

ARIES

Assistance to
Resource Institutions
for Enterprise Support

Zambia Agricultural Marketing Support Project

Market Potential for Fruits, Vegetables, and Minor Field Crops

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Directed by
Robert R. Nathan Associates, Inc.

In association with
Agmark Limited, Lusaka

June 1988

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Submitted to
USAID/Zambia

Submitted by
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*The views and interpretations in this publication are
those of the authors and should not be attributed to
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ARIES

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The ARIES project is designed to strengthen the capabilities of support organizations in developing countries to implement small-scale and micro-enterprise development programs. ARIES builds on the work of the Agency for International Development's former Program for Investment in the Small Capital Enterprise Sector (PISCES) and Small Business Capacity Development projects. It works with intermediary support organizations that provide services to small and micro-businesses and industries, such as private voluntary organizations (PVOs), banks, chambers of commerce, management training centers, business people's organizations, and other developing country government and non-governmental organizations (NGOs).

The contract for this five-year project has been awarded to Robert R. Nathan Associates, Inc. (RRNA) with subcontractors Harvard Institute for International Development (HIID), Control Data Corporation (CDC) and Appropriate Technology International (ATI).

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The ARIES project has three major components -- research, training, and technical assistance -- designed to cross-fertilize each other. The applied research component focuses on economic, social, and organizational issues surrounding intermediary support organizations to inform AID missions and host country actions in this subsector. The training component includes design, testing, conduct and follow-up of training programs in such areas as finance, management and evaluation for PVO and NGO personnel. The technical assistance component provides short-term technical assistance to AID missions and intermediary organizations to assist small and micro-enterprise development.

PREFACE

This study of the marketing system for fruits, vegetables, and minor field crops was entrusted by USAID/Lusaka to Robert R. Nathan Associates of Washington D.C. In addition, USAID engaged Agmark Limited of Lusaka to support RRNA in the collection of basic field information on marketing of the selected commodity groups. Two RRNA consultants were primarily responsible for the study, Edgar J. Ariza-Nino and Philippe Dardel. Each component report reflects the joint work of several persons, but final responsibility rests with the individuals named as principal authors.

We both express our appreciation and gratitude for the support of our colleagues at USAID and Agmark in the course of this assignment (April-May 1988). Dr. J. Snell of USAID was especially helpful in orienting the course of the studies. P. Flemming and S. Haley of Agmark shared with us their knowledge of Zambia's agricultural sector and its problems. Finally, we are especially indebted to the numerous farmers, traders, and other marketing participants who were so willing to be inconvenienced by our questions.

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EXECUTIVE SUMMARY

Introduction

USAID/Lusaka commissioned this study to gather essential background information on the marketing system for selected farm products in order to enable a subsequent team to design the Zambia Agricultural Marketing Support project (ZAMS). Two groups of commodities were originally identified: fresh fruits and vegetables for the domestic market, and three traditional staple crops -- cassava, millet, and sorghum.

Part of the rationale for selecting these crop categories was that government programs have not affected these products directly. The assumption was that private trade in these commodities could be encouraged by ZAMS. For the CMS crops (cassava, millet, and sorghum) it was quickly concluded that current pricing and subsidies policies towards maize have completely displaced these staples from urban diets, and from part of rural diets as well. Fruits and vegetables, being less subject to substitution by maize, offer a more fertile environment for private initiatives in marketing.

The report consists of three separate volumes concerning fruits and vegetables (Volume I), cassava, millet and sorghum (Volume II), and other minor crops and initiatives (Volume III). Several appendices are also included (Volume IV) concerning specific issues and agricultural marketing constraints in Zambia. Summaries from each volume of the principal findings and implications for possible ZAMS initiatives are given below.

Fruits and Vegetable Marketing

Three components of the Zambian fruit and vegetable market are analyzed separately: the domestic market for fresh produce, exports of high-value products to Europe, and the domestic processing industry.

Fresh vegetables and fruits are consumed throughout the country all through the year. There are no specialized producers of fruits and vegetables for the domestic market, not even near large cities. Farmers all over the country produce small quantities of vegetables for their own consumption, but only among a few does this production constitute the major commercial farm activity. More often, vegetable production is a sideline to other farm or economic enterprises.

Production areas are not well defined. Good climate and favorable soils and water conditions for vegetable production are present through the country. Each major consumption center is supplied from area farms along the main paved roads. Vegetable farming and marketing for the domestic market is mostly in the hands of indigenous Zambian farmers and traders.

Most local producers are small, with half a hectare of vegetables, at most. Large-scale and advanced "commercial" farmers are conspicuously absent in the production of produce for the Zambian population. The expatriate and elite community consuming European-type vegetables and fruits constitutes a small market, involving some special producers and marketing channels. Most of the following observations concern the popular Zambian market.

The absence of a greenbelt around Lusaka and other major towns is surprising and puzzling to marketing professionals from other countries. Vegetables to feed large cities in developing countries often come from intensively cultivated garden plots around those cities, to minimize transport costs, which are by far the major marketing cost component. The empty spaces surrounding Lusaka and other Zambian cities are economic anomalies perhaps better explained by historical reasons.

Lands around Lusaka are owned by the District Councils, and their use and allocation are strictly controlled. Housing construction is allowed only according to well planned development schemes, normally drawn up by the state-owned housing authorities; therefore, land cannot be easily bought and used.

Farm land all along the major rail line and paved road was allocated in colonial times to expatriate commercial farmers, and no major land reform has been made since independence. Today, large-scale commercial farmers along the main transport arteries show little interest in vegetable production for local consumption. Vegetables for local consumption are produced almost entirely by small African farmers in areas removed from the big cities and the better highways.

Every day it is estimated that 50 to 70 tons of produce arrive in Lusaka, mainly through the Soweto wholesale market. This time of year (April-May), roughly half of the volume is tomatoes, and rape leaves (similar to collard leaves) are the second most common item. Other vegetables are also present but in relatively small amounts compared with tomatoes and rape.

The main difficulty encountered by farmers in marketing tomatoes and other vegetables is transport. It is especially difficult to get produce from the farms to the nearest town or roadside collection point. Feeder roads are rapidly deteriorating, and motorized transport becomes impossible during the rainy season. Once on the paved road, truck transport to market is scarce but eventually available.

Farmers ordinarily accompany their produce to the city until it is sold in the market. There are few standing arrangements between farmers and wholesale traders in the cities for regular vegetable deliveries. A few traders

do travel to production areas to bring produce to the city; this occurs especially in times of scarcity.

Except for some village markets in the Copperbelt area, there are no organized assembly markets in the main producing areas, not even in Mumbwa, which was providing the bulk of the produce for Lusaka this time of the year (May).

Wholesale markets in Lusaka and Ndola are utterly inadequate for their functions. They consist of nothing more than an empty space at the entrance of the city where incoming trucks from producing areas are unloaded, and trading takes place by the road side. In the rainy season, mud and stagnant waters pose a public health menace, as well as an economic cost.

Marketing of fresh fruits and vegetables is relatively free from government interference. Prices vary often and fluctuate quickly in response to market conditions. There are large numbers of producers, traders, and retailers, and no evidence of market concentration. Entry and exit are relatively easy. In Lusaka and Ndola large numbers of small-scale retailers (marketeers) take care of distributing daily supplies of vegetables and fruits among the popular compounds through a network of neighborhood markets.

The government poses a problem mainly in two areas. First, occasional harassment of vendors by police and United National Independence Party (UNIP) vigilantes in vain attempts to dictate prices of rape, tomatoes, and other vegetables. Itinerant vendors are illegal. Women street vendors of fruits and vegetables are periodically rounded up by police and party militants. Second, the municipalities' inability to build and maintain retail markets for the rapidly growing urban population has led to the proliferation of spontaneous markets, which the authorities are constantly threatening to bulldoze. The legalization and improvement of these spontaneous markets should be sought.

Consumer prices are high relative to income levels. Price fluctuations are also large through the year because of irregular supplies, rigidity in demand, and seasonal effects.

There is a small fruits and vegetables processing industry consisting of a handful of firms that produce canned products, preserves, juices, and jellies. The demand for these products is small relative to the fresh market, and concentrated among the high-income and expatriate community. These processors are supplied mainly by a few commercial farmers producing almost exclusively for that purpose.

Fresh fruits and vegetables are exported by air to Europe, and also to neighboring countries. The volume is small, reaching up to 700 tons a year, supplied mainly by a handful of large expatriate farmers with advanced production and packaging technology and good marketing connections in Europe. Their production is aimed at the export market in terms of product selection and high quality. There is no domestic market for left-over production below export-grade quality.

Reduction of price fluctuations from seasonal changes in production could be accomplished in several ways:

- Increasing the diversity of vegetables in the domestic market and of varieties of each type of vegetable to provide a smoother production through the year
- Improving the availability and use of fungicides and pesticides during the rainy season
- Increasing the availability of water pumps and spare parts for irrigation during the dry season

Improvement in marketing infrastructure could greatly facilitate transactions and price determination, and reduce product losses from excessive and rough handling of produce. The need for a wholesale market in Lusaka is a priority. Ndola and other cities should also be considered. Organization of rural assembly marketing in the main vegetable production areas also needs close and further consideration.

Lack of coordination among producers, wholesalers, and retailers is a major constraint on the smooth marketing of fruits and vegetables. Access by market participants to the rather well-functioning telephone system in Lusaka could enhance greatly the flow of information and market coordination. ZAMS should explore what improvements in information flow can be made.

ZAMS could also promote the emergence of commercial entrepreneurs out of the mass of unskilled participants in the market. To raise the efficiency of their operations, promising individual traders could be supported in making marketing-related investments. Existing market associations of traders and retailers could be supported in self-help undertakings to improve their current facilities by providing shelter, water, sewage, electricity, and telephones to their markets.

Training programs are recommended for farmers as well as for traders and marketers to improve the quality, packaging, and handling of produce. The network of existing self-help professional organizations could be used as vehicles for training programs. Simple accounting, stock management, and business procedures have proved popular among small traders in other parts of the world.

It is recommended that a coordinating and marketing advisory unit similar to the one contemplated under ZAMS's project identification paper be charged with carrying out the necessary work to follow up on some of the initiatives suggested above. The unit could also support the several services and institutions involved in the marketing of fruits and vegetables.

Cassava, Millet, and Sorghum

The Zambia Agricultural Marketing Support (ZAMS) project identification paper selects cassava, millet, and sorghum (henceforth referred to as CMS) as three minor field crops with favorable prospects in the Zambian agricultural sector that ZAMS could help promote. One of the principal reasons why these crops were selected was that, so far, the state marketing agencies that pervade the rest of the agricultural sector have shied away from these crops.

The study team concludes that the prospects for promoting cassava, millet, and sorghum consumption and production through improvements in their marketing system are rather discouraging at present. Although these crops have been spared direct government intervention, they suffer the indirect consequences of official encouragement of maize production, marketing, and consumption. Some of the reasons why it does not seem advisable for AID to concentrate much effort on promoting the marketing of the CMS crops are detailed below.

Cassava, millet, and sorghum are truly minor field crops from the perspective of the national agricultural economy. Although in some regions each of these crops can be of some importance in production and in the diet, their overall value is dwarfed by maize. The three CMS crops together only add up to 133,000 hectares, or barely one-sixth of the 780,000 hectares planted in maize.

It is no surprise that these crops are basically subsistence crops that are consumed mainly within the producing household, and when sold, are traded mainly within the village or zone of production. Very little is traded outside the immediate region of production. Sales of sorghum in the 1988 harvest are expected to be 24,000 bags, or 9 percent of total sorghum production. For maize the marketed output is forecast at 11,200,000 bags, or 73 percent of overall production. In other words, for every kilogram of maize in the market there are 2 grams of sorghum. Sales of millet and cassava are even weaker than sorghum.

