on the following pages. Table 2 is the complete list of all the villagers' reported needs. The information in Tables 3-5 is tabulated by gender as well as by the population as a whole and presents the first, second and third priorities for improving village life. It provides an interesting insight into the villagers' definition of local problems.

The villagers' first priorities are to have medical care available in the villages, buyers for their agricultural products, better housing (cement bricks and sheet metal roofs), improved roads and bridges, local stores and mills for manioc and corn (Table 3). Their second set of priorities include those and add the need for schools, wells and means of transportation (Table 4). Their third set of priorities contains the same categories of needs (Table 5).

Based on the frequencies of their responses, men and women agree on the need for medical care, improving the roads and the need for stores (Tables 3-5). Outside of these categories, however, men and women have different priorities for local development. Men consistently reported the need for improved housing as a priority. Their other priorities are to have a source of wage labor, schools, the means of transportation such as trucks, access to medical care and credit. The women's priorities are different, focusing on the need to improve both aspects of local commerce (to have buyers and stores) and the need for mills and wells.

**TABLE 2. Villagers' Felt Needs**

| Stated Need | Women* | Men* | Total* |
|---|---|---|---|
| 1. Dispensary/hospital/ pharmacy/medicines | 36 | 37 | 73 |
| 2. Improved housing | 14 | 31 | 44 |
| 3. Store | 25 | 17 | 42 |
| 4. Mill | 28 | 11 | 39 |
| 5. Well | 19 | 13 | 32 |
| 6. Schools | 11 | 11 | 22 |
| 7. Buyers/market/transportation for agricultural products | 15 | 6 | 21 |
| 8. Improve roads and bridges | 8 | 13 | 21 |
| 9. Means of transportation/ truck | 9 | 10 | 19 |
| 10. Agricultural tools (including electric saws) | 2 | 7 | 9 |
| 11. Electricity | 5 | 3 | 8 |
| 12. Tractor | 4 | 1 | 5 |
| 13. Women's center (foyer social; to learn to sew, cook) | 5 | 0 | 5 |
| 14. Credit | 1 | 4 | 5 |
| 15. Fingerlings/improved species of fingerlings | 1 | 3 | 4 |
| 16. Cattle | 2 | 2 | 4 |
| 17. Wage labor | 1 | 3 | 4 |
| 18. Cooperative | 0 | 3 | 3 |
| 19. Improved seed | 2 | 1 | 3 |
| 20. Metal drums to cook chikwangue (futs) | 2 | 0 | 2 |
| 21. School for mechanics | 0 | 2 | 2 |
| 22. Palm oil press | 2 | 0 | 2 |
| 23. Sports | 0 | 2 | 2 |
| 24. Barbed wire | 0 | 2 | 2 |
| 25. Carpentry school | 0 | 1 | 1 |
| 26. Technical assistance for fish farming | 0 | 1 | 1 |
| 27. Coffee decorticator | 0 | 1 | 1 |
| 28. Rice decorticator | 0 | 1 | 1 |
| 29. Brick press | 0 | 1 | 1 |
| 30. Raise pigs | 1 | 1 | 1 |
| 31. Sewing machine | 1 | 0 | 1 |
| 32. Bicycle | 1 | 0 | 1 |
| 33. Chemical fertilizer | 1 | 0 | 1 |
| 34. Insecticide | 1 | 0 | 1 |

*The numbers are the frequency of response to an open question that allowed the villagers to list any number of local needs for development, thus percentages cannot be calculated.

TABLE 3. Villagers' First Priorities for Local Development

| | Stated Need | Women* | Men* | Villagers* |
|---|---|---|---|---|
| 1. | Dispensary/hospital/ pharmacy/medicines | 33% | 32% | 32% |
| 2. | Buyers/market/transportation for agricultural products | 19% | 10% | 14% |
| 3. | Improved housing | 5% | 17% | 11% |
| 4. | Improved roads and bridges | 7% | 10% | 8% |
| 5. | Store | 7% | 7% | 7% |
| 6. | Mill | 12% | 0 | 6% |
| 7. | Source of wage labor | 0 | 7% | 4% |
| 8. | School | 5% | 0 | 2% |
| 9. | Means of transportation/ truck | 5% | 0 | 2% |
| 10. | Agricultural tools | 0 | 5% | 2% |
| 11. | Tractor | 1 person | 1 person | 2% |
| 12. | Well | 1 person | 0 | — |
| 13. | Electricity | 1 person | 0 | — |
| 14. | Credit | 0 | 1 person | — |
| 15. | Raise pigs | 0 | 1 person | — |
| 16. | Cattle | 1 person | 0 | — |

*The percentages are calculated from the frequency of response to a closed question addressed to 44 groups of women and 44 groups of men. ("What is the first problem in your village you want to resolve?").

**TABLE 4. Villagers' Second Set of Priorities for Local Development**

| | Stated Need | Women* | Men* | Villagers* |
|---|---|---|---|---|
| 1. | Store | 23% | 15% | 19% |
| 2. | Dispensary/hospital/ pharmacy/medicines | 14% | 15% | 14% |
| 3. | Mill | 23% | 5% | 14% |
| 4. | Improve roads and bridges | 9% | 7% | 8% |
| 5. | School | 5% | 12% | 8% |
| 6. | Well | 7% | 7% | 7% |
| 7. | Means of transportation/ truck | 1 person | 12% | 7% |
| 8. | Improved housing | 1 person | 12% | 7% |
| 9. | Buyers/transportation/market for agricultural products | 9% | 1 person | 6% |
| 10. | Cattle | 0 | 2 | 5% |
| 11. | Tractor | 1 person | 0 | — |
| 12. | Agricultural tools | 1 person | 0 | — |
| 13. | Source of wage labor | 0 | 1 person | — |
| 14. | Brick press | 0 | 1 person | — |

*The percentages are calculated from the frequency of response to a closed question addressed to 44 groups of women and 44 groups of men. ("What is the second problem in your village you want to resolve?").

**TABLE 5. Villagers' Third Set of Priorities for Local Development**

| | Stated Need | Women* | Men* | Villagers* |
|---|---|---|---|---|
| 1. | Dispensary/hospital/ pharmacy/medicines | 12% | 20% | 16% |
| 2. | Improved housing | 7% | 22% | 14% |
| 3. | Well | 21% | 5% | 13% |
| 4. | Store | 14% | 7% | 11% |
| 5. | Mill | 14% | 7% | 11% |
| 6. | Improved roads and bridges | 7% | 10% | 8% |
| 7. | School | 1 person | 7% | 5% |
| 8. | Credit | 0 | 10% | 5% |
| 9. | Buyers/market/transportation for agricultural products | 7% | 0 | 4% |
| 10. | Agricultural tools | 5% | 1 person | 4% |
| 11. | School for mechanics | 1 person | 1 person | 2% |
| 12. | Technical assistance for fish farming | 1 person | 0 | — |
| 13. | Electricity | 1 person | 0 | — |
| 14. | Tractor | 1 person | 0 | — |
| 15. | Cooperative | 0 | 1 person | — |
| 16. | Improved seed | 0 | 1 person | — |
| 17. | Means of transportation/ truck | 0 | 1 person | — |

*The percentages are calculated from the frequency of response to a closed question addressed to 44 groups of women and 44 groups of men. ("What is the third problem in your village you want to resolve?").

## CREDIT

No formal systems of credit for the rural population were found in the villages surveyed in the project area. The RRA did not find that agencies working in the project area, such as DPP in Idiofa or the Catholic missions, extend credit either in cash or in kind. (The men in Punkulu Lankwon (Banga) mentioned that DPP loaned the farmers one sack of rice for seed and after the harvest they repaid it with two sacks). The villagers generate limited amounts of credit at the village level with likelemba and special interest groups.

Likelemba is a form of rotating, interest-free credit that is organized among small groups of friends (usually about 5 people). The group agrees on a monthly or weekly fee (50 - 300z) and each month one member receives the entire sum for his/her use. Women also organize likelemba groups using agricultural products: each contributes a quantity of produce (such as two sacks of manioc), one woman sells it and keeps the money. The villagers reported that this money is used to pay school fees, buy clothes and pay for medical care. Likelemba is more commonly practiced by women than men.

Special interest groups such as churches, teachers and village health workers (Red Cross aides, nurses) generally collect monthly fees from the members of their groups and use the funds as credit. Village-level church groups such as Mamas Misato, Mamas Legionnaires and Caritas were frequently reported as providing limited funds (300-2,000z) to members and nonmembers for needs such as medical care or funeral expenses. The villagers reported that they do not charge interest and there is no fixed time for repayment. Many of the villages that reported having cooperatives were referring to these groups (Pankulu Iwungu, Manganga, Kindey II, Imbimb Dzou).