Maize is the crop that generates the most cash income, even among traditional farmers. Maize represents 60 percent of the total value of traditional agricultural production, followed by cassava at 11 percent. Millet contributes 7 percent and sorghum less than 3 percent. These figures are for the traditional sector; in the commercial sector, the importance of cassava, millet, and sorghum is even lower. Among traditional farmers, 55 percent of the maize is sold out, compared with only 9 percent of cassava, 8 percent of millet, and 4 percent of sorghum.

Official statistics on cassava, millet, and sorghum are too imprecise to make definite evaluations of past trends in area, production, and sales. It is even riskier to predict how these variables will evolve in the future, but the evidence indicates that production of these three crops has suffered a persistent decline in the past decade. Drought in the 1986-87 crop year might have shocked the authorities and traditional farmers into increasing plantings of sorghum and millet instead of maize in drier areas, but empirical evidence remains to be seen.

The relatively low importance of cassava, millet, and sorghum in farm production reflects a corresponding decline of these products in the regional diets. There is no empirical data on this, since the last detailed food consumption survey was done in 1969; however, there is ample anecdotal evidence that food consumption patterns have changed drastically over the last decade or two. The dominance of maize is a relatively recent phenomenon, slowly but steadily displacing other foods. Now, the substitution is nearly complete. Maize is the main ingredient in diets even in the Northern and Southern provinces, which formerly were accustomed to cassava and sorghum, respectively. Perhaps most poignant is the complete substitution of maize for sorghum in the manufacture of the traditional opaque beer, Chibuku, in urban areas. A similar substitution is in progress in rural areas.

Consumption of cassava is equally rare, even in the Copperbelt area, which used to produce and consume large quantities in the past. Now, the most common form of consumption are the cassava leaves, used in preparing relish for the nshima, that is, as a green vegetable. Only in Luapula and the Northwest provinces does cassava retain a major share of consumption. In rural areas in the Southern province, sorghum is still the preferred staple grain.

The usual explanation for the decline in consumption of cassava, millet, and sorghum is that these staples are inferior foods. Nutritionally these staples are roughly equivalent to maize in calories, but less rich in other nutrients, and taste preferences generally favor maize. Nevertheless, the high prices of these three products in urban markets, together with the decline in urban income levels in the past decade, contradict the view of CMS as inferior foods. More likely, their reduced consumption is the result of the lower prices for maize. Their drop in consumption is fully consistent with consumer behavior towards normal foods.

In contrast to the rather depressing performance of the CMS crops, maize production has made great and steady inroads in the past few years, mainly as a result of generous government subsidies. The competitiveness of cassava, millet, and sorghum with maize, their main substitute, has been affected by the many government policies and actions to achieve self-sufficiency in maize.

Maize producers benefit from incentives not offered to producers of cassava, millet, and sorghum. Credit, for example, is generously provided at negative rates of interest to maize producers. This is facilitated by the Cooperative Unions, which, as the sole purchasers of maize, can guarantee payment on loans. With the provision of credit also comes access to purchased inputs like fertilizers and farm equipment. Fertilizers are also highly subsidized by the Zambian government; the bulk of fertilizer goes to maize, and none to any of the CMS crops.

Large-scale modern maize farmers estimate that 70 percent of their costs are imported inputs. The Kwacha is overvalued by about 300 percent, which means they are paying only one-third of the real cost of those imported inputs. Their costs would jump by 133 percent if the Kwacha were valued

more realistically. By contrast, CMS producers hardly use any imported inputs.

Provincial Cooperative Unions store and transport the maize crop from collection points to central depots. Their costs are reimbursed by the central government. Farmers get 80 Kwacha per 90-kg bag without any discount for transport. NAMBoard takes the maize from the Cooperatives, stores it and transports it across the country to consumption centers. All expenses incurred by NAMBoard are absorbed by the national government. NAMBoard can then sell to millers at the same price paid to farmers.

All mills are nationalized. The government pays millers substantial subsidies for every bag of maize processed, so that they can sell to distributors at subsidized prices. The distributors themselves are mostly state-owned supermarket and shops, whose losses are also financed by the government. In the end, consumers can buy mealie meal in downtown Lusaka for less than the farmer was paid for the grain.

Neither storage nor transport of cassava, millet, and sorghum receive any help from the government. Traders interested in dealing in sorghum would have to pay for these services, which would redound in higher prices for consumers and lower prices for producers.

The obvious conclusion is that maize production, marketing, and consumption are so favored by government pricing and subsidies, that any crop that can be substituted by maize cannot remain competitive. The disappearance of cassava, millet, and sorghum consumption in urban areas, and to a lesser extent in rural areas, is directly attributable to these policies. As long as these pricing and subsidy policies persist, the outlook for cassava, millet, and sorghum will remain bleak.

Consumption of CMS crops has remained an important part of the local diet only in those areas of Zambia so remote as to be relatively unaffected by the maize policies of the central government. Whenever a farmer is able to acquire subsidized mealie meal on a regular basis, he will find it advantageous to sell maize to the government and then buy back his own family's needs at subsidized prices.

In areas with climate unfavorable for maize, such as the low-rainfall areas of the Southern, Western, and North-West provinces, sorghum and millet become viable competitors for maize because of their high drought resistance. But only the Southern province is expected to market a substantial amount of sorghum outside the province.

One of the principal uses of sorghum is the manufacture of the local beer, Chibuku. Beer brewing is only permitted in rural areas. In urban concentrations, the government has a state monopoly on the manufacture of beer, both the bottled kind and Chibuku. At the moment, the most likely potential market for sorghum is in the manufacture of Chibuku by National Breweries. The government is pressing the brewery to switch to sorghum as a potential way of saving on the subsidies on maize. The brewery prefers maize because of its cheaper price.

Use of sorghum in animal feeds is also a possible market in the future, but maize subsidies would need to be reduced considerably before it becomes possible. Right now, the animal feed industry is using corn bran by-products from the milling process as the principal ingredient in feed. Human consumption of sorghum and millet in urban areas is not likely to develop in the near future. The higher cost and consumer resistance make their reintroduction in the diet very unlikely.

Cassava production is concentrated in Luapula, perhaps the most remote province from the urban markets of Lusaka and the Copperbelt. The small amounts of cassava in Lusaka originate in the Western province. One existing market for cassava from Luapula and Northwest provinces is the export of dry chips to Zaire's southern Shaba area. This trade could possibly be expanded in the future given the high demand and prices for cassava in Lubumbashi. A quick study of this market potential should be worthwhile as part of ZAMS. Right now the main constraints seem to be the possible illegality of the trade on the Zambian side, lack of sufficient production from the mealy bug infestation, difficulties in transport between Luapula and Lubumbashi, and inadequate rural processing facilities for making cassava chips.

Other Crops and Initiatives

Sorghum for Chibuku Beer

A potential market for substantial quantities of sorghum exists in brewing Chibuku beer. National Breweries considers sorghum a preferable raw material to maize grain and would switch to 100 percent sorghum if they could obtain sufficient amounts of the requisite varieties at a price comparable to maize. A sorghum-based brew is preferred by the consuming public and would have a significant impact on consumption. The potential requirement for sorghum is about 27,000 tons per year. Given the low yields and small farm size of typical sorghum producers, this volume could affect a large number of small holders.

The present price of Chibuku beer is controlled at K 0.45 per liter, calculated to cover costs but no profit. This price does not allow the brewery to offer a premium to farmers for sorghum grain. ZAMS could explore possible financing support to National Breweries to upgrade their facilities to encourage use of sorghum and to induce the GRZ to deregulate the controls on a sorghum-based premium beer.

Preserved Fruits and Vegetables

A young private company, Rivonia, is the main producer of fruit and vegetable preserves and juices in Zambia. In six years of operation, it has grown to employ 60 semi-skilled workers. Its production is marketed directly to Lusaka supermarkets and food stores on a contract basis and through NIEC, a holding company of state enterprises, and Mwaiseni to other urban centers. Rivonia reports a good growth potential, but it is constrained at the moment by the inability to obtain foreign exchange to import essential processing

equipment, such as a sealing machine for canning. ZAMS could facilitate the foreign exchange necessary for importing the equipment, at an exchange rate compatible with that paid on dollars under the 50 percent retention for exporters.

Soft Drinks Industry

As a result of the dire scarcity of foreign exchange, Zambia has stopped the importation of syrups and concentrates for soft drinks; therefore, there is a potential demand for soft drinks using locally produced fruit juices and concentrates. The present availability of fruit for crushing -- oranges, grapefruit, and pineapples -- is extremely limited, and the location of production is far from consumption centers. At present, the demand for citrus in the smallholder sector far exceeds the seedlings available from provincial Ministry of Agriculture and Water Development (MAWD) nurseries. ZAMS intervention could help coordinate joint development of the industrial capacity along with smallholder production of fruit trees in strategic locations.

Groundnuts

Zambia used to be a major producer and exporter of groundnuts, and the Eastern Province contributed the bulk of it. Production and marketing of groundnuts have declined to a fraction of their levels of a decade ago. Exports declined from 4,000 tons in the early 1970s to zero in the 1980s. The main reason for the decline is the increasing imbalance between the price of maize and groundnuts. A minimum ratio of 3:1 in price with regard to maize is deemed necessary by producers to justify groundnut production. A small but encouraging recovery has been detected since 1985, when the marketing and export of groundnuts were freed. Until then, prices were controlled, and exports were the sole responsibility of the Eastern Province Cooperative Union.

ZAMS could help to re-establish the production and export of confectionery groundnuts by encouraging the traditional growers to produce the well-known Chalimbana or other varieties acceptable to the confectionery trade. Unfortunately, Chalimbana nuts no longer command their old premium in the international market. In fact, they are now discounted by as much as US \$100 a ton, so that a switch in varieties should be explored.

ZAMS could also help in financing and establishing a privately run company to coordinate the production and export of groundnuts, including subcontracting of production, buying, and processing, while disposing of those which do not make export grade on the local market.

Fruit and Vegetables for the Export Market

This is a rapidly growing sector in Zambia. It takes advantage of the favorable climate in Zambia for the production of fruits, vegetables, and flowers during the off-season in Europe. Items include strawberries, green beans, okra, ginger, sweet corn, chillies, aubergines (eggplant), courgettes (zucchini), and gladioli. Exports are entirely in the hands of private concerns, after a disastrous attempt to establish a parastatal company, ZAMHORT, to do

the same. Constraints relate mainly to ready access to technical information and appropriate quality standards for producers. Regarding price competition, Zambia has lower labor costs than other regional producers and, at present, a discounted rate for air freight to Europe.

An export diversification project had already been identified last year by the World Bank, before Zambia's break with the IMF economic recovery program. The project included tobacco, groundnuts, cotton, beef, and fruit and vegetables. The concept of the project was to provide foreign exchange through commercial banks for short- and medium-term loans for the importation of equipment and inputs. These loans would be recovered from the export retentions. The project was put on hold when Zambia abandoned the IMF economic program. ZAMS could look into using its resources in a similar manner as outlined above.

Recently, the Bank of Zambia has approved up to US \$12 million in pipeline debt to be dismantled in order to provide kwacha support for a horticultural export project. Under this scheme, local currency costs such as land clearing and on-farm buildings could be financed by producers wishing to enter the export market. Of course, if the foreign exchange is used for buying up debt, it cannot be used for importing equipment also.

Airport facilities for preshipment storage and handling are presently inadequate. Credit could be provided under the ZAMS project to an association wishing to invest in appropriate handling and cold storage facilities at the airport. These facilities are badly needed; exporters are not getting top prices, partly because of the decline in quality at the airport when the cool chain is broken.