The villagers expressed a definite interest in having access to credit, both in cash and in kind. They reported that it would be just as practical to have credit in kind because their access to consumer goods (bicycles, metal roofing, cement, agricultural tools) is limited. In general they would prefer individual credit because of the problems inherent working in groups. The women would like to have access to credit that could be repaid with agricultural products. The abbey of Mission Mateko in Sedzo ran a credit program on that basis that the villagers evaluated very favorably (see summary report on Sedzo). The missions were cited as the villagers' preferred sources of credit, probably because there are few other agencies present in the project area.

## FARMER COOPERATIVES

Although there are a number of organized, functional farmer cooperatives in the project area (see Hall et al.,1988), none exist in the 44 villages surveyed in the RRA. The groups called cooperatives by the villagers are more accurately designated village groups or precooperatives, particularly in terms of their potential to work with PROCAR. Several villages have groups that cooperate to raise livestock or market their agricultural products but their organization and links with external sources of technical assistance, especially for marketing, are nil. Most of these village groups are found in the eastern part of the project area, probably as a result of DPP's introduction of cattle there in the seventies. Some villages reported having cooperatives that actually are defunct; for example, Mayungu, in the collectivité of Kalanganda, reported having a cattle cooperative but all the animals are dead. Further research would be necessary to determine the level of activity in the groups listed below, as the villagers' reports generally are not accurate. The groups that exist in the villages surveyed are summarized below, by collectivité.

Mateko

1. Kimbanda has a cattle cooperative named "Developpement Kimbanda" that was organized in 1974 with the DPP personnel that work in Mbeo. There are 62 members and they currently have ten head of cattle.

Sedzo

2. The village of ManaMana has a largely defunct cattle cooperative that was started in 1965. The herd has decreased from 3,200 to 340 head and is being replaced with coffee, as a cash crop. The president reported that lack of technical assistance and buyers were the cooperative's major problems. They have requested aid from CODAIK in Kikwit but have not yet received any.

Kemba

3. In 1986 the coffee producers in Motangili organized a group named "PLAMBO." The major objective of the group is to set the price of coffee in the village and improve marketing.

4. Mokila started a cattle cooperative in 1987 with help from the Catholic Mission in Makaw. There are seven members and each pays a fee of 1,000z per animal per year. They attend a monthly meeting at Makaw and receive veterinary care from the mission. Information on the size of the herd was not available.

Banga

5. Morulom has a group of eighteen people who started raising sheep in 1987, without external aid. The villagers also started raising cattle in 1972. The chef de village is the president of both groups.

6. Pu[illegible]lu Iwungu, in Banga, has a group of 38 households that began raising cattle in 1976.

Kalanganda

7. Ikubi Kanga organized a group of 43 villagers in 1987 to improve health and housing conditions in the village. They are planning to raise cattle, with the help of DPP in Idiofa.

Bulwem

8. The women in Imbim Dzou, Bulwem, cultivated a collective rice field in 1987, sold the harvest and used the money to buy three pigs and a goat. Each member pays dues of 300z per month, which will be used to buy a cow.

Nkara

9. The village of Nkara reported having three village groups. One is a group of thirteen carpenters who sell their products; the second is a group of twenty fish farmers who cooperate in the manufacture of the tools used in fish farming and selling fish; and the third is a group of seven people who raise pigs.

A traditional basis for organizing group activities does exist in the region. The women traditionally cooperate to do their agricultural work and fishing. Time-consuming operations such as sowing and harvesting are done in small groups, working in each person's field in rotation until all the fields in the group are sown or harvested. This collective labor is called "à tour de role" (or likelemba) and does not require payment. Labor also can be organized for major operations and repaid with a meal, palm wine or cash, in which case it is called "entre-aide." Fishing in the rivers is also a cooperative activity: the women fish in groups and divide the catch. In general the women tend to work in groups more than the men.

Men also cooperate for agricultural work and hunting. The heavy work of cutting and clearing the fields is done either "à tour de role" or as "entre-aide" throughout the project area. In the northern collectivités of Kemba and Batere the men frequently cited hunting as a traditional group activity.

The villagers' responses to the questions about cooperatives revealed mixed feelings. They expressed interest in organizing cooperatives for improving agricultural production and sales, raising cattle, fish farming and improving their houses. However, some villages reported that groups are unmanageable because not all members are equally responsible and hard-working. Especially in the northern collectivités (Kemba, Batere, Sedzo) people reported that they preferred individual enterprises or their traditional forms of group organization.

## TECHNICAL ASSISTANCE AND CURRENT PROJECTS

A primary objective of the RRA was to identify the organizations that currently provide technical assistance and administer projects in the PROCAR area. This was to provide information on the non-governmental organizations (NGOs) that PROCAR could potentially work with to fulfill the project objectives. The villagers therefore were asked about past and present sources

of technical assistance, and to evaluate the quality of the organizations / personnel with whom they are familiar. This village-level perspective on the regional sources of technical assistance is designed to complement the fourth team's research on the NGOs (Hall et al., 1988). A review of their report does in fact confirm the information reported by the villagers: the sources of good technical assistance in the project area are limited and generally do not include the missions. There are organizations such as Lusekele and PPF (Project Pisciculture Familiale, Peace Corps) that provide quality technical assistance in the region but they do not work in the villages surveyed.

The National System of Agricultural Extension Agents

The most common sources of technical assistance in the villages surveyed are the collectivité-level extension agents and the local missions. The national system of extension agents (agronomists, veterinary agents, agricultural extension agents) operates in all the project collectivités south of the Kasai River. There is one agronomist and veterinary agent in each collectivité and several extension agents (moniteur agricole, or monagris). Four or five years of high school education is the requirement for the first two agents; the monagris may have even less. These agents are ineffective, partly due to their lack of technical education and partly due to their lack of resources: they have no means of transport to visit the villages and cannot provide the advice or inputs the farmers need (pesticides, veterinary medicine). Their major responsibility is to ensure that the villagers cultivate their imposed fields and to deliver the appropriate part of the harvest to the collectivité chief.

This system of state extension agents is absent in the two project collectivités north of the Kasai River, Kemba and Batere. The northern zone is administered by the traditional system of customary chiefs (chef coutumier) who, in the villages surveyed, do not have agricultural agents or require the cultivation of collective fields for the national PRAAL program (Programme d'Autosuffisance Alimentaire). The absence of extension agents is not perceived as a disadvantage by the local population.

The Missions

There are missions present in each collectivité but their technical assistance is also minimal. Their major activities are to buy agricultural products and provide health care. The latter generally consists of maintaining a hospital on the mission grounds and supporting dispensaries in some local villages. Many villages in the project area reported receiving advice on health and nutrition, especially for children, from the mission personnel but they also reported that medical services and medicine are generally not available.

The only village that reported receiving direct technical assistance from a mission is Motangili, in Kemba. It is working with the PAC program (Programme d'Action Complementaire) administered by the Catholic mission of Bokoro. This is an integrated program for rural development that provides technical assistance in several areas: agriculture, fish farming, animal husbandry and health. According to the NGO research team, PAC is a promising program (for further information, see Hall et al., 1988). The Project Pisciculture Familiale (Peace Corps) is another excellent assistance program

for modern fish farming that works in the project area, mainly in Luniungu, but none of the villages surveyed participate in the program.

Current Projects in the Region

Only two other sources of technical assistance were found among the forty-four villages surveyed. There is a Canadian reforestation project, based in Kikwit, that began working in the collectivité of Luniungu this year. It is currently providing seedlings and technical advice for the villagers in Kina. The second source of aid reported by the villagers is PRODEV, an organization based in Idiofa, that provides assistance for fish farming and animal husbandry. It began working in Intsueme Lokwa, Bulwem collectivité, this year.

There are two USAID projects currently operating in the collectivités surveyed, Basic Rural Health (Sante Rural, 086) and Agricultural Marketing Development III (098). A few of the villages surveyed have dispensaries with nurses and midwives supported by the Basic Rural Health project. The USAID 098 project is in the process of improving the local roads. It is designed to complement regional improvements in agricultural production by facilitating transportation and marketing. The Catholic diocese of Kinshasa also has a project to build roads and concrete bridges that is operating in the collectivité of Kemba.