Barley

Zambia Breweries is currently producing significantly below demand, and shortages are frequent. Lack of foreign exchange to import the malted barley is currently the greatest constraint to meeting demand. INDECO, a government parastatal and owner of Zambia Breweries, is anxious to substitute locally produced malt for imported malt.

Some large tracts of land in areas agro-ecologically suited to barley production have been set aside by government for large-scale commercial development. One of the main areas of priority for this type of development is in the Mpongwe valley where there are already a number of similar development projects, and where soils and irrigation potential are suited for barley production. Irrigated barley could initially be sent to Zimbabwe for malting, although provisions would be made to establish a malting capability once production warrants it.

Rice and Beans

Beans form a small part of the diet of most Zambians but are not traded in any substantial quantity through the formal market. High production in the Northern province probably reflects the lack of animal proteins in that region, but it is unlikely that the province is suited for cash production. More likely, the Eastern province would be more responsive to incentive pricing.

The main production area for rice is also the Northern Province, and to a lesser extent the Eastern and Western provinces. High prices of rice would indicate a good potential demand, but poor quality makes Zambian rice less appealing than the imported rice from Malawi. The problem is simply one of mixed varieties in the planting material, resulting in excessive breakage at milling.

Possible interventions by USAID to explore the market potential for rice and beans are warranted, because of their appeal and nutritional value. Specific interventions to promote growing rice and beans need to be identified.

VOLUME I. FRUIT AND VEGETABLE MARKETING IN ZAMBIA

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I. INTRODUCTION

Summary and Main Recommendations

Fresh vegetables are consumed everywhere in the country, with seasonal variations in supply and price. Fruit consumption is very low, subject to seasonal production. Nearly all farmers grow vegetables; there is no specialized market-gardening near the main towns. The production areas are in and near the consumption zones. Although the distance to markets is short, farmers have difficulties because of the poor maintenance of the rural roads.

Some rural assembly markets exist in the Copperbelt. In the larger towns, an empty lot is used as a wholesale market by farmers and by traders. Fruit and vegetable marketing is a free business; each marketeer has his work well delimited. Marketing concerns mainly the urban populations along the rail line and in the Copperbelt. Consumer prices have high fluctuations, because of irregular supply (depending on the seasons) and high demand rigidity.

Fruit and vegetables are exported to European and neighboring countries by a few farmers; this export trade concerns produce of high quality, in very small quantities. Zambia also has a small fruit and vegetable processing industry, with a few firms producing canned fruit and vegetables, preserves, and juices. The demand is low in the domestic market, and the processors are easily supplied with raw material by specialized farmers.

A study of the fruit and vegetable industry needs to be done in three parts, one for the fresh domestic market, one for the export trade, and one for the processing industry. Some of the actions recommended aim to reduce seasonability and other irregularities of production in quantity and quality, and to regularize consumption. Improvements of the market facilities are recommended, mainly for the rural assembly markets and wholesale markets. Different technical training is recommended for farmers and traders, individually and within their existing or new professional associations. A Coordination Bureau should be set up, charged with continuation of the studies, and organization and follow-up of the actions to be taken by existing services and organizations.

The ZAMS Project

USAID in Zambia requested this study in order to obtain the complete information needed for the Zambian Agricultural Marketing Support Project (ZAMS). The purpose of the ZAMS project is

to improve the operational efficiency of the agricultural marketing system in Zambia for selected agricultural commodities, and promote market development as necessary.

The selected commodities include fruit and vegetables.

The project goal is to increase agricultural production and rural incomes through improvements in the marketing system for agricultural outputs and inputs, mainly by supporting and strengthening the activities of private entrepreneurs in marketing.

The Guidelines of the Report and Some Definitions

The Different Marketing Processes

Fruit and vegetable marketing in Zambia needs three different studies, according to the types of production and producers, the marketeers and their marketing roles, and the demands of the different consumers:

1. Domestic marketing of fresh fruit and vegetables, which concerns many different producers and the entire population as consumers
2. Fruit and vegetable processing and the marketing of the processed foods, which are new products with high value added requiring special marketing processes
3. Export marketing of fresh fruit and vegetables (and flowers), requiring special quality products and well-organized farmers and exporters

The Marketing Functions and Operations

Marketing is an aggregate of three inseparable processes:

- The transfer of goods like fruits and vegetables from producer to consumer

1. Zambia Agricultural Marketing Support Project (ZAMS: 611-0214), Project Identification Document, March 1988.

- The transfer of the value of these goods from consumer to producer and others participating in the marketing process
- The permanent transfer of information from consumer to producer, and producer to consumer

These operations require certain kinds of infrastructure and capabilities. The main kinds of infrastructure are roads, markets, and storage facilities; some capabilities necessary are communications and transport with packaging material.

The marketing operators are

- Producers, whose first task is to produce according to the demand and to put the produce on the market
- Traders and other economic agents, who perform the services of transferring the goods and participate in the distribution of the value and the wealth
- Consumers, whose needs are tempered by their purchasing power, determining the level of demand

The Commodities

This study includes all fruit and vegetables as well as other basic components of the diet that are marketed with fresh vegetables by the same marketing agents in the retail market, like dry beans, fresh groundnuts, and mushrooms. Most of these commodities are perishable items, and this perishability influences the lines of the marketing processes.

Perishability and Post-Harvest Losses

All the fruit and vegetables included in this study are fragile and highly perishable. They are susceptible to many external factors. Their shelf life is a few days to several months. Losses usually are caused by rotting (bacteria, fungi), senescence, sprouting, withering, and bruising.

In less developed countries, losses in horticulture crops are usually estimated to range from 15 to 50 percent. These losses are always lost for everybody in the marketing process: for the producer who receives a price taking into consideration the foreseeable losses, the trader who may lose his profit margin, and the consumer whose buying price includes all losses in the marketing process.

Any element in production, harvest, packaging, transport, and trade organization that may minimize the losses has to be considered.

II. THE PRESENT STATE OF FRUIT AND VEGETABLE MARKETING

Domestic Fresh Fruit and Vegetable Marketing

Consumption

Quantities

The quantities of fruit and vegetables consumed are very difficult to assess because there is no record of production and consumption. The last study that gives some information on the consumption is the Household Budget Survey carried out in 1985. The figures are difficult to interpret for fruit and vegetables. The survey gives the expenditures in cash for households with different incomes and from different sites in towns and in rural areas.

The expenditures for fruit and vegetables vary from one household to another. The high inflation rates from 1985 make it difficult to obtain precise data; a rough calculation shows that the amount expended for fruit and vegetables is about 10 percent of the expenses for grains, including bread and mealie meal. Using an annual consumption of 800,000 tons of maize at 80 ngwee/kg, we obtain a consumption of about 125,000 tons of vegetable at an average price of K4/kg, or 17 kg per capita per year.

In the study of vegetable production and marketing on the Central Plateau in Northern Province, consumption is estimated at 23 to 32 kg per capita per year. It is reasonable to keep the mean of 20 kg, and a global consumption of 140,000 tons per year.

The consumption of fruit is much lower, and given, in the same study, as 1 percent of vegetable consumption -- 1,400 tons a year, or, with a higher consumption in the urban areas, about 2,000 tons a year.

The point of these rough figures is to give the average amount of fruit and vegetables produced and marketed by the numerous farmers and marketeers involved in this business. It is difficult, however, to differentiate the consumption in urban and in rural areas.

Uses of Vegetables

Zambian food consists mainly of two items, nshima and relish, a cooked sauce made out of vegetables and meat or fish or beans. Nshima is always eaten with a relish. Some vegetables are always necessary for relish -- mainly leaves (rape, pumpkin, cassava), tomatoes, onions, okra, and potatoes. That explains the very high price of vegetables when there is a shortage: the housewife will buy at any price. (That in turn explains the sale by unit or small heap.) Other vegetables, like sweet potatoes, and fruits are used as snacks beside nshima and relish.

Supply

All fruit and vegetables consumed in Zambia are produced domestically; the climate, the soil, and other agricultural conditions are favorable almost everywhere. There is no importation.

Quantities

No figures are available on the area devoted to vegetable production, and the agricultural statistics do not give the quantities harvested. There is no record of the acreage of orchards, or the number of scattered fruit trees around farmers' houses.

Production Areas

Except for dry beans and groundnuts, no specific area is devoted to special production of fruits or vegetables. Climate, soil, and other agricultural conditions are quite similar nearly everywhere in the country and adequate for growing vegetables. The lack of a greenbelt and specialized market gardening in the suburbs of the towns, however, is surprising.

Dry beans are produced mainly in the Northern Province. Other fruits and vegetables for marketing are produced in and close to the consumption areas. Transport of produce from one production-consumption area to another is not frequent. Some production areas far from consumption zones are devoted to a special consumption zone; for example, the Mumbwa-Chikanda production area, more than 100 kilometers from Lusaka, is one of the major supply areas for Lusaka. It is supplying only this town; there is no technical reason for this situation.

Seasonability of Production

Although the climate is favorable for year-round production of vegetables, irrigation needs in the dry season and the easy development of diseases in the hot rainy season make production much more difficult. The farmers producing vegetables also grow maize and other cash crops and breed cattle. Even if they can make a good profit on the vegetable crop, they do not have the equipment and technical ability necessary for all-weather production.

The seasonality of vegetable production and consumption is high. In the towns, it is less seasonal because of the diversity and the great number of suppliers, but it exists.

Quality of the Produce

Some commercial farmers produce good quality fruit and vegetables for export, for processing, and also for the domestic market. The quality of production overall, however, is much less even, with irregular sizes and shapes, and inefficient techniques of disease prevention. The marketing techniques of scattered small and middle-sized farmers do not improve or minimize this irregular quality. Farmers harvest at different stages of maturity, produce is not always sorted before packing, and packages and the way they are used do not help maintain quality.

Production Costs

Reasons for and Problems with the Study

A good knowledge of production costs helps the farmers in their decisions for production. The public authorities need also to be acquainted with the economic interest of production, in order to take, if necessary, some political steps to rationalize production in the entire agricultural economy.

The costs of vegetable production in Zambia are very difficult to establish for several reasons:

- The different farming systems, commercial farmers and small and middle-sized farmers, have different costs of production for the same commodity.
- Depending on the size of the farms and the vegetable fields, the shares of household women and external labor in vegetable production are different and difficult to estimate.
- Some vegetable are grown as intercrops, like pumpkins and beans in maize fields.
- The value of leafy vegetables is difficult to establish; cassava, beans, and pumpkins are picked according to the market demand.

Estimates

Theoretical calculations of the costs of production of some fruits and vegetables are possible, based on simplified assumptions about the costs of the different agricultural tasks, and average yields in different regions of the country. These figures might be sufficient.

It might also be useful to know the farmers' estimates of their costs of production and what they consider a reasonable minimum selling price. The

figures vary greatly from one farmer to another (10 to 30 kwachas for a tomato crate in April 1988), but even in these conditions, this information might be useful.

Marketing Operations

Infrastructure and the Means

Infrastructure is the facilities that the marketing operators use to organize the processes. Infrastructure can be provided by state and public institutions, like roads, or by private individuals or associations, like stalls and stores.

Roads. In Zambia, the tar roads linking the regions and the main towns are in good condition; so are the main roads in consumption-production areas and the roads from special production centers to the towns. From the main roads to the vegetable farms, however, most of the rural roads are in very poor condition, often unusable in the rainy season. Truckers refuse to drive on some of them for fear of damaging the trucks. In other areas, with primarily small farmers, the roads cannot be used by trucks and pick-ups. Farmers have to convey their produce to the nearest main road using head haulage or ox carts. All these rural roads are very important for vegetable production, because they are very numerous, and they are short. As soon as produce is brought out of a rural road it has nearly arrived in the consumption market.