The Villagers' Perspective

The villagers' overall evaluation of current aid is that it is too much advice and too little practical assistance. They expect no more than advice from the state extension agents, who seldom visit the villages except to monitor the imposed fields. They do expect material assistance from the missions that have resources but the missions generally provide access to medical care and little else. The villagers' major criticism of the missions is that they are interested only in buying agricultural products, not in improving production or providing machines such as rice hullers to increase the value of the farmers' products. This criticism was frequently leveled at DPP by the villagers in the collectivités near Banga (Idiofa). In general, the villagers' experience with technical assistance and development projects has been limited to advice. As many stated, what they need are agents that visit the fields and fish ponds, and material assistance, even if it is provided on credit.

## THE REGIONAL MARKETING SYSTEM

Regional Marketing Problems

The sale of agricultural products is of principal importance in the rural economy as it is the population's major source of cash income. The inadequacy of the regional marketing system therefore constitutes a serious problem for the villagers. Several factors contribute to the problematic condition of the local commercial system. From the merchants' perspective, poor roads and bridges make transportation difficult and expensive. The region's small, dispersed villages produce limited quantities of agricultural products that,

due to local production and storage techniques, are not always of acceptable quality for the urban markets. For example, coffee is a major cash crop in Kemba and Batere but improper harvest and storage techniques damage the coffee beans, which are classified as grade three in the Kinshasa market. Prices and the volume of trade to Kinshasa via the commercial buyers thus has decreased during the past three years. Manioc is the primary commercial crop throughout the region, but the variety preferred for consumption in Kinshasa is not produced in central Bandundu. Washing and storage techniques also are said to compromise the local varieties' marketability. The market quality of local agricultural products and the disadvantages of the local transportation system thus are disincentives for the large buyers who come from the urban centers.

From the villagers' perspective, trade with the major commercial buyers is irregular and insufficient and the prices of their agricultural products are low in comparison to the prices of the consumer goods they need. The inadequate system cuts both ways, limiting their market sales and their access to consumer goods, including the inputs that would improve agricultural production and improve their standard of living. When the harvest season is over the merchants disappear and trade is left to the small buyers and peddlers. The villagers along the region's major rivers, the Lukenie and the Kasai, do the great part of their commerce with the boats that run to urban centers such as Kinshasa and Bandundu. However,they face the same problems as those who market their products to the merchants with trucks.

Commercial Crops and Sales

The region's major crops are produced for both commerce and subsistence; only one, coffee, is reported to be strictly a commercial crop. The information on the sales of major crops is summarized in Table 6. Quantitative information on manioc production and sales was not collected in the RRA because it is already available from previous studies. The villagers reported that manioc accounts for most of their sales and profits because it is sold all year. The other market crops are sold in bulk after the harvest. As Table 6 shows, the principal market crops are corn, rice and peanuts: as much as three-quarters of these crops are sold. Squash seed (mantete) is the fourth major market crop but a larger portion of the harvest is kept for consumption. (It must be noted that these figures are based on self reports from the household interviews with the farmers and are cited as approximations. The amount kept for consumption generally includes seed for the next year.) The villagers reported that, after manioc, corn and peanuts are their most profitable crops. In Kemba and Batere, coffee is the most profitable crop and in Kidzweme, it is sesame.

**Table 6. Production and Disposition of Major Crops By Household***

| CROP | Average # sacks produced | Average sacks # sold | Percent sold | Average # sacks consumed | Percent consumed |
|---|---|---|---|---|---|
| Corn | | | | | |
| Project area | 4 | 3 | 75% | 1 | 25%** |
| Northeast area* | 4.7 | 3.8 | 81% | .90 | 19% |
| Northwest area* | 4.3 | 3.2 | 74% | 1.1 | 26% |
| Kemba & Batere | .78 | .50 | 64% | .28 | 36% |
| Rice | | | | | |
| Project area | 2.8 | 2 | 71% | .8 | 29% |
| Northeast area | 4.6 | 3.1 | 67% | 1.5 | 33% |
| Northwest area | 0 | 0 | 0 | 0 | 0 |
| Kemba & Batere | .81 | .63 | 77% | .18 | 23% |
| Squash seed | | | | | |
| Project region | 1.3 | .75 | 58% | .55 | 42% |
| Northeast area | 1.6 | .96 | 60% | .64 | 40% |
| Northwest area | 1.2 | .70 | 58% | .50 | 42% |
| Kemba & Batere | .31 | .06 | 19% | .25 | 81% |
| Peanuts | | | | | |
| Project area | 3.7 | 2.3 | 62% | 1.4 | 38% |
| Northeast area | 3.9 | 2.6 | 67% | 1.3 | 33% |
| Northwest area | 4.9 | 2.6 | 53% | 2.3 | 47% |
| Kemba & Batere | .91 | .66 | 73% | .25 | 27% |
| Plantains+ | | | | | |
| Project region | 1.4 | .7 | 50% | .7 | 50% |
| Northeast area | 1.4 | .71 | 49% | .72 | 51% |
| Northwest area | | | | | |
| Kemba & Batere | 3.4 | 1.9 | 56% | 1.5 | 44% |
| Regional Crops | | | | | |
| Millet, | | | | | |
| Northeast area | .43 | .11 | 26% | .32 | 74% |
| Coffee, | | | | | |
| Kemba & Batere | 4.8 | 4.8 | 100% | -- | -- |

* 100 households. The northeast area comprises the six collectivités of Banga, Bulwem, Kalanganda, Due, Nkara and Sedzo. The northwest area comprises the collectivités of Mateko, Luniungu and Kidzweme.

The calculations were made on the basis of the total number of households interviewed in each area (not just the households that produced the crops listed).

** This does not include the quantity eaten fresh.

+ The harvest unit for plantains is "regime," or stalk. No plantain production was reported in Kidzweme.

Some intra-regional differences in commercial crops are apparent. Plantains and coffee are the major crops sold in Kemba and Batere, the two collectivités north of the Kasai River (Table 6). Millet is produced and sold only in the northeast part of the project area. Some of the villagers in the collectivité of Kidzweme cultivate sesame and market approximately half of their production.

Barter

For the most part it is the women who barter agricultural products for consumer goods. In general they reported that the small buyers and peddlers prefer cash, but some exchange is still done. The villages along the rivers exchange their products with the boatmen. Manioc in several forms--cossettes, chikwangue, bimpuka (a partially processed, wet form of manioc found mainly in Kemba and Batere) -- is the primary product used for barter. Barter among the villagers themselves is not done, according to both men and women. The table below presents the agricultural goods that are most commonly traded for consumer goods, in the order of frequency reported by the women surveyed.

Barter

| Agricultural Products | Consumer Goods |
|---|---|
| Manioc | Salt |
| Corn | Clothes |
| Chikwangue | Pots and pans |
| Peanuts | Soap |
| Squash seeds | Salted fish |
| Fumbwa (a wild vegetable) | Buckets |
| | Plates |
| | Basins |
| | Machetes |
| | Hoes |

Inconspicuous Consumption

The supply of consumer goods in the rural villages is limited and irregular. Only ten of the forty-four villages surveyed have stores (boutiques) and these sell goods such as salt, sugar, cigarettes, pens and notebooks. Items such as blankets, medicines, agricultural tools and cooking pots are not available in the village stores. Travel to a large town or regional market center is necessary to buy these items, unless they can be found with a traveling merchant or boatman.

Agricultural tools generally are purchased in the regional market centers (Idiofa, Kikwit, Semendua) or brought in by the merchants at harvest. The villagers also contract with the peddlers and boatmen to bring them tools and other items not available locally. According to the villagers, a major problem is that these three sources -- the village stores, boats and merchants -- do not provide a sufficiently large and stable supply of consumer goods. Many supplies that they need to improve their standard of living -- metal roofing, cement for construction, lamps, bicycles -- are not brought into the

rural areas for sale. It is for this reason that an item such as construction materials is reported among the villagers' primary felt needs.

The tables on the following three pages provide some insight into the consumer side of the regional commercial system.. They present household-level information on the types of consumer goods that the villagers most frequently purchase, those that are generally not available and those that they need but cannot afford. The common household purchases are limited to basic goods and include few commercial foods (Table 7). The overlap between some items in Table 7 (reported household purchases) and Table 8 (items not available locally) reflects the lack of a stable supply of essential goods. And the villagers' limited purchasing power, partly the result of the inadequate commercial system, is reflected in the items listed in Table 9.

## Table 7. Household Purchases of Consumer Goods and Food in the Past Month

| Consumer Goods | Percent of Households* |
|---|---|
| Soap | 95% |
| Matches | 84% |
| Salt | 73% |
| Kerosene (petrol, for lamps) | 71% |
| Meat | 70% |
| Gasoline (for lamps) | 69% |
| School supplies | 63% |
| Medicine | 61% |
| Sugar | 52% |
| Clothes/shoes for children | 51% |
| Clothes/shoes for women | 48% |
| Palm oil | 44% |
| Palm wine | 43% |
| Salted fish | 32% |
| Tobacco/cigarettes | 31% |
| Clothes/shoes for men | 30% |
| Jewelry | 27% |
| Bottled beer | 25% |
| Toothpaste | 20% |
| Batteries | 18% |
| Makeup | 11% |
| Kerosene lamp | 7% |
| Candles | 6% |
| Raphia palm wine | 4% |

* In order of frequency of response, converted into percent of the households interviewed.

**Table 8. Affordable Consumer Goods That Are Not Available Locally**

| Consumer Goods | Percent of Households* |
|---|---|
| Pots and pans | 64% |
| Clothes | 29% |
| Soap | 27% |
| Salted fish | 26% |
| Kerosene (for lamps) | 20% |
| Agricultural tools | 19% |
| Sardines | 14% |
| Sugar | 14% |
| Shoes | 8% |
| Onions | 7% |
| Bicycle | 7% |
| Bicycle tools | 7% |
| Salt | 7% |
| Medicines | 6% |
| Notebooks | 5% |
| Matches | 5% |
| Cement | 4% |
| Beans | 4% |
| Glasses | 3% |
| Radio | 3% |
| Coffee | 3% |
| Tea | 3% |

* In order of frequency of response, converted into percent of the households interviewed.

## Table 9. Consumer Goods That are Needed but are Not Affordable

| Consumer Goods | Percent Households* |
|---|---|
| Bicycle | 46% |
| Clothes | 41% |
| Metal roofing | 33% |
| Radio | 31% |
| Pots and pans | 29% |
| Sewing machine | 22% |
| Cement | 15% |
| Shoes | 13% |
| Coleman lamp | 6% |
| Agricultural tools | 6% |
| Typewriter | 5% |
| Medicines | 4% |
| Chairs | 3% |
| Cabinets (armoire) | 3% |

* In order of frequency of response, converted into percent of the households interviewed.

## LAND RESOURCES AND AGRICULTURAL PRODUCTION

### Land Availability

In all the 11 Collectivités studied by the survey, the majority of villages reported that there was enough forest land, as seen by the following percentages:

| | |
|---|---|
| In the forests: | |
| Enough land | 93 % |
| Not enough land | 7 % |
| In the savannas: | |
| Enough land | 59 % |
| Not enough land | 22 % |

As far as loans and rental of land in exchange for payments are concerned, 55% of the villages surveyed have acknowledged that these systems exist. The payments are often in kind, sometimes including some cash. They consist of either:

1 basket of corn or peanuts and a little cash, the total is not fixed.
1/3 of the production.
1/4 of the production, soap, salt, palm wine, or
1 basket of produce (corn, peanuts) and coffee.

Each household has an imposed field of 0.5 ha which was assigned by the collectivité's agronomist. The head of the household is responsible for this type of field and the harvested produce is at his disposal.

These fields, with an area of 100 m x 100 m, are found in all of the villages. These fields are within the framework of the nutritional self-sufficiency program, which goes by the acronym PRAAL. They are the responsibility of the head of the locality (chef de localité). The use of these products is not known, since the harvest had not yet taken place when the study was conducted.

### Major Crops

The major crops are manioc, corn, peanuts and squash. The commercial crops which are cultivated are primarily coffee and oil palms (elases Guineusis). These palms are only cultivated by a few farmers.

Here is a table of the major crops, and their importance as a percentage of the villages which cultivate them.

Table 10. Forest Crops and Savanna Crops

| Crops | Cultivated in Forests % of villages | Cultivated in Savannas % of villages |
|---|---|---|
| Manioc | 100% | 61% |
| Corn | 100% | |
| Peanuts | 97% | 47% |
| Squash | 81% | 31% |
| Pili-pili | 47% | 20% |
| Pineapple | 40% | 11% |
| Rice | 38% | 2% |
| Yams | 38% | |
| Tomato | 36% | |
| Spinach | 36% | |
| Bananas | 30% | |
| Sweet potatoes | 30% | |
| Sorrel | 25% | 16% |
| Biteku teku | 25% | |
| Plantain | 25% | |
| Vegetables | 16% | |
| Bilolo | 14% | |
| Okra | 14% | |
| Coffee | 7% | |
| Pay pay | 7% | |
| Sesame | 7% | |
| Tobacco | 7% | |
| Beans | 7% | 4% |
| Tangawisi | 2% | |
| Lettuce | 2% | |
| Cucurbutacea | 2% | |
| Cabbage | 2% | |
| Millet | 2% | |

**Table 11. Work Periods and Implementation**

| Month | Activities |
|---|---|
| August | slash and burn new fields<br>clear old manioc fields<br>clear burnt fields (in the forests) |
| September | clear the fields (peanuts)<br>sow peanuts, corn, plant manioc, sweet potato, yams, vegetables (tomato, amaranthus, spinach, cabbage)<br>sow squash in savannas, same as in forests |
| October | continue planting manioc cuttings, start weeding peanut fields |
| November | weed corn and peanut fields |
| December | harvest peanuts, plant manioc into corn fields. |
| Janvuary | harvest peanuts |
| February | harvest peanuts |
| March | harvest corn and weed manioc fields,<br>start squash harvest |
| April | start marketing campaign |
| May | start clearing land in the forest and soil preparation of the savannas (peanut fields) |
| June | clear forest fields and prepare soil in savannas. |
| July | clear land in the forest and sow rice in the bottom lands, prepare soil in the savannas |

## Cultural Practices

Everywhere we went, the population of the 11 Collectivités which we visited practiced the slash and burn technique in the forest. After burning, they do not prepare the soil, but sow directly.

They do not practice burning in the savannas. The technique that they use involves turning over the topsoil to incorporate the ground cover. In general, savanna soil is sandy. It must also be noted that intercropping is practiced for food crops. They do not have a monocultural system.

In order to maintain soil fertility, the majority of the villages surveyed pratice a 5 year fallowing cycle, as seen in the table below.

## Duration of Fallow Period

| | < 4 years | 4 years | 5 years | 6 years | 7 years | >7 years |
|---|---|---|---|---|---|---|
| % of villages | 17% | 11% | 45% | 5% | 20% | --- |

## New varieties

The new varieties are listed below along with the date of their introduction.

| Variety | Location | Collectivité | Date of introd. | Organization or person |
|---|---|---|---|---|
| Manioc F100 | Yungu-Kisala | Luniungu | 1986 | PRONAM/Kiyaka |
| Manioc F100 | Kinzama | Luniungu | 1985 | CODAIK |
| Coffee arabica | Tukubu I | Kalanganda | 1983 | A farmer |
| Swamp Rice | ------ | -------- | 1980 | PNR/Kikwit |

## Food Gardens

Throughout the collectivité, the food garden situation can be described as follows:
70% of the population of the collectivités which we visited have food gardens.

The products of these food gardens are, in order of importance:

| | |
|---|---|
| Amaranthus | 70 % |
| Spinach | 58 % |
| Pili-pili | 38 % |
| Bilolo | 35 % |
| Sorrel | 32 % |
| Okra | 26 % |
| Cucurbutacea | 9 % |
| Lettuce | 9 % |
| Cabbage | 9 % |
| Sweet potatoes | 6 % |
| Tomatoes | 5 % |
| Lusanga | 3 % |

These gardens are located either in the villages or in the forests near the rivers. The situation is as follows:

food gardens located in forests near rivers..... 53 %
located in the villages..... 47 %

As these figures indicate, the tendency is to cultivate gardens in the forest on the banks of streams.

Crops Which Were Discontinued

The crops which were no longer cultivated (abandoned) in the collectivités surveyed are, generally speaking:

- urena fiber ..... 100 %
- traditional peanuts ..... 94 %
- bambara groundnuts ..... 77 %
- millet ..... 38 %
- red beans ..... 27 %
- sweet manioc ..... 22 %
- rubber ..... 11 %

It should be noted that cotton is no longer cultivated in the collectivités of Kemba and Batere. It should also be noted that the cultivation of urena fiber and cotton was imposed on the farmers. At the moment, there are no buyers for these.

The traditional variety of peanuts, the creeping variety, poses problems at harvest time because hoes are needed since the pods often stay in the soil. Furthermore, the Portuguese buyer did not want this variety because he claimed that it did not produce much oil.