Trucks and Other Transport Means. It seems that there is no shortage of trucks on the good roads, and even on the rural roads, but truckers refuse to go to the farms, even at high prices, when road conditions are too bad. So there is a shortage of transport means in the rural areas, depending mainly on the quality of the roads. Small farmers, however, have no means of conveying their production to an assembly point, or to the nearest village or town.

Packages. For transport and sale, fruit and vegetables are packed in wooden crates and in bags. Wooden crates are used mostly for tomatoes, one of the most fragile items. The crates are manufactured by individual carpenters, from boards of varying thicknesses; their sizes vary slightly from one to another, creating some difficulties in packing the crates correctly in trucks. These crates hold 15 to 18 kg of tomatoes. Usually the crates belong to the farmers. After sale in the wholesale market, the retailers pour the tomatoes into other packages like baskets or metal tins, with not much care, and give the crates back to the farmers.

Bags of different qualities and sizes are used for most other fruits and vegetables. They are of different origins: fertilizer bags for leafy vegetables (rape, pumpkin leaves); jute bags for heavy vegetables; plastic net bags for smaller quantities of the same vegetables and for fruit, citrus, and avocado pears.

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Physical Markets

As a general rule, market facilities are built by public institutions, and township councils. Sometimes they are built and organized by traders associations. They are not always officially authorized to operate.

Village Markets. Some village markets exist in Copperbelt villages with sufficient vegetable production. The farmers bring their production to be sold to traders who come from the towns. These village markets operate once or twice a week; the days that they operate are distributed throughout the week.

There is no such market in the production area, even in the relatively far away Mumbwa area, which is one of the most important for Lusaka. As explained in Chapter III, this lack of markets could be the result of ZAMHORT's attempt, in 1978-80, to establish rural assembly markets as a means to collect small farmers' production.

Wholesale Markets. Places where the fruit and vegetables are sold wholesale exist in some big towns, in Lusaka, and in the Copperbelt region. The facilities of these so-called wholesale markets are nonexistent; the markets are simply cleared land where some wholesaler has set up shop.

The Soweto Wholesale Market in Lusaka. The Soweto market in Lusaka is a combination of different markets, including two wholesale markets -- one legal, the other unrecognized -- a consumers market, selling food and all other commodities, and an area with a gathering of illegal street vendors.

The first wholesale market was designed and built beside the retail market. Shelters and stalls are used by wholesalers and petty wholesalers to store bags of heavy vegetables, potatoes, sweet potatoes, onions, and groundnuts, and some daily crates and bags of the most perishable items like tomatoes, cabbages, and oranges. They sell vegetables to retailers, street vendors, and consumers.

The expansion of the town, along with an increase in the number of traders crowded the first wholesale market. Some wholesalers shifted their operations to another location nearby. At this site, the vegetables are unloaded from the trucks and marketed without further handling. The farmers usually sell in bulk to a wholesaler who later sells to retailers, or the farmers may sell to commission agents. Petty wholesalers sell fruit and vegetables bought from farms or other traders at this site.

The site is relatively large and has assigned locations for the main commodities. But the location for this wholesale market is not authorized; no committee or institution supervises it. The cleared, uneven land has no facilities and it is never, or very rarely, cleaned. Discards and spoiled vegetables rot on the soil, and the site is dirty and unsanitary; there is no shelter to protect vegetables, fruit, and people against sun and rains; in rainy seasons the soil is muddy and several hollows are full of stagnant water. Nevertheless, dealings are very active the year round, and any simple improvement will be very useful.

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Fruit and Vegetable Retail Markets. Specialized markets for fruit and vegetables exist, often beside markets for other perishable foods like fish and meat. Such markets have been set up in areas of very high population, or near large compounds; because of the scattering of houses or compounds in the towns, each town has numerous markets. A report entitled *Marketing of Vegetables in Lusaka* in 1987 indicated 69 markets in the town. Out of the 69, only 21 have been designed and recognized by the Lusaka Town Council. The others have been set up or built by traders individually or in associations.

Under these conditions, the markets have different designs and management, adapted to the compound or the ward, the size of the population around, and the average income. Many markets are built of concrete and have stalls and tables, and are well maintained, while others are simple rows of corrugated iron shelters. Some are run by Town Council Market Committees, others by traders cooperatives or unions. They are cleaned regularly, even where the proper facilities (water taps, sewerage) do not exist.

Other Marketing Tools

The telephone is not used by the marketeers. The farmers, more often than not, come to the wholesale market in the towns. Also, the quality of the produce obliges the retailers to look carefully before purchasing any.

Scales are not used in the wholesale markets, even in Lusaka in the Kamwala market, which is the wholesale market for dry beans, groundnuts, and dried fish. In a few retail markets, scales are used either for direct sales or for preparing preweighed packets.

In the marketing process, storage is an indispensable tool for regulating the supply and adapting it to the demand. In Zambia, the storage of fruit and vegetables is not efficiently utilized to take advantage of the possible year-round production of most of the vegetables. Nevertheless storage is used for a few vegetables that can be stored cheaply and relatively easily, like onions and potatoes.

Refrigeration is the best means of storage for perishable fruit and vegetables. It is not used for domestic marketing mainly because of its high costs for investment and for use in the retail markets (since many traders deal with only small quantities of produce).

The farmers who export some fruit and vegetables to European countries are equipped with their own cold stores, as a part of the complete cold chain necessary from the farmers to the consumers, with, at present, a gap created by the lack of cold storage facilities at the Lusaka Airport.

Marketing Agents

Marketing agents are

- The producers whose way of bringing their produce to the market initially may influence the whole of the marketing process

- The traders in each step of the transfer of the produce from producers to consumers
- The consumers whose special habits and purchasing power create the demand and influence the shape and the main lines of the marketing process

In Zambia, it seems that all farmers produce some vegetables, either for the market or for their own consumption. Even in the vicinities of the main towns, there is no market-gardener, no farmer specializing in vegetable production, or producing only vegetables.

For fruit and vegetable production and marketing, farmers may be distributed roughly within four main categories, without precise limits between them: commercial farmers, middle-sized producers, small-scale producers, and no-vegetable producers. The farmers of the first three classes produce vegetables for the market; farmers of the last class sell, in rural areas, some vegetable surplus of their production for domestic consumption.

The Commercial Farmers. Commercial farmers run large farms, of a few hundred to few thousand hectares of land, mostly along the Line of Rail, and in some other designated areas (Mkushi). Most of these farmers are foreigners, settled for some length of time. They farm mostly maize and cattle, applying modern techniques of intensive agriculture.

Besides maize and cattle, some commercial farmers produce vegetables and fruit, under varying conditions. Some farmers supply fruit and vegetables to processing plants in urban and industrial areas (see Chapter II). Close to the towns, some farmers produce fruit and vegetables for exporting to developed countries (see Chapter II). Farmers producing for export trade and for processing bring vegetables, discards or surplus from their normal outputs to the nearest markets in the towns, where the quality corresponds to the normal demand.

Other commercial farmers close to the main towns, especially Lusaka, produce fruit and vegetables for the domestic market for fresh produce. They are able to produce high quality vegetables and limit the varieties to those vegetables for which consumers have a high demand, like tomatoes, cabbages, potatoes, and onions. Most of them sell their produce at their farms or in shops in town, to numerous traders, often supplying them with the necessary transport to the main market (Soweto market in Lusaka).

The commercial farmers producing fruit and vegetables for the domestic market are very well organized. Their fruit and vegetable production and sales represent a small part of their agriculture business, but the quantities of some commodities they bring to the market (potatoes, onions, oranges) might have a high impact on the market during certain periods.

The Middle-Sized Vegetable Producers. Middle-sized farmers and small-scale farmers produce vegetables and fruit for the domestic market in about the same technical conditions. Their farms are scattered in production areas

in or close to the consumption areas where they market their produce; in rural areas, more distant from a town, their produce is usually assigned to the market of the town.

Middle-sized and small-scale farmers producing vegetables differ mainly in the areas they plant to vegetable production and in their ways of marketing. They usually have more land than they are able to cultivate; they grow maize as a cash crop and staple food, and other cash crops -- mainly cotton and sunflower, and in smaller quantities, sorghum, groundnuts, and soyabeans. Most of them breed cattle. They produce the best-selling vegetables, tomato, rape, cabbage, onion, sweet potato, chili, and as intercrops in the maize and sorghum or cassava fields, other vegetables like pumpkins (for fruit and leaves), beans, cucumber, and other squash.

Middle-sized vegetable producers may be defined as those farming more than half a hectare of vegetables, employing family members and outside labor. They have little equipment -- ox-drawn farm equipment, some irrigation pumps and devices -- often in bad condition or out of order because of the unreasonably high prices and scarcity of spare parts.

At harvest time, because of the size of their production, they are often in a position to hire a truck or a pick-up to bring their production to the market. Some traders-wholesalers from the town can come to the farms to buy the harvested produce. Some farmers have their own vehicles to transport their produce to market and also can buy the produce of their neighboring small farmers at "market price"; in this way, they are also traders.

The Small-scale Vegetable Producers. Small-scale vegetable producers grow vegetables in fields of less than half a hectare, farming with family labor. They may have irrigation devices (all those we saw were out of order), but most grow vegetables in the dry season only near boreholes, and avoid production during the hot rainy season because of their lack of technical knowledge regarding diseases and pest control, and their lack of equipment and necessary inputs.

They sell their vegetables to small traders coming from the town, or use any device for bringing the vegetables out of the fields -- head haulage, oxcarts -- to the town market or the nearest point in the next good road. Usually the next good road is the main tar road, because of the poor maintenance of the rural roads. Once the farmers arrive at the main road they expect to hire passing trucks to transport the produce to the town market. Some truckers specialize in this type of transport along the main roads in the vegetable production areas, and they collect produce and producers in different spots.

But this transport is not regular, and producers may wait for the trucks a few hours, or the complete day, with the vegetables lying in the sun. Then they go the market, wait until the early hours of the day, and sell their produce to wholesalers or retailers, sometimes through commission agents, and go back to their farm with empty boxes or bags. Sometimes traders from the town market go to the production areas and buy the produce from the farmers at the farm or the small assembly points along the tar roads.

It seems that there is no organization of the farmers and the traders which might decide whether the farmer is going to the town or the trader to the production area. The traders would mostly go to the farm when there is a vegetable shortage, but even in these circumstances, the farmer might also decide to go to the town; in some areas, there is a complete lack of agreement between traders and farmers on this first step of marketing.

The farmers think that they obtain a better price from the traders in the town, because of competition between the traders, but mainly because the traders have to pay for the transport. But the farmers do not take into consideration the time spent on the road awaiting the truck, or in the market awaiting the trader, time that could be very much better used on the farm. They also do not consider the deterioration of the produce after a few hours in the sun or the rains.

The Non-vegetable Producer. The fourth class of fruit and vegetable producer is the farmer who does not specialize in vegetable production but grows vegetables for family consumption. This production is most often undertaken by family women, on a small scale; in full production season, the surplus vegetables are sold at a low price in the nearest market, in the village or the town to traders, or directly to consumers.

This situation exists mainly in rural areas, near the villages. The quantity of vegetables sold in these conditions is not known, but could have a certain impact on the supply of the markets in villages, and even in towns, during the full production season. This situation could increase the surplus over the demand, with the attendant consequences on the price paid to all the farmers, including specialized vegetable producers.

The Farmers Cooperatives and Associations. Except for export, with ZEGA (Zambian Export Growers Association), there is no coordination of farmers with resources to help them market their fruit and vegetable production.