Bambara groundnuts were dropped because, like traditional peanuts, they stay in the soil and require work with hoes at harvest time. Furthermore, they mature late and their harvest period coincides with the period of important work in the forest.

As for sweet manioc, the farmers prefer regular manioc because sweet

manioc is always attacked by rodents and boars.

Problems Concerning the Crops

In this area, the following factors deserve attention:

* The rotting of manioc tubercles is an important problem. It seems that this starts at the age of 6 months.

We can also cite cases such as:

* Rice fields which are often invaded by birds.

* The destruction of fields by animals, especially boars.

* Insect and caterpillar attacks of young plants. The farmers have no solutions in this case.

* There is also a case which was observed in Due: the presence of Epathorium ordoratum, a weed which seriously exhausts the soil in fallows and even in certain fields.

Agricultural Labor

The labor necessary for agricultural production is provided by the farming household, its relatives and cooperative labor from other villagers. Only one-third of the households interviewed reported doing all their agricultural production with only household labor, but they probably did not consider aid from relatives as outside labor. Cooperative labor and relatives provide roughly equal contributions to household production. There are two types of cooperative labor: the first is "entre-aide," or assistance for heavy work such as cutting heavy forest and clearing fields, that can be repaid with labor, with cash or in kind. Hiring labor from a neighboring village for payment in cash is another alternative. The second is "likelemba" or "à tour de role," in which a small group of friends works in each field in turn, until the work of the entire group is finished. Likelemba is most often used for sowing and weeding fields, operations that must be done within set time limits. These types of cooperative labor are used to sow the major crops — manioc, corn, rice, peanuts, squash — but seldom is used for the harvest.

Relatives' labor is used to accomplish these same tasks and harvesting. Harvesting is most often done by the household and relatives. The relatives most frequently cited as providing labor are: younger brothers, wives' sisters, parents, nephews, brothers- and sisters-in-law. Their labor is used to produce both food and cash crops: younger brothers are the primary source of labor in the coffee fields as they will inherit them.

Women without husbands are responsible for their own subsistence and the work required in their fields. Their children, especially older sons, are cited as their primary source of labor, followed by male relatives such as brothers and fathers. One of the latter, generally whomever the woman lives

with, does the heavy work of cutting and clearing her forest field. If these relatives cannot afford to invest their labor in the single woman's field, she must hire labor. In some villages the women reported that it is unacceptable to pay men of the village to work, so men from a neighboring village are hired. Some single women participate in the work of cutting and clearing and some reported that they cultivate their own coffee fields, generally a man's work.

Extra-household labor is repaid in various forms. Some villagers reported paying cash: 700Z to clear a field, 1,500 - 3,000Z to cut heavy forest and clear a field for sowing corn and manioc. The amount paid depends on the size of the field to be cleared and sown; the work is done by a group of people who split the payment. Payment in kind is more common: the labor for harvesting manioc is repaid with chikwangue or prepaid by giving part of the cut and burned field that is ready for sowing to another person who will later help with the harvest. Students who work in groups are repaid with notebooks. Palm wine, meals and cigarettes are the common payments for both relatives and friends but cloth, a piece of clothing, a basket of the harvest and small amounts of cash such as 100Z also are used.

The tables on the following two pages summarize the major tasks in the calendar of men's and women's agricultural labor. The men are most busy from May through mid-September, and less busy from September through December. The women are most busy from August through November, and less busy during May, June and July.

Rainfall Cycles

Rainfall Cycles*

Jan. Feb. March April May June July Aug. Sept. Oct. Nov. Dec.

=Short dry season= = Long dry season=

- Short rainy season
Heavy rains-

-Long rainy season
Heavy rains-

* From Gaudreau et al., 1986.

**Table 12. Men's Agricultural Labor Calendar**

| | |
|---|---|
| MAY: | The period when men are most occupied with agricultural labor. Cut and clear the forest fields. Weed and harvest the coffee fields (Kemba and Batere). Cut and replace palm thatching on roofs. Hunt, on the days not occupied in cutting the fields. |
| JUNE: | Cut and clear the forest fields. Harvest the coffee. Replace palm roofing. Less hunting during the dry season, more fishing. |
| JULY: | Cut and clear the fields. Harvest coffee. Fish. Replace palm roofing. Little hunting. |
| AUGUST: | Cut the fields; start burning in mid-August. Harvest coffee. Fish. Replace palm roofing. |
| SEPTEMBER: | Cut and burn the forest fields. Help the women sow corn, peanuts, squash, rice, sesame. Weed the fields. Less busy by the end of the month. Start maintenance on the house walls. |
| OCTOBER: | The beginning of the period when men are less occupied with agricultural labor. Make fishponds, plant coffee, "reposer au village" (leisure). The women plant manioc without their help. |
| NOVEMBER: | Less busy: make fishponds, plant coffee. |
| DECEMBER: | Chase the birds from the rice fields. Harvest of peanuts and sesame begins. |
| JANUARY: | Help with the harvest of rice, peanuts and squash. The beginning of the season to gather and sell urena fiber. |
| FEBRUARY: | Prepare the fields for corn, peanuts and manioc for the "short rainy season." Help harvest rice, peanuts, squash. Gather and sell urena. |
| MARCH: | Prepare the fields for corn and manioc for the short rainy season, help with the harvests, gather and sell urena. In Kemba and Batere, weed the coffee fields and begin the coffee harvest. |
| APRIL: | The beginning of the busy period for men's agricultural labor. Locate forests fields for the next season's food crops. Beginning of the marketing season for corn, rice, peanuts, squash. Weed and harvest coffee. Cut and dry the palm fronds used for roofing. |

**Table 13. Women's Agricultural Labor Calendar**

| | |
|---|---|
| MAY: | The beginning of the period of the year when women are less occupied with agricultural labor. Weed manioc and coffee; harvest coffee and the second crop of corn from the short rainy season. |
| JUNE: | Weed manioc and coffee; harvest coffee and corn. Fish. |
| JULY: | Fishing becomes a primary activity during the dry season. Harvest coffee. |
| AUGUST: | Beginning of the period when women are most occupied with agricultural labor. Clear the fields. End of the month, begin sowing peanuts, corn, squash. Harvest coffee. Fish. |
| SEPTEMBER: | Sow manioc, peanuts, corn, squash, sesame and rice. |
| OCTOBER: | Weed the fields. Harvest the fishponds. |
| NOVEMBER: | Weed the fields. |
| DECEMBER: | Weed the fields. Harvest peanuts and corn. Sell manioc. |
| JANUARY: | Harvest peanuts, rice, squash and corn. Plant manioc in the peanut fields. Gather fumbwa (a wild vegetable) and harvest manioc, to sell. |
| FEBRUARY: | Harvests continue. Plant manioc. Gather fumbwa and manioc to sell. |
| MARCH: | Weed manioc, harvest corn. Gather and sell urena fiber. |
| APRIL: | Harvest corn. Gather and sell urena. |

## FORESTRY RESOURCES

Forestry products are important resources for household consumption and for sale within the villages. They are the source of only small cash revenues because of their low prices in relation to the labor (time) required to convert them into marketable goods. Also, the market demand apparently is limited: none of the villages surveyed cultivate urena fiber (punga-punga), oil palms or raphia, formerly major commercial crops in the region. The villagers reported that their commercial production ended when the merchants' purchases ended, approximately twenty years ago. The palm plantations are no longer a source of wage labor; in fact, many villagers reported that the young men cannot climb the trees to cut the palm nuts. However, these three resources remain indispensable in the local economy because they produce food, wine, oil, fiber and materials for construction.

Table 14. Use of Forestry Resources, by Collectivité

| Former commercial cultivation of oil palms | Former commercial cultivation of raphia palms | Present sales of urena fiber |
|---|---|---|
| Bulwem | Bulwem | Bulwem |
| Kalanganda | Kalanganda | Kalanganda |
| Sedzo | ---- | Sedzo |
| Banga | Banga | Banga |
| Nkara | Nkara | ---- |
| Mateko | ---- | Mateko |
| Kidzweme | Kidzweme | Kidzweme |
| Kemba | Kemba | ---- |
| ---- | Luniungu | ---- |
| ---- | ---- | Dua |

Table 15. Market Prices of Major Forest Products

| Product | Price |
|---|---|
| 1 bottle palm oil | 50Z |
| 1 bottle palm wine | 20Z |
| 1 kilogram urena | 15-20Z* |
| 1 kilogram palm nuts | 10Z |
| 1 board | 450-550Z |
| 1 log (4" diameter) | 50Z |
| 1 bundle vines | 20Z |

*The reports of urena's market price varied from 15-60Z/kilo.

## Oil Palms

Oil palms generally are regarded as a natural resource rather than a cultivated crop. Plantations for commercial production such as Lever Brothers existed in the region until the early sixties, except in Kemba and Batere. All the villagers reported that commercial production ended when the big merchants such as Coreman and C.K.E. stopped purchasing. Only some of the registered farmers (fermiers) now cultivate oil palms as a commercial crop, in the same fields with their coffee. A number of products are obtained from the wild palms for household consumption: nuts, oil, wine, larvae and bicarbonate (a seasoning for food). The fronds are used for thatching roofs and making brooms; the trunks for building houses and beds; and the fibers for weaving mats. The traditional beds are sold within the villages for 150-300Z; the mats are sold for 100-200Z. These products are not made in quantity for commercialization. The villagers in Sedzo, Mateko Bulwem and Luniungu reported that Fernandes maintains a storehouse in Sezo and still buys palm nuts, but for the low price of 10Z per kilo.

## Raphia Palms

The raphia palm traditionally is an important resource in this region, according to the villagers. It is a natural resource and not cultivated. Woven raphia was traded with the Belgians for imported goods and made into clothing. The collectivités in the area around Idiofa, particularly Banga, still produce woven raphia that is sold in the traditional rolls and made into hats and baskets. The fiber has a number of other uses in the villages: it is made into nets, rope and mats. The palm fronds are used for roofing and to make brooms. The trees also yield wine and larvae for household consumption .

## Urena Fiber

There are several varieties of fiber-producing plants such as urena in the project region. The cultivation of a commercial variety was imposed by the Belgians but production in the villages ended in the mid-sixties when the big merchants such as Coreman ceased buying. The villagers in Kalanganda reported that they planted urena in 1982 but no longer cultivate it because there are few buyers and it requires too much work. However, the wild varieties provide fiber for household use and for sale. Table 14 lists the collectivités where urena (punga-punga) is gathered and sold. The villagers in Sedzo and Due reported that Fernandes buys the fiber they produce; in Kidzweme it is sold to the CDR at Sia.

Both men and women prepare and sell urena fiber. The plant is cut during January, February and March and the fibers are pulled out. The fibers are soaked in the river three to four weeks, cleaned, combed out and dried. The villagers estimated that they can earn as much as 5,000Z per year from urena sales.

Other Forestry Products

Products such as small logs, boards and various types of vines used for construction and weaving are used and sold by the villagers. Gathering these products for household use is more important than their commercialization, which is sporadic. Merchants occasionally contract to buy a certain quantity of logs or boards in a village, or the villagers themselves pay to have logs cut and transported to build a house, but there is no steady trade in these products. Most of the villages that reported periodic sales of logs and boards are near the missions and on the main roads. Precise information regarding the time spent gathering these products or the money earned from sales thus is difficult to obtain. The villagers reported that boards are sold for 450-550Z; logs four inches in diameter are sold to the merchants for 50Z, and smaller logs are sold in the villages for 20Z.

## ANIMAL HUSBANDRY

Livestock are an important component of the rural economy, but as a household resource rather than for commercial production. The livestock are raised mainly to eat and as a form of savings: they are sold when the villagers need cash. The villagers have cattle, goats, sheep, pigs, a variety of fowl (chickens, ducks, pigeons, peahens) and some guinea pigs and rabbits. Goats, sheep and chickens are the traditional species. DPP of Idiofa introduced cattle to the collectivités in the northeastern area as early as the mid-sixties (Banga, Bulwem, Kalanganda, Sedzo, Due, Nkara). The Catholic mission at Sia and Lusekele's development program introduced them in Kidzweme in the early sixties. The villagers in Mateko reported obtaining cattle from the Catholic missionaries and DPP during the same years; the villagers in Luniungu reported obtaining them from the local Catholic mission in the late fifties. The other new species were brought in by the villagers themselves or obtained from merchants. Pigs have been forbidden since the mid-eighties by the chefs de collectivité in six collectivités because they ruin the fields and carry diseases (Kidzweme, Mateko, Luniungu, Due, Nkara, Kemba; fences are required in Nkara).

The distribution of livestock within the project region and at the household level is shown in Table 16. This information is from the farmers' self reports in the household interviews and probably underestimates the actual number of animals owned. Goats and sheep are the two most common animals: slightly less than half of the households interviewed have them, and they have one or two head (Table 16). Chickens and ducks are the most common fowl. Few households have cattle or pigs; the former because they are expensive to buy and maintain, the latter because they are destructive.

Livestock generally are owned by the household unit. The small ruminants are owned jointly by wives and husbands; the poultry tend to belong to the women. Few villagers reported having cattle or other animals in common with other people although in Kemba and Batere the church groups have small ruminants that belong to the members. A few people did report having joint ownership of animals with relatives. Single women usually own only poultry because livestock are too expensive to buy, but there is no prohibition against their joining a cattle cooperative or buying the animals that they can

afford.

A system of free grazing for all types of livestock is used throughout the project region. The farmers or villages with small herds of cattle generally do not have herders to survey them during the day although sometimes they are corralled at night. PioPio, a village in Sedzo, has found a novel solution to the conflict between livestock and crops: its cattle are kept on an island in the Lukenie River. The villagers in Mokila and Manganga, in Kemba, have huge pastures fenced with barbed wire for their cattle, perhaps because they are working with the Catholic mission in Makaw. But damage to crops and fields from the loose livestock is common: household gardens must be fenced and even some fields near the villages are fenced. The villagers reported that one reason for cultivating fields far from the village is to avoid crop losses to the livestock. Others said that the small ruminants were tied up until the evening, when they would not wander far, but picketed animals were not observed. Pigs caught destroying crops in the fields are killed; the case with other animals is not clear, although many villagers said that fines are imposed. The system of free grazing does not facilitate the use of manure on the fields or in the fishponds; some women reported using it on their household gardens.

The major problem with raising livestock is the lack of veterinary assistance and medicines available to the rural population. The villagers without household animals said that they were discouraged by the high mortality rates and could not afford to replace the stock they lost regularly from disease. It is generally the villagers of higher status and economic resources, such as the chiefs who can afford to have cattle or numbers of sheep and goats. Cattle are the species that most often receive veterinary care. The cattle-owners reported that they buy medicines at the local dispensaries and receive veterinary care from the collectivités' veterinary agents and the technicians at Kalo, DPP and Lusekele. The Catholic mission in Makaw, Kemba collectivité, provides assistance for the villages in its animal husbandry program.

There are other problems that limit animal husbandry at the household level. Theft is said to be common, and some villagers reported that livestock cause problems within the village because they destroy the crops, cause arguments and ultimately cost their owners money to pay fines. But there are certain advantages to the current system of free grazing and minimal veterinary care: the household invests neither labor nor cash resources in raising animals. Veterinary care might improve livestock production, but larger numbers of animals at the household level might increase conflicts with agricultural production. Village cooperatives that have the resources to invest in commercial production are a viable alternative, as the complementary report shows (Hall et al., 1988).

Table 16. Type of Livestock by Household and Region

| Species | Percent of households owning animals | Average # per household+ | Range (# animals) |
|---|---|---|---|
| Cattle | | | |
| Project area | 16% | .41 | 1-9 |
| Northeast area* | 16% | .78 | |
| Northwest area** | 22% | 4.8 | |
| Kemba & Batere | 1 household | 5 | |
| Goats | | | |
| Project area | 46% | 1.7 | 1-24 |
| Northeast area | 53% | 3.2 | |
| Northwest area | 33% | 5 | |
| Kemba & Batere | 44% | 4.3 | |
| Sheep | | | |
| Project area | 42% | .55 | 1-9 |
| Northeast area | 54% | 1 | |
| Northwest area | 26% | 2.6 | |
| Kemba & Batere | 25% | 4.5 | |
| Pigs | | | |
| Project area | 15% | .43 | 1-8 |
| Northeast area | 26% | 3 | |
| Northwest area | 0 | 0 | |
| Kemba & Batere | 0 | 0 | |
| Chickens | | | |
| Project area | 92% | 4.8 | 1-16 |
| Northeast area | 90% | 6 | |
| Northwest area | 96% | 4.7 | |
| Kemba & Batere | 94% | 3 | |
| Ducks | | | |
| Project area | 25% | .81 | 1-9 |
| Northeast area | 19% | 5 | |
| Northwest area | 37% | 2 | |
| Kemba & Batere | 25% | 2 | |
| Pigeons | | | |
| Project area | 6% | .66 | 2-10 |
| Northeast area | 6% | 4 | |
| Northwest area | 22% | 7 | |
| Kemba & Batere | 0 | 0 | |

+The averages were calculated on the basis of the households owning animals (not the total number of households interviewed in each area).
* Banga, Bulwem, Kalanganda, Due, Nkara and Sedzo.
** Mateko, Kidzweme, Luniungu.