The Traders. In any marketing process, the traders perform or participate in three main operations:

1. The physical transfer of goods from producer to consumer in a way to keep the produce in the best condition. That is very important for perishable items like fruit and vegetables, and means traders must avoid touching the produce; they have only to transport the packages with the produce as quickly as possible from the producers to the consumers.
2. The transfer of the value of the good from the consumer to the producer and, on the way, the distribution of part of the value to the marketing agents -- retailers, wholesalers, and truckers. The shape of the marketing process and the participation of more or fewer traders leads to different distributions of the value, and may

transform the social position of the participants. For example, more traders in the production areas, which is not the case in Zambia, help maintain more wealth in the rural areas than if all the traders are urban, even if they go to the farm to purchase the produce.

3. The permanent transfer of information from producer to consumer and vice-versa, on general supply and demand, and more practically, instant or quick information to the farmers on the supply in the market and fluctuations in prices, or even the availability of trucks, or vegetable supply from other areas.

The Traders in Rural Areas. Very few traders live in rural areas, even if a village market exists. Most of them are also farmers, and while marketing their own produce, they buy the produce of their neighbors either in their farms, or in the market, or along the roads.

The Wholesalers. Wholesalers are installed in the existing wholesale markets in the town. They are middlemen between farmers and retailers, and sometimes petty wholesalers. The facilities are bad or nonexistent in the so-called wholesale markets; the wholesalers would pay higher fees for better organizations.

The wholesalers purchase the produce from the farmers, and a few village traders, either going to the village market or to the farms, or along the roads, or in the wholesale market itself. Some wholesalers have been dealing with this business for many years; they specialize in seasonal produce, changing with the season, and often have long-standing arrangements with certain suppliers (farmers) and buyers (retailers).

The Commission Agents. In some markets, such as the Soweto wholesale market, farmers may sell their produce to retailers with the help of commission agents. The commission rate is 7.5 percent, or sometimes a fixed amount per unit.

The Petty Wholesalers. Petty wholesalers operate in the Soweto market in the area previously allotted to the wholesalers. They purchase fruit and vegetables from the farmers, in the farms or in the market, or from the wholesalers, and sell to retailers, street vendors, and consumers, at varying prices.

The Retailers. Retailers are the last traders in the marketing process in contact with the consumers. They are installed in fresh fruit and vegetable retail markets, legal or unauthorized, with stalls for which they have to pay daily or monthly fees. They are mostly women; some men are also regular retailers, and some are only in the business temporarily. The retailers are very numerous, dealing most often with small volumes. Some are very well organized, have been established for a few years, and handle quite large quantities of various fruits and vegetables.

The retailers purchase the produce either from the wholesale market or from the farms, where there is no wholesale market or where they are nearer to the farm. They organize and pay for the transport to and from their market; this sometimes represents, like in Lusaka, long distances and high costs.

The retailers usually organize the supply daily, because of the perishability of the produce, the lack of storage facilities, and a frequent shortage of funds. They usually go very early in the morning to the wholesale market, or to the farms or other far supply points; sometimes they go in the evening. They prepare the produce for sale to the consumers, washing or wiping if necessary, binding bunches of leaves, weighing some units in small bags, or building small heaps on the tables.

The supermarkets that sell some fruit and vegetables are a type of inefficient vegetable retailer; the produce in the state store is the least appealing seen in the market.

The Street Vendors. Street vendors exist in all the towns, more or less numerous according to the efficiency of the police, who try, from time to time, to stop their unauthorized activities. These women or children sell fruit and vegetables of inferior or poor quality in the most crowded streets and near bus stops. They sell the produce in small heaps or units, which are convenient for low income people. Their business is small, and their margins doubtful; if they make any profit it is usually small, but they earn some ngwee or kwachas from time to time. Street vendors represent more a social fact than a participation in the fruit and vegetables marketing processes.

The Traders Associations. In several markets, traders, mainly retailers, have formed groups, associations, and cooperatives for different targets, mostly for setting, organizing, and running the markets. These associations look active.

The Consumers. In the rural areas and most probably in most of the towns and villages away from the Line of Rail, the people eat vegetables according to the season, with less production and consumption in the dry season and the rainy season. During these periods, more stored and dried vegetables might be consumed. In urban areas, in the large towns, the consumption of vegetables is more regular year-round, but there are always variations in supply from the producers, and consequently, fluctuations in prices.

Consumers purchase perishable fruits and vegetables daily, because they do not have home storage equipment (refrigerators). During the period of full production, with very low prices in the market, they cannot buy additional quantities and avoid losses. The traders know that there is a limit to the practical purchase, and they know that lowering the price will not increase consumption. This situation brings back to the farmers any losses because of production in excess of demand.

Consumers need mostly certain types of vegetables for the relish (nshima) that is necessary with the main dish. Even when the prices of these

vegetables increase, they purchase them, although sometimes in smaller quantities. There is never a shift in demand from a very expensive vegetable to one that is cheaper, but less adapted to the dishes. That explains seasonal high prices for some vegetables, and the sale of any quality of vegetable, as well as the street vendors selling units or very small heaps of low quality vegetables at relatively low prices.

Others Intervening in the Marketing Process

Public Authorities. There are no special commerce regulations and laws applicable to fruit and vegetable marketing. This business is free and there is no special institution looking after it: not the Department of Internal Commerce in the Ministry of Commerce, or in the Ministry of Marketing and Co-operatives. The only supervision comes from the UNIP responsible and the Town Council Market Committee, and that takes place in the markets, not in the marketing processes.

External Aid. There is no project providing direct assistance to fruit and vegetable marketing, to the private marketers individually or in association; but the numerous projects for agricultural development and increase in production must take into consideration the demand of the new or increased production and the marketing organizations necessary.

Prices

Within the general agricultural produce price policy, the main staple crop, maize, has fixed prices and a special marketing organization. The other minor crops have fixed floor prices. The prices of fruit and vegetables are free, fluctuating according to the general law of supply and demand, altered by the quality of the produce and the way of life of the people.

Price Fluctuations

A few information and price statements show that vegetable prices have wide fluctuations from season to season, or month to month or even from day to day. In the frame of the law of supply and demand, these large fluctuations can be attributed to three main factors:

1. Irregular variabilities in the quantity and the quality of the production of the main produce demanded.
2. Frequent misunderstandings between farmers and traders with consequences on the marketing costs and the quality of the produce.
3. High rigidity of demand: consumers need some special vegetables for relish, and buy these vegetables at any price; there is no shift to a cheaper commodity. When the vegetables needed are in abundance in the market, the demand remains at the same level, because of the lack of home storage facilities, and the shortage of daily purchasing power.

Prices are often different from one market to another, and from one season to another, according to the wholesale prices, the quality of the produce, and the quantity and quality of consumer demand, which differs in different urban areas according to the consumers' purchasing power. The gross margin of the retailers also fluctuates because of the same factors, and seems usually very high. This situation is due partly to the perishability of the produce and the lack of adapted storage facilities.

Prices are fixed freely by the retailers, according to the quality of the produce and the competition; but in some markets, vigilantes or someone in authority tries to impose a fixed price, creating a mess and discouraging the traders. A fixed price may not have any effect, because the price is fixed for a unit (bunches, heaps), but the unit fluctuates according to the quality and the retailer purchasing price.

Fruit and Vegetable Price Records

Price statements and records of prices at the farm-gate level and in the retail market are usually of interest for the public authorities, and the farmers, for organizing production. They do not exist in Zambia. Some partial elements that do exist are difficult or even impossible to use because of the permanent high inflation for the last few years.

Breakdown of the Prices

Any study of the components of retail prices to estimate at least the traders' gross margins, their benefit, the other marketing costs, and the producer farm-gate prices is worthwhile for a good knowledge of the quality of the marketing processes. But proper calculations require a complete and detailed knowledge of these marketing processes and the quality of the produce concerned. At present, the marketing processes of fruit and vegetables are not well enough known to allow a comprehensive study of fruit and vegetable prices, and of the share of each participant in the final price for the consumer.

Fruit and Vegetable Processing

A special study is needed for fruit and vegetable processing, separate from the one for fresh fruit and vegetable marketing, because of special production and different marketing processes. Investments for processing plants need economic studies estimating production based on a regular supply of raw material. This regular supply is assured only by contracts with farmers, with a strict schedule for fixed quantities, at fixed periods.

The contracts between farmers and processing plants fix a price which is rarely bound by the prices of the same commodities in the fresh market. The processing of fruit and vegetables usually adds a high value to the produce (ingredients, labor, containers). The price of canned vegetables in Lusaka is three to five times the price of fresh produce; only the high

income population can afford processed fruit and vegetables, and that is only a very small part of the population, even in urban areas.

The quality demanded for processing is frequently different from the quality accepted for the fresh market (different sugar or acid or dry matter content). Processed foods do not use the same marketing processes as fresh fruit and vegetables; they are storable products, with long shelf lives (a few years), and are sold with the dry groceries.

Fruit and Vegetable Processing Business in Zambia

Several small processing plants exist in Lusaka and the Copperbelt. Two of these are described in Volume III of this report.

Demand

Figures do not exist for the demand for or the actual purchase of manufactured products. These products are very diversified: fruit, vegetables (pure or mixed with other food such as meat or fish), preserves, concentrates, juices, and jams. Consumption in the domestic market is limited by the availability of the fresh produce, and the high price of processed fruit and vegetables limits their consumption to the high income population.

Supply of Fresh Produce to the Processing Plants

Processors usually sign contracts with producers for a regular supply of the necessary special produce. Small quantities of fruit and vegetables are purchased in the fresh produce market, without impact in that market. The total processed raw fruit and vegetables could range from 2,000 to 3,000 tons a year.

The Surplus of the Fresh Market

The surplus of fruit or vegetables in the fresh market is always seasonal and difficult or impossible to anticipate. A processing plant cannot be built to use an unforeseen production. Processing is never, or only exceptionally, a means to absorb seasonal gluts of fresh fruit and vegetable production.

Sun Drying

Sun drying and other local or familial processing of fruit and vegetables for domestic consumption is used for okra, mushrooms, vegetable leaves, tomatoes, and chilies. Sun drying is one of the simplest ways to store vegetables and extend the period of consumption, especially in rural areas, where production is seasonal. This technique needs to be applied carefully in order to retain most of the nutrients.

Exports of Fruits and Vegetables

The export of fruit and vegetables needs a special study, separate from the fresh fruit and vegetable domestic market, because the export trade requires special production, special produce, and special marketing organizations. This is also true for export to the neighboring countries.

Export to Developed Countries

The export of fruit and vegetables to developed countries is limited to a few items of very high value, because of the need for air transport at very high costs, and for special packaging. Exotic fruits are exported, but most exports are fruit and vegetables that are off-season in Europe and other developed countries. They must be of high quality to compete in those markets with produce from the rest of the world.

Most of the demand concerns special produce, like green beans, sweet corn, aubergines, and courgette, for which there is little demand and consumption in the domestic market, even for the discards of the necessarily severe sorting. Production of this produce requires high technical ability.

The export of fruits and vegetables from Zambia to European countries amounts to 600 to 700 tons a year; most of it is produced by a few well-organized farmers. In the last 10 years, several studies have been carried out on this subject.

Export to Neighboring Countries

An export market exists with neighboring countries for some fruits and vegetables normally produced and consumed in Zambia, like potatoes. Good quality production and the export trade have to be carefully organized.

A successful export trade needs organized marketing channels and permanent contacts between producers and regular traders, their customers and consumers in the importing countries. For example, a trader or a group of farmers from Zambia who would like to export potatoes to Angola must keep contacts with traders in Angola and obtain information on the demand in quantity and quality, and must be sure, by contracts, that the quantity and quality demanded would be available from the Zambian farmers, at the right time, even accepting price fluctuations. Then, a special production must be assigned to this export trade, whatever the level of price in the domestic market and in the foreign country.