## HUNTING AND FISHING

### Hunting

Hunting is a traditional male activity that is still practiced in the project area. In the collectivités south of the Kasai River, hunting is ranked fourth among the men's principal activities, after agriculture, fishing and animal husbandry. In Kemba and Batere, the northern collectivités, it is ranked third, after agriculture and fishing. Hunting is broadly defined by the men: killing a squirrel while working in the fields or on the way home is reported as hunting. The men hunt all year, less frequently in the dry season (June, July, August) because their noise in the dry vegetation warns off the animals. In general they hunt 1-3 times per week, all year; in the northern collectivités the men reported that they hunt more frequently.

Hunting is a relatively important activity in Kemba and Batere. Rifles, spears, traps and bows and arrows are used for hunting; rifles are common in the area and cartridges are a primary trade item. The men hunt individually 3-4 times per week, after finishing their work in the fields, and at night, using flashlights. During the dry season they are occupied with cutting and clearing the fields and hunt once a week. Collective hunts with groups of ten to fifteen people using nets and dogs to chase the game are done less frequently, once or twice a month, and during the dry season. Elephants were hunted in Batere in the early fifties but now the most common animals killed are, in order: peccary, monkey, antelope, gazelle and boa. After the village chief receives his traditional portion, the game is divided up among the hunter's relatives. When there is a large quantity it is smoked or sold within the village. Game is reported to be eaten less frequently than fish.

The importance of hunting has diminished as that of agriculture has increased in the area south of the Kasai River. The amount of game has decreased in recent decades as the local population has grown and agriculture has become a more productive activity, according to the villagers. The men in Due, Kalanganda and Kidzweme reported that they hunt once or twice a week, often on Sundays when they do not work in the fields. Bows and arrows, traps and rifles are used to kill game and hunting collectively with nets and dogs also is practiced. The animals most commonly hunted are, in order: gazelle, antelope, beaver (castor), peccary, monkey, civet and snakes. Game is mainly eaten fresh as it is found in small quantities and it is reported to be eaten less frequently than fish.

### Fishing

Fishing is the second major component of the rural economic system, following agriculture. It includes fishing in the region's numerous streams and rivers as well as fish farming (raising fish in ponds). Both modern fish culture techniques and traditional methods are used in fish farming and the villagers' fishponds represent different stages along the continuum. The men have fishponds that are defined as "modern" because they are only for raising fish; the women's "traditional" ponds are primarily to soak manioc and maintaining fish in them is of secondary importance. The majority of the men reported that they have made their ponds without technical assistance and stock them with fish from the river because improved species such as tilapia are not available.

For the purposes of the RRA, modern fish culture was defined as the presence of an active project or technical assistance, and few villages reported having either. DPP provides advice in Bulwem and the Project Pisciculture Familiale (Peace Corps) is known in Kalanganda and Nkara but the villages studied in these collectivités do not have modern fishponds. Neither does the village of Motangili (in Kemba) that started working with PAC (Programme d'Action Complementaire, Bokoro Mission) this year. Traditional fish farming methods thus prevail in this important part of the local economy.

The information on the distribution of fishponds in the region and within households is summarized in the tables that follow. Few households in the project area have more than three fishponds (Table 18) and most of them belong to the household unit (Table 19). The importance of river-fishing in the northern collectivités of Kemba and Batere is evident: fishponds are less common in the area (Table 17) and the men do not have their own (modern) fishponds (Table 19).

The traditional fishponds require little work and provide limited harvests. The men reported that they visit their ponds two or three times a week to check the dikes, cut down the weeds and feed the fish. The fish are fed manioc leaves and insects; those in large ponds often are not fed at all. The women help the men and maintain their own ponds; their fish subsist on the manioc that is being soaked. The fish are harvested as needed for household consumption or saved for one or two big harvests during the year. The harvest is eaten fresh, smoked, given as gifts and sold within the village. It is primarily for consumption as the quantity is small. Fish is reported as a dietary staple throughout the project area and is eaten more frequently than game or meat from domesticated animals.

Fishing in the rivers is an important activity throughout the region, particularly in the villages with access to major rivers. The dry months of April through August are the best season for fishing because the rivers are low. Women traditionally fish in groups, fencing off an area near the shore and then scooping the fish out with baskets. The men fish individually, with nets and lines and hooks; they rarely fish in groups. The villagers reported that they fish 1-4 times per week during the dry season. Most of the catch is eaten fresh by the household; the rest is smoked or sold within the village.

Fishing is a major source of cash income in Kemba and Batere, the collectivités bordered by two major rivers, the Kasai and the Lukenie. Many families in the riverine villages such as Mokila (Kemba) spend part of May through September traveling along the river by pirogue, camping on the bank and fishing. The women smoke the fish and sell it to the boatmen and in the large villages. The men also travel alone to fish, returning in time to clear the forest fields. The women leave their villages for two or three weeks during this season to fish, smoking the catch and selling it to the boatmen and peddlers. Part of the villagers' income is reinvested in the same activity: some fishermen have outboard motors for their pirogues. The household's investment in fishing is thus greater in the north than in the rest of the region.

Table 17. Percent of Households with Fishponds

| Region | Percent of Households with Fishponds |
|---|---|
| Project area | 62% |
| Northeast area* | 68% |
| Northwest area** | 52% |
| Kemba and Batere | 50% |

Table 18. Distribution of the Number of Fishponds per Household

| | Number of Fishponds per Household | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Region | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Project area | 1+ | 27% | 25% | 19% | 14% | 5% | 5% | 5% | 0 |
| Northeast area | 1+ | 23% | 23% | 23% | 15% | 8% | 5% | 5% | 0 |
| Northwest area | 0 | 43% | 22% | 1+ | 22% | 0 | 1+ | 1+ | 0 |
| Kemba and Batere | 0 | 25% | 50% | 25% | 0 | 0 | 0 | 0 | 0 |

Table 19. Ownership of Fishponds within Households

| | Percent of Fishponds that Belong to: | | |
|---|---|---|---|
| Region | Men | Women | Both |
| Project area | 14% | 26% | 60% |
| Northeast area | 26% | 14% | 60% |
| Northwest area | 13% | 13% | 74% |
| Kemba and Batere | 0 | 38% | 62% |

* Banga, Kalanganda, Bulwem, Due, Nkara and Sedzo.
** Mateko, Kidzweme and Luniungu.
+ Absolute number of households.

## NON-AGRICULTURAL ECONOMIC ACTIVITIES

Besides agriculture, the alternative activities for generating cash income are very limited. Both men's and women's activities are closely linked to agricultural production; in fact, most of the activities reported involve the processing or selling of agricultural goods and natural resources within the villages. The information on short-term seasonal migration for wage labor indicates that it is not a traditional activity, but further research is necessary to define its role in the household economy. The men do migrate to the urban centers (Kikwit, Bandundu, Kinshasa, Bulungu, Mangay) to work as wage laborers (cooks, gardeners, sentinels, masons), but quantitative information on the amount of time spent there and the income earned was not obtained. Nor have off-farm activities or the sources of wage labor changed substantially over time, according to the villagers. The men's major activities in the past were cutting palm nuts, gathering urena fiber and tree resin (as a source of light) and making clothes from raphia. The women's primary activity was selling palm nuts;in addition, they sold urena fiber, Rauwolfia (a medicinal root) and wove raphia.

### Men

The mens' activities for generating cash income are summarized in the two tables on the following page. Weaving is done by men in this region, and making mats, baskets and sieves are the activities most frequently reported to earn money. Making palm wine (or raphia or sugarcane wine) is their second major activity. The limited off-farm activities available to men, who are generally less occupied with agricultural labor than the women, underlines the need for wage labor that they reported as a priority for local development.

Table 20. Men's Cash-Earning Activities

| Item | Man-days to fabricate | Price |
|---|---|---|
| Mat | 1-2 | 100-200Z |
| Bed (grabat) | 3 | 150-300Z |
| Baskets (different sizes) | 1-2 | 50-200Z |
| Sieve (passoir) for chikwangue | 1 | 150Z |
| Fishing net | | 200Z |
| Canoe (pirogue) | 7-21 | 1,000-3,000Z |
| Palm/sugarcane wine (per bottle) | | 20Z |
| Bricks (per brick) | | 2-5Z |
| Carpentry: | | |
| Chair | | 800Z |
| Table | | 1,000-2,000Z |
| Cabinet (armoire) | | 3,000-4,000Z |
| Bed (lit) | | 1,500-1,800Z |
| Door | | 500-700Z |
| Roof poles | | 800Z |

Table 21. Men's Wage Labor

| Activity | Revenue |
|---|---|
| Cattle herder* | 200Z per head per month |
| Fishing (dry season) | 1,200Z per month |
| House construction* | 500-3,000Z |
| Porter (load boats)* | 50-100Z per sack |
| Cut palm nuts* | 100Z per box |
| Cut palm thatch for roofing* | 30Z/bundle |
| Cut vines for construction, weaving | 200Z/bundle |
| Gather urena fiber | 15-20Z per kilogram |
| Trade/peddling | |
| Carpentry* | |
| Tailoring* | |
| Masonry* | |

* Activities within the village.

Women

The women's means of generating cash are even more closely linked to agricultural production. Processing and selling the products they produce are the major activities reported; their opportunities for wage labor are nil, even within the villages. The most frequently cited means of earning money are, in order: distilling alcohol from corn and manioc, making palm and sugarcane wine, making baskets (the type used to portage goods from the fields), and selling mikungu (a wild vegetable) and beignets (fried bread). The other products made and sold within the villages and to small buyers include bread, flour (manioc and corn), chikwangue, bimpuka (a partially processed form of manioc), manioc cossettes, fish, urena fiber, palm nuts and wild fruits and vegetables (mikungu, fumbwa, oseille, mambanfu). Salaried labor includes harvesting coffee, gathering the red clay used to make house walls and making the house walls. The women earn some money by clearing, sowing and harvesting fields for men, but payment for this labor often is in kind rather than in cash. Quantitative data on cash earnings was difficult to obtain as they were reported to depend on the size of the group that works, or the size of the fields.

The table below summarizes the information on women's cash-earning activities.

**Table 22. Women's Cash-Earning Activities**

| Item/Activity | Revenue |
|---|---|
| Alcohol (corn and manioc) | 120Z per bottle |
| Palm/sugarcane wine | 20Z per bottle |
| Palm oil | 35-50Z per bottle |
| Bimpuka (partially processed manioc) | 200Z per basket |
| Chikwangue | 50Z/package or 200Z/basket |
| Manioc cossettes | 1,000Z per sack |
| Baskets (for portage) | 10-50Z |
| Bricks | 2-5Z/each |
| Gather urena | 15-20Z per kilogram |
| Cut palm thatch | 30Z/bundle |
| Cut leaves (for wrapping) | 10Z/bundle |
| Harvest coffee | |
| Gather red clay/construct house walls | |
| Clear/sow/harvest fields | |

## GENERAL PATTERN OF FOOD CONSUMPTION

The staple food is fufu or chikwangue, both made out of cassava (also called manioc) tubers. Fufu is prepared with manioc flour from which a dough is made using plain boiling water while chikwangue is made of the fresh tubers that at some point during the preparation are wrapped inside large green leaves and cooked. The region is divided into chikwangue eating and fufu eating areas. Corn flour is often added to fufu though not to chikwangue.

By far the most common food that accompanies fufu or chikwangue is what is called saka-saka. Saka-saka consists of the leaves of the cassava plant that produces the tubers previously mentioned. Cassava leaves or saka-saka are eaten freshly pounded and cooked in water with salt, usually with palm oil added. This meal is occasionally accompanied by smoked or fresh fish, caterpillars or other larvae.

An important place in the diet of the people of the region surveyed belongs to gourd seeds also called squash seeds, to mushrooms, to caterpillars, and to vegetables called biteku-teku, bilolo, fern and spinach. The seeds of gourd or squash are ground and prepared mixed with other foods such as fish or caterpillars, or frequently they are cooked inside large green leaves. They are eaten along with fufu or chikwangue. Mushrooms, although seasonal by nature, are eaten practically all year long as different varieties become available. Mushrooms are eaten fresh or are dried to permit longer storage. They are often prepared in tomato sauce and eaten along with fufu or chikwangue.

Caterpillars also are seasonal, widely available and highly valued in the local diet. Crickets and grasshoppers contribute significantly to the diet at some times. They are usually dried and mixed with vegetables to be eaten along with fufu or chikwangue.

As mentioned above, green vegetables bring a most significant contribution to the diet, especially during the rainy season. The most common vegetables beside saka-saka are: biteku-teku (sweet amaranthus), bilolo (bitter amaranthus), sorrel, spinach, and ndindi (a wild bitter liana). Fresh tomatoes are commonly cultivated and used in the diet. Fumbwa and mikungu, also called wild macaroni, are two wild vegetables worth noting because of the importance they sometimes acquire in the diet. Pili-pili, a variety of pepper, is a universal ingredient in the area. It is very hot and is used as a spice. Wild tubers and bananas may also become important parts of the diet. In the northern areas, plantains (bananas) may be a dietary staple.

Except where it is mixed with manioc flour, corn is often eaten fresh on the cob, generally grilled or boiled, as a snack. Roasted peanuts or a dish with peanut butter sauce are present in virtually all areas, especially during the harvest periods.

Among the foods whose production and hence consumption vary widely are: millet, voandzou, rice, and sesame. Voandzou is a legume. In some areas millet and rice rival manioc as dietary staples.

Usually, villagers eat twice or three times a day: morning and evening, or morning, midday and evening. However, the type of the meal does not change. They often eat in the morning leftovers of the previous evening, or at noon leftovers of the morning.

There is not a hungry season as such. However, the dry season between June and August is considered to be a period of less abundant food supply. The foods that become harder to find are the vegetables, including saka-saka, because they dry up. Also since the dry season is not the time when most merchants visit the villages, the foods that they bring become scarce, such as salted fish, sardines, ocean fish, beans and rice.

Special mention deserves to be made of palm wine. It is a beverage extracted from palm trees or raphias. After the sap is collected, it is left to ferment. Palm wine is greatly appreciated and widely consumed. Its nutritive value in the local diet has not been estimated.

Animal Products

Animal products have only a secondary place in the diet of the population investigated, compared to the foods of vegetal origin. Fish from the rivers or fishponds play an important role as do caterpillars. Chicken is probably the third most common animal product consumed. The villagers also occasionally eat goat meat or beef, goat meat being more frequent. Crayfish, though unknown in some areas are very common in others. Pork is not generally available due to problems caused by its raising (destruction of crops and other problems). Game was an important component of the diet in the past but today wild animals have become scarce. Hunting is forbidden by the government during most of the year. Thus in most places game is eaten only occasionally.

Gathered Products

Non-cultivated and non-raised foods are an important part of the diet in the villages. Gathering is still an intrinsic aspect of village life. Products such as mushrooms, caterpillars, grasshoppers, crickets, larvae, and wild vegetables such as fern, ndindi, fumbwa, macaroni, and wild tubers, have already been mentioned and bring a significant contribution to the every day diet. Other products worth mentioning are wild fruits such as mabanfu, and many other wild vegetables including ginger.

Food Taboos Among Expectant and Lactating Women

Food taboos appear to be disappearing in the project zone. Most of the people in the research villages claimed not to practice them anymore. When they are practiced, the taboos are usually similar both for expectant and lactating mothers and they concern all or any of the following foods: a fish called kolokolo with a big head and a backbone, and another one called ngolo; crayfish; some game, especially nkalu (with a big head), pangolin, mbenga, elephant, gazelle, antelope, simbric, big forest rat, bat; pork; fern, wild macaroni, bitter liana, saka-saka cooked with bicarbonade, gombo (a hibiscus), fumbwa, very young gourd seeds.

## Conclusions

The foods in the region surveyed are very diversified. However, these ingredients are not supplied uniformly throughout the region or continuously throughout the year. The diet tends to be monotonous, consisting mainly of vegetables and tubers. Animal products are represented in the area in a high variety, but are not necessarily present in the villager diet. Thus, in terms of quality, the necessary ingredients are present in the area, but an effort must be made to supply the foods in much larger quantities and all year long; this is especially true concerning foods of animal origin.

Special attention should be drawn to fruit. Fruits are not an important part of the diet in the villages surveyed, and they are not considered pertinent foods for adults. However, since all the vegetables are usually eaten fully cooked, fruits should become important sources of raw material for all.