As a deduction from the previous paragraph it is assumed that the export trade is not a solution for seasonal surpluses in production, even if occasionally part of the domestic production is used to increase the exported quantities, in an export market that is already organized.

The export trade of fruit and vegetables with the neighboring countries is

not very important and depends very much on the fluctuating economic situations of the countries concerned. Only a few farmers-traders are involved in this business. Volume III contains complementary information.

The Fruit and Vegetable Marketing Channels

Figure 1 shows the main marketing channels for fruit and vegetables in Zambia for the domestic fresh produce market, for processing, and for export trade. The diagram of the process is unusual, compared with those of other countries where the marketing operators are more numerous, and the products grown in specific areas are needed in urban consumption areas that are closer or farther away from the production areas.

In Zambia, each zone with a concentrated urban population has its own fruit and vegetable production area and the transfer from one "region" to another is not very frequent.

Summary of the Main Problems in Marketing

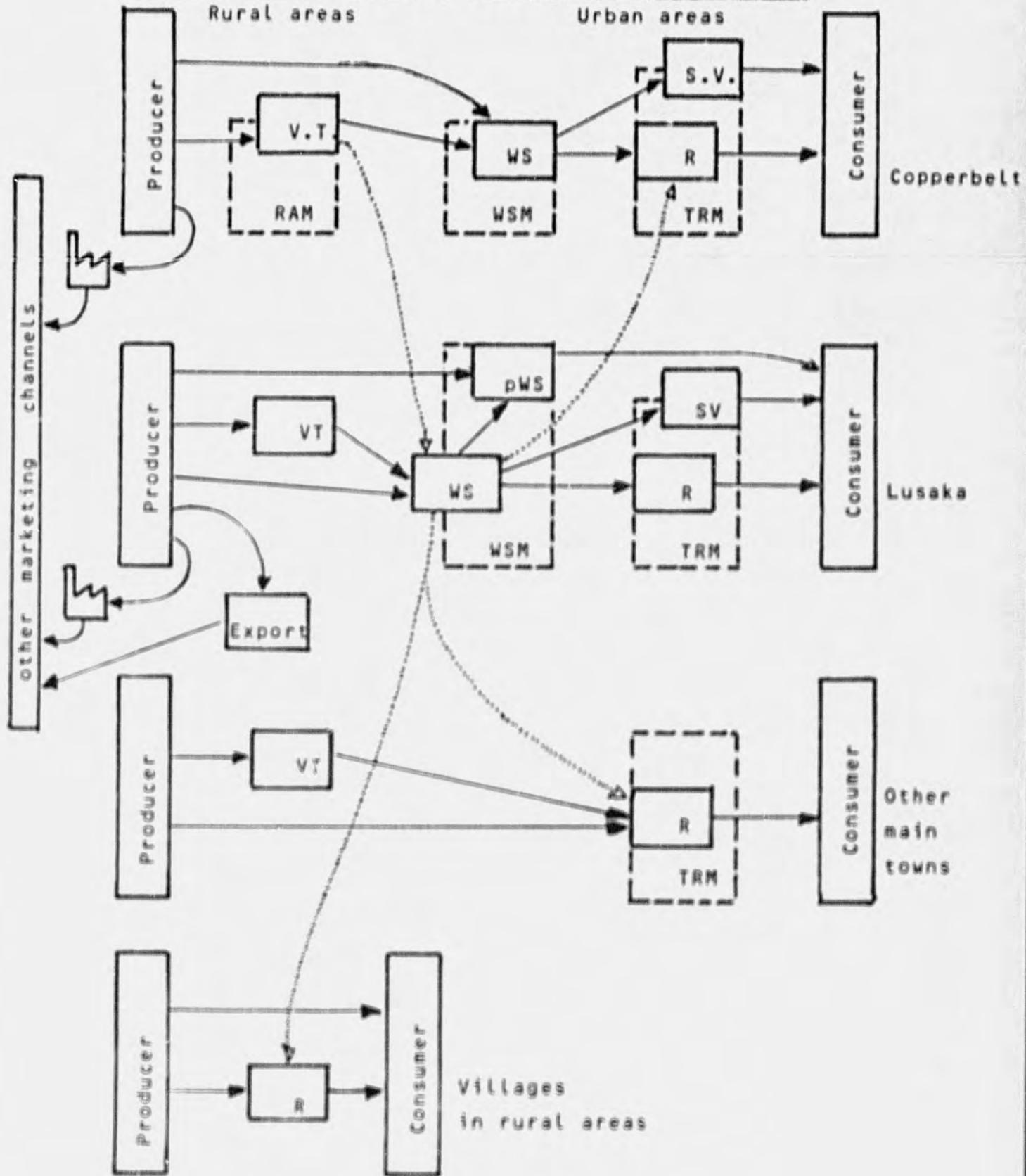
Half of the Zambian population lives in urban and industrial areas, in the Copperbelt and along the Line of Rail. Fruit and vegetable marketing concerns mainly this urban population; in rural areas, the population is more self-sufficient.

For the urban market, the vegetable producers are in or near the towns and they bring their production to the town wholesale markets. They have transport problems because of the poor conditions of the rural roads near their farms. In the bigger towns, wholesalers operate on sites called "wholesale markets" but not at all equipped for that. In the retail markets, many traders have formed associations that could be useful for implementing improvements in the marketing processes.

The consumers in towns have vegetables, with variations, all year around, but the prices fluctuate frequently and widely. The fluctuations could be reduced by providing the farmers with technical training and the necessary equipment and inputs at the right time. In rural areas, consequences of the seasonality of the vegetable production could be reduced by storage or sun drying of some produce.

Many characteristics of marketing are difficult to determine, because of the population is scattered in vegetable production areas or in towns; several studies have to be completed.

FRUITS AND VEGETABLE MARKETING CHANNELS IN ZAMBIA



III. THE RECOMMENDATIONS

In this chapter, the recommendations concern the whole of the fruit and vegetable industry, each section considering the three "businesses" together: domestic marketing of fresh fruit and vegetables, the export trade, and fruit and vegetable processing.

The False Solutions

In many studies and debates on fresh fruit and vegetable marketing, solutions that appear simple are often proposed but never implemented, because they are not practically realizable.

A Marketing Organization

The solution is to create an organization, statal or parastatal, in charge of buying the surplus or the whole of fruit and vegetable production, of storing it partly, and selling it in wholesale or retail markets to traders or directly to the consumers. Any detailed study will show that such an organization cannot work for highly perishable produce, in a country where vegetable and fruit production and marketing are free businesses.

A trial has already been made with the establishment of *Zambian Horticultural Products Limited (ZAMHORT)*, in 1978. ZAMHORT was responsible for rationalizing the marketing of fruit and vegetables and for establishing facilities for transport, storage, and processing. ZAMHORT set up some rural assembly markets to make it easy to gather farmers' production, and tried to buy produce and bring it to the markets and its stores in town.

The scheme failed for many reasons, including difficult internal organizational problems. The main reasons are bound to the characteristics of vegetable production, which is irregular in quantity and quality, seasonal, and highly perishable. ZAMHORT was never in a position to buy all the production, nor to pay the prices expected by the farmers; this resulted in a lot of waste on the part of the farmers. The farmers marketed with traders in competition with ZAMHORT. In 1981, the responsibility of vegetable marketing for smallholders in rural areas was withdrawn, and ZAMHORT now deals with fruit and vegetables only for export trade, and for running a small processing line.

It is quite likely that the experiments and failure of ZAMHORT, in particular with the unsuccessful rural assembly markets, might have pushed the

farmers of the vegetable production areas for Lusaka, Mumbwa, and Chikanda to market their production in Lusaka. ZAMHORT's failure may also be the reason farmers are reluctant to use rural assembly markets or to sell to traders in their production areas. However, some assembly markets, called village markets, are working efficiently in the Copperbelt.

Price Fixation

Chapter II explained the reasons for the impossibility, in a free market, of fixing prices for highly perishable produce. The only condition under which application of fixed prices for vegetables works is when the marketing is conducted entirely by a special organization, and that is not workable.

Use of Surplus for Processing

As explained in Chapter II, there is no economic justification in the investments for processing facilities provided for using the surplus vegetable or fruit production, surpluses which are irregular and unforeseeable.

The Recommendations in Consumption

Increased consumption of fresh and dried vegetables and fruits should be promoted. Increased consumption of vegetables and fruit will improve the population's health through better nutrition. These actions have to be organized by and with the Ministry of Health and Social Affairs, the National Food and Nutrition Commission, UNICEF, and other such organizations. An improvement of the fruit and vegetable marketing process may facilitate these actions, by providing produce more regularly and possibly cheaper.

Higher consumption of dried vegetables would help. Fruit and vegetable production is seasonal. Even though some vegetables are available year round, some are missing or in short quantity in the dry and rainy seasons, mostly in rural areas. During full production periods, surpluses of vegetables are frequently lost, not being absorbed by the market.

Rural families already dry some vegetables for their own consumption: okra, various leaves, tomatoes. Some dried vegetables are also available in the fresh vegetable market: okra (dried by the traders in the market), leaves, and mushrooms. Encouraging the preparation of dried vegetables will

- Increase the consumption of vegetables out of the production periods
- Decrease the quantity of vegetables in the market in the full production periods, the surplus going directly to sun drying

This operation demands supports for training rural housewives in the best and simplest techniques of vegetable and fruit sun drying and the preparation of dried products before consumption.

The Recommendations for Production

Any variation in vegetable production, in quantity and in quality, creates fluctuations in prices for the producers and for the consumers, and makes a smooth marketing process difficult. Any action aiming to regularize the production in quantity and quality, and to adapt it to the demand, which is stable and constant year round, contributes to an improvement of the marketing process.

Supply of Inputs

In many vegetable production areas, the farmers are not regularly supplied with the necessary inputs, vegetable seeds, fertilizers, and pesticides. These inputs are often packed in inconvenient amounts; too large units, for example. This situation affects mostly the small farmers, who cannot afford the price of big packages of products, seed or pesticides when they need only a small quantity. Sometimes, in some production areas, these inputs are not available at the right time.

A regular and constant supply of the necessary inputs to the vegetable farmers in the production areas should be organized with private traders and cooperative societies. Imports of vegetable seeds should be organized as a complement of local production.

Decentralized workshops for the manufacturing of packets of the necessary inputs, adapted to the needs and the demand of the vegetable producers, should be studied and organized with private firms, cooperative societies, and state organizations like ZAMSEED.

Extension of the Production Periods

Fruit and vegetables abound in certain periods, with even surpluses over the consumer demand, and there are shortages in other times, mainly in the dry season and in the hot and rainy season. That frequently leads to unbalanced supply to the consumer demand and big price fluctuations. Many different actions are necessary to help the small and middle-sized farmers regulate their production and market this production during longer periods of time.

Adapted Varieties

Vegetable varieties well adapted to the climate should be experimented with and put at farmers' disposal for better production during the dry season and the rainy season.

African Vegetables

Most African vegetables -- okra, amaranthus, sweet potato -- stand the climate during certain periods of the year more easily than European types, and produce during a much longer period. Experiments should be conducted to improve the varieties of the African vegetables.

The production and consumption of African vegetables should be encouraged. This recommendation might be more easily implemented in rural areas, but has to be applied also for urban population consumption.

Equipment

Most of the small vegetable producers and some middle-sized farmers are not equipped with irrigation devices that would allow them to produce vegetables for a longer time during the dry season. During the hot and rainy season, the weather is very favorable for various pests. Many farmers do not know the right techniques of disease control, and are not equipped with the necessary sprayers; in these conditions, they prefer not to grow vegetables during this season.

The ZAMS project should support the farmers' supply of the necessary equipment for irrigation and for spraying, linked with technical training.

The Quality of Production

The vegetables and fruit marketed by the producer are not always of a high enough quality at the beginning of the marketing process to stand up to the marketing channels and arrive in good condition to the consumer. The damages might happen because of farmers' inadequate knowledge of the right cultural techniques, bad harvesting conditions, and poor packing.

Technical training on the following topics for the farmers should be organized:

- Horticultural techniques
- Harvesting operations
- Packaging
- Marketing

Production Costs

Studies should be carried out on the production costs of the main fruit and vegetables.

Fruit Tree Plantations

The planting of fruit trees in orchards and around the farmers' houses should be encouraged. Citrus (mostly oranges), avocado pears, and grafted mangoes, which have extended harvest periods, are recommended.

The Recommendations for Marketing

Infrastructure and the Means

Roads

Any improvement in the roads brings improvements in the marketing processes. Improvements in the rural roads have to be linked with a new organization of the physical markets in the villages (rural assembly markets) and the larger towns (production and wholesale urban markets).

Repair and maintenance of the rural roads should be studied, with precise evaluations of the physical markets, and possibly a new marketing organization of farmers and traders.

Transport Means

Studies should be completed on the use of trucks and pick-ups for the transport of fruit and vegetables from the farms to the nearest markets. The findings are to be linked with the study of repairing and maintaining rural roads.

Packaging

Packages are necessary to transport fruit and vegetables from the farms to the consumers. They are also an important means of maintaining the quality of the produce.

Physical Markets

Several markets need improvements; in some production areas and in some townships or urban compounds, new markets should be legalized or created. Each case requires a particular study of the market itself, its environment, and the possible consequences on the marketing processes. In the following paragraphs, the proposed situations are given as examples.

Rural Assembly Market. Some rural assembly markets exist in the Copperbelt as village markets. For the Lusaka area, rural assembly markets might be worthwhile in the Mumbwa-Chikanda production area. A detailed study should be carried out of the existing village markets in the Copperbelt Region, and the possibility of similar markets in other production areas, relatively distant from the consumption zones.

Wholesale Markets. In all the large towns with several fruit and vegetable retail markets, a wholesale market is necessary; some wholesale

markets are already operating in Lusaka and some other towns, but on sites without facilities. When the producers are located near the consumers, the wholesale markets where traders sell to the retailers are also markets for producers. The design and the management of such markets must be well reasoned for them to be flexible and efficient. A study should be carried out of the adapted wholesale market, for the special Zambian fruit and vegetable marketing processes, and to design the wholesale market for Lusaka.

Retail Markets. It is recommended to standardize the situation of the fruit and vegetable retail markets, and to simplify the design, building, and running of new markets everywhere it is necessary.

Storage for Domestic Marketing

The marketing processes and the permanent vegetable production, in spite of the seasonality of some produce, make the use of cold storage questionable, except for some heavy vegetables (potato, onion), that may have cheaper long-term storage. For these commodities, even though new cultural techniques would provide longer production periods, it is necessary to develop storage possibilities for a smooth supply to the market. Studies should be carried out on rural methods of potato and onion storage and how to apply these methods.

Fruit and Vegetable Storage for Export

The export of high quality fruit and vegetables by air to developed countries needs a continuous cold chain. Facilities for cold storage are lacking in Lusaka Airport. The necessary cold storage facilities should be designed and built at Lusaka Airport, to facilitate development of fruit and vegetable exports.

Marketing Agents

Producers

Vegetable producers are scattered in the rural zones and even partly in the urban areas, making the actions of the Extension Services difficult and inefficient. A voluntary grouping of the farmers might facilitate the contact with extension workers, and a more rapid spreading of improved horticultural techniques and marketing methods.

The organization of the vegetable and fruit producers in Farmers Technical Associations, at the small area and village level, should be encouraged. These self-formed FTA are only for technical studies and debates; they do not involve farmers' funds, inputs, and outputs. From their FTA, farmers will receive marketing information and training on the following:

- Horticultural production techniques
- Harvesting
- Packaging

- Marketing, and organization of small groups of farmers with the goal of consolidating their production for common marketing

Traders

Farmers and Wholesalers. Vegetable farmers are not far from the town markets, but they spend much time transporting and marketing their produce. A new organization with rural assembly markets, where necessary, and a different type of wholesale market could change the work of farmers and of traders. The place and the duties to be performed by the farmers and by the traders in a new organization should be studied as the first step in the fruit and vegetable marketing process.

Retailers and Their Associations. Retailers, in the frame of their associations, should be helped to organize their purchases from the wholesalers better. They should also receive technical training on various items, for example

- Fruit and vegetable handling and preparation for sale
- Simple methods for reducing losses
- Small business and association management
- Accounting

Produce

Quality

Good produce for the consumer depends on good agricultural techniques, and then, in the marketing process, on methods of harvesting and packing by the farmers, with correct packages, transport, and transfer through traders to the consumers. Training in harvesting and packing should be provided for the farmers, and marketing techniques for traders.

High Quality

In the present state of fruit and vegetable marketing, it is not reasonable to implement produce standardization, which implies at least

- Sorting according to strict regulations and standards, increasing the costs
- A quality control brigade for checking any application of regulations

That is not feasible. But several farmers bring into the market produce of better than average quality, and this produce obtains a higher price. That has to be encouraged, as a first real step to improving quality. Working with

farmers and traders associations, a method should be sought to encourage production and marketing of produce of higher quality.

Packages and Packing

An improvement of the packages and their use contributes to the general improvement of the fruit and vegetable marketing process, and to the reduction of losses. The two packages most used are wooden crates for tomatoes, and bags for other crops.

The bags are of different sizes and qualities, because they are old bags for fertilizer, mealie meal, and grains. They are very cheap and it is not reasonable to try to change them; but with the Farmers and Traders Associations, it could be possible to fix rules for their use, such as a fixed quantity in a bag for a certain vegetable or a maximum weight of 25 kg for heavy vegetables or fruits.

A new type of wooden crate for fragile fruit and vegetables should be developed, and funds and the necessary equipment should be provided for small workshops. Tomatoes are packed in wooden crates by farmers. The sizes of the crates are fine, but the shape and the manufacturing must be changed. The vertical pieces must remain strong enough, but all other boards must be thinner and wider with very small space between them, to avoid injuring the tomatoes. The external dimensions have to be standardized to make it easier to pile them during the marketing process. The average size of the present crates may be maintained, or it might be better to decide on a new size, which could be one of the OECD (6) standardized packages. The best size is the box with basic dimensions of 50 x 30 x 26 centimeters high. This box may be easily manufactured by carpenters supplied with adequate boards by small saw mills (using bush trees).

The quantity of the crates seems insufficient. Retailers have to change the packing in the wholesale market, before going back to their markets. It could be useful to have more boxes, owned by farmers and traders. Some way to provide funds to farmers and traders should be found, in order to increase the number of the wooden crates utilized in the market.

The Recommendations for Prices

The levels of comparative prices and traders' gross margins indicate the quality of the marketing processes. Any information and record on the prices is very useful.

The collection of fruit and vegetable prices should be organized at two levels, the farm-gate prices or the first sale by farmers to any trader (mostly wholesalers), and the retailer-consumer prices. Any information on the traders' costs, charges, and margins should be recorded to be used with other figures to measure improvements in the marketing processes.

External Interventions

It is recommended to study, with the Town Councils and other ruling authorities, how to standardize the situation of all the markets in the towns and to facilitate the settlement of new markets adapted to the traders and to the consumers.

A Coordination Bureau for Fruit and Vegetable Marketing

An improvement in the fruit and vegetable marketing process requires many different actions which may be realized by several existing services and institutions. Coordination of these actions is necessary to improve participants' efficiency.

A Fruit and Vegetable Marketing Coordination Bureau (FVMCB) should be created, with the following main tasks:

- To collect and utilize information about fruit and vegetable consumption, production, and marketing
- To coordinate any action in these fields with interested services and organizations
- To orient Agriculture Extension Services and other training institutions for farmers and traders

The responsibilities of the FVMCB will include at least the following:

- Consumption and nutrition: orient campaigns according to production and marketing seasonal availabilities.
- Production: organize with the services concerned and with public and private dealers, a regular supply of agricultural equipment and inputs and technical training; encourage farmers' actions in their Technical Associations; assess the responses to training.
- Marketing: organize training of concerned farmers and traders for harvesting and packing the produce; conduct studies on storage, packages, and market organizations; check and collect prices; and carry out any other studies and assess results of the fruit and vegetable marketing process as a whole.

IV. CONCLUSIONS AND SUMMARY OF RECOMMENDATIONS

Fruit and vegetable marketing is difficult to investigate and to understand. Improvements and changes are necessary, but must be implemented carefully, to avoid disturbing the marketing process more than necessary. The marketing process in use may not work correctly, but at least it works.

The last recommended action for the ZAMS Project is to implement a Coordination Bureau. Its main task is to coordinate studies and actions by several services or organizations within the same project for a smooth improvement of fruit and vegetable marketing in Zambia as a whole.

Consumption

1. Increased consumption of fruit and vegetables, fresh and dried, should be encouraged.

Production

2. A regular and constant supply of the necessary inputs to vegetable farmers in the production areas should be organized, in cooperation with private traders and cooperative societies.
3. Decentralized workshops should be evaluated and organized with private firms and cooperative societies and state organizations like ZAMSEED, to make packets of the necessary inputs, adapted to the needs and the demand of the vegetable producers.
4. Varieties of vegetables that are well adapted to the climate should be experimented with and put at farmers' disposal, for better production during the dry season and the rainy season.
5. The production and the consumption of African vegetables should be encouraged. Experiments should be made to improve the varieties of the African vegetables.

6. Farmers should be supported with supplies of the equipment necessary for irrigation and for spraying, linked with technical training.
7. Technical training for the farmers should be organized, in the following techniques: horticulture, harvesting, packaging, and marketing.
8. Studies should be carried out of the production costs of the main fruits and vegetables.
9. The planting of fruit trees should be encouraged.

Marketing

10. Repair and maintenance of the rural roads should be studied, with precise studies of the physical markets, possible new organizations, and the marketing processes, with farmers and traders.
11. The studies on the use of trucks, pick-ups, and oxcarts for the transport of fruit and vegetables from the farm to the nearest market should be completed.
12. A detailed study should be carried out on the existing village markets in the Copperbelt region, and the possibility of similar markets in other production areas, relatively distant from the consumption zones.
13. A study should be carried out for an appropriate wholesale market, for the special Zambian fruit and vegetable marketing processes, and to design the wholesale market for Lusaka.
14. The situation of the fruit and vegetable retail markets should be standardized, and the design, building, and running of new markets made simpler everywhere it is necessary.
15. A study should be carried out of the rural methods of potato and onion storage, and of how, eventually, to spread these methods out.
16. The necessary cold storage facilities at the Lusaka Airport should be designed and built, in order to facilitate development of fruit and vegetable exports.
17. The organization of vegetable and fruit producers in Farmers Technical Associations, at the small area and village level, should be encouraged.

18. The duties to be performed by the farmers and by the traders in a new organization as the first step in the fruit and vegetable marketing process should be determined.
19. A method to encourage production and marketing of produce of higher quality should be researched with farmers and traders associations.
20. A new type of wooden crate for fragile fruit and vegetables should be developed, and funds and necessary equipment provided for small workshops. A way should be found to provide funds to farmers and traders, in order to increase the number of wooden crates used in the market.
21. The collection of fruit and vegetable prices should be organized at two levels, the first sale by the farmer and the retailer-consumer price. Information on traders' gross margins should be recorded, to be used with other figures to measure improvements in the marketing processes.
22. Working with the town councils and other ruling authorities, a way should be found to regularize the situation of all the markets in the towns and to facilitate the development of new markets adapted to the traders and to the consumers.
23. The Fruit and Vegetable Marketing Coordination Bureau should be created.

**VOLUME II. MARKET PROSPECTS FOR CASSAVA, MILLET, AND SORGHUM
IN ZAMBIA**

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Introduction

ZAMS, the Zambia Agricultural Marketing Support project, identifies cassava, millet, and sorghum (referred to as CMS) as three minor field crops with favorable prospects in the Zambian agricultural sector, which the project could help in promoting. One of the principal reasons for having selected these crops for special consideration was that, so far, the state marketing agencies that pervade the rest of the agricultural sector have shied away from these crops. Thus, it was thought that the lack of government involvement in these crops could open favorable prospects for ZAMS to encourage their production and consumption.

Minor Field Crops

CMS are truly minor field crops from the perspective of the national agricultural economy. Although in some regions each of these crops can be of some importance in both production and the diet, their overall value is dwarfed by maize.

Preliminary crop forecast figures for the 1987/88 season anticipate a total area planted in maize of 780,000 hectares in the whole of Zambia. In contrast, the anticipated area for sorghum is only 42,000 hectares. For millet the area is even smaller, 36,000 hectares; and for cassava a bit larger, 56,000 hectares. The three CMS crops together only add up to 133,000 hectares, or barely one-sixth of the area planted in maize.

In terms of production, the relation between CMS crops and maize is even more striking. Total national production for maize for the 1987/88 crop is anticipated at 15.5 million bags of 90 kg each. The corresponding production estimates for cassava, sorghum, and millet are, respectively, 0.62, 0.26, and 0.29 million bags. Measured in bags, the combined output of the three CMS crops reaches only 8 percent of the maize output.

The reason for the reduced relative importance in terms of production is that maize has on average much higher yields per hectare than sorghum and millet, and even cassava. The national average yield for maize, according to the Ministry of Agriculture's forecasts, is close to 20 bags per hectare. Forecasts for sorghum average 6 bags; for millet, 8 bags; and for cassava, 11.3 bags per hectare.

Subsistence Crops

For the purposes of the ZAMS project, it is interesting to ask how important cassava, sorghum, and millet are in the rest of the economy (i.e., what proportion of output is sold by producers for use either in consumption, processing, or exports).

It comes as no surprise that these crops are basically subsistence crops that are consumed mainly within the producing household, and when sold, are traded mainly within the village or zone of production. Very little is traded outside the immediate region of production. By contrast, maize has become the cash crop for both the commercial and the traditional sectors.

The Ministry of Agriculture expects the sales of maize for 1987/88 to reach 11,200,000 bags, or 73 percent of the overall production. The weather has been fairly favorable for this crop year, and farmers are expected to sell a higher proportion of their output than last year, when yields were low because of severely low rainfall. Sales of sorghum are also anticipated to increase substantially to 24,000 bags, representing 9 percent of total sorghum production, but only about one-fifth of one percent of maize sales in the market. For every kilogram of maize in the market there are 2 grams of sorghum.

The relative marketing of millet and cassava is even weaker than that for sorghum. Only 5,140 bags are expected to be sold by millet producers in the 1987/88 crop year, or one-fifth of one percent of the total production (18 grams of every kilogram produced). For cassava, 11,678 bags are expected to be sold out of the 626,000 produced (about 19 grams sold per kilogram produced).

Traditional Sector Crops

The high level of household retention of the output of the CMS crops for internal consumption indicates that these crops are mainly grown by traditional farmers, those who are less incorporated into the market economy and use low-input production technology. But even traditional farmers have a need to generate money income to purchase many other necessities from outside the village, such as sugar, matches, candles, and tea. Therefore, one must wonder to what extent cassava, sorghum, and millet are sold by traditional farmers to generate such cash income.

Unpublished data from another agency of the Zambian government throws some light on this question. The value of farm products in the traditional sector was averaged for the period 1982-85 (three crop years), and disaggregated by crop. The government found that maize generates the most cash income even for traditional farmers. Maize represents 60 percent of the total value of traditional agricultural production, valued at the average prices farmers received in the market. The second most valuable crop, in terms of production, was cassava, which generated 11 percent of the total value. Millet and groundnuts contributed 7 percent each. Sorghum only contributed 2.6

percent of total value, slightly less than beans (3 percent), and cotton (4 percent).

These figures refer only to the traditional sector; they exclude the commercial sector, where the importance of cassava, sorghum, and millet is even less. Even in the traditional sector, maize is the most marketable crop: 55 percent of maize was sold, compared with only 9 percent of cassava, 8 percent of millet, and 4 percent of sorghum (96 percent of sorghum is retained on the farm).

Maize constitutes the principal cash crop, even among the so-called traditional farmers. Cassava and millet also make significant, though minor contributions. Sorghum, however, even among traditional farmers, is practically all consumed internally; only a minuscule portion is sold.

Declining Trend in Production

The current forecast for sorghum area planted and production is substantially lower than last year's. Last year's was also lower than the previous year. In the 1985-86 season, the Ministry of Agriculture estimated that 56,000 hectares were planted in sorghum, followed by 47,000 hectares in the 1986-87 crop year; and forecasted 42,000 hectares for the 1987-88 season. In terms of production, the coming harvest is estimated at 255,000 bags, compared with 291,000 the previous harvest, and 500,000 in the 1985-86 crop year. The 1985-86 year had the highest area planted in sorghum in several years, but it is still far lower than the 89,000 hectares planted in 1979/80. The definite trend in the last few years has been one of fewer hectares planted to sorghum and lower yields per hectare.

Data on millet and cassava are less reliable and less available than that for sorghum. This year is the first one for which there is an estimate of area, production, and sales for cassava, so little can be said about possible trends. We surmise however, that a downward trend has persisted for several years, based partly on evidence of reduced consumption, but also on the decimation of cassava production from the spread of the mealy bug. It is not known whether efforts at biological control of the mealy bug have been sufficiently successful to anticipate a renewed growth in cassava production. At any rate, the recovery will probably be slow, since cassava is reproduced vegetatively.

Trends in millet production are rather difficult to detect on the basis of recent figures from the Ministry of Agriculture. Area planted in 1986-87 seems to have more than doubled to 44,000 hectares from about 20,000 on average for the previous three years. Production also increased almost three-fold according to the same figures, but sales in fact declined by 50 percent in 1986-87 with respect to 1985-86. The forecast for 1987-88 is equally perplexing; although area planted is lower by 18 percent than in 1986-87, and while production is expected to drop by 14 percent, total sales are expected to increase by 135 percent to 5,000 bags.

It is risky, on the basis of official figures available, to make pronouncements about possible past trends in area, production, and sales of cassava, millet, and sorghum. It is even riskier to predict how these variables are likely to evolve in the future; however, we are left with the definite impression that production of these three crops has suffered a persistent decline in the past decade. Drought in the 1986-87 crop year might have shocked the authorities and traditional farmers into increasing plantings of sorghum and millet instead of maize, but empirical evidence of this effect remains to be seen.

Diminishing Consumption

The relatively low importance of cassava, millet, and sorghum in farm production reflects a corresponding decline of these products in the regional diets of the population.

It is not possible to provide empirical evidence of the changing pattern of consumption in Zambia during the last few years. The last National Food Consumption Survey was carried out in 1969-72 with the participation of the Food and Agricultural Organization. The rural household survey conducted by the Ministry of Agriculture in the early 1980s has not yet been processed, but some results are expected in the coming years.

However, there is ample anecdotal evidence that food consumption patterns have changed drastically over the last decade or two. Older adults can recall that their diets when growing up were far more dependent on traditional staples like cassava, sorghum, and millet, depending on their region of origin. The dominance of maize is a relatively recent phenomenon of the last two decades. Maize substitution has now become almost complete, pervading diets even in the Northern and Southern provinces, which were formerly accustomed solely to cassava or sorghum. Perhaps most poignant is the complete substitution of maize for sorghum in the manufacture of the traditional and popular opaque beer, Chibuku, in urban areas. Until recently, only red sorghum was, and still is in many rural areas, considered suitable to make Chibuku beer.

In urban areas, the disappearance of cassava and sorghum from the diet is a reality. Despite numerous inquiries, the authors were not able to obtain cassava flour or sorghum, or any information on where to find them, in the central Lusaka area. Other colleagues report having found it in the supermarket or the public market sometime in the recent past. Those who report finding cassava flour remember paying extraordinarily high prices, about 10 Kwacha per kilo.

There seems to be some unanimity about the merits of blending a small portion of cassava flour with the maize meal to make nshima. The cassava flour reportedly improves both the flavor and the consistency of the traditional dish. The main reasons for not using cassava flour more often are the lack of availability and its high price compared with mealie meal.

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Consumption of cassava in the Copperbelt area is equally rare, even though that area used to produce cassava in large quantities. Now, the most common form of cassava consumption is as a green vegetable; the leaves are used in preparing relish for the nshima. Cassava consumption still represents a major share of the regional diets only Luapula and the Northwest provinces. In rural areas of the Southern Province, sorghum is still the preferred staple grain.

Expensive "Inferior Goods"

The usual explanation given for the decline in consumption of cassava, millet, and sorghum in the urban Zambian diet is that these staples are inferior foods; therefore, their consumption diminishes as consumer income rises. European and American tastebuds undoubtedly have a low preference for cassava and coarser grains, but they don't eat maize either. It is likely that as their incomes increase, the food preferences of Zambians might follow a similar ranking.

However, the mere preference of maize over sorghum or cassava is not sufficient to assume the latter are inferior foods. Nutritionally, they are roughly equivalent in terms of caloric content. More paradoxically, income per capita in Zambia cannot be said to have increased much in the past two decades, while the shift to maize has been taking place.

Finally, consumption per capita of an inferior food declines even though the cost of the food is low relative to the alternative substitutes. The situation in Zambia is the reverse. The costs to consumers reported for sorghum, cassava, and millet are far higher than for maize. Finger millet, for example, can be purchased at ZCBC in Lusaka at 6 K per kilo, while the cost of mealie meal is only 80 Ngwe, that is, finger millet costs seven times as much as corn already ground. Similarly, cassava is reportedly available at more than 10 K per kilo, or 12 times the cost of mealie meal.

The high prices of cassava, sorghum, and millet in the urban markets, together with the decline in urban per capita income levels in the last decade, cast doubts on the validity of labeling them as inferior foods. More likely, their reduced consumption in favor of maize can be explained better as the logical result of the lower prices for maize during the period. In this case, their drop in consumption is consistent with the behavior of consumers toward any normal food.

Success in Maize and CMS

In contrast to the rather depressing performance observed in the CMS crops, maize production has made steady inroads in the past few years. In the five years from 1982/83 to 1987/88, area planted in maize has increased by 56 percent, production has grown proportionately, and market sales have nearly doubled from 6.3 million to 11.2 million bags. Such spectacular gains in maize production are well known and have been analyzed. The Government of Zambia, and the Ministry of Agriculture and Water Development in particular,

can claim much credit for a successful campaign to increase maize production to become self-sufficient in that cereal.

The question that arises is to what extent has the increase in maize production caused a concurrent decline in other crops.

The competitiveness of cassava, millet, and sorghum relative to maize has been affected by many government policies and actions to achieve maize self-sufficiency. These policies have affected the relative position of CMS crops at the producer, consumer, and trader levels.

Subsidies on Maize Production

Producers of maize benefit from several incentives that are not offered to producers of cassava, sorghum, and millet. Credit, for example, is generously provided to maize producers, with the harvest accepted as collateral. This is facilitated by the Cooperative Union, which, as the sole purchaser of maize, can guarantee the repayment of the loan. Moreover, farmers' credit is highly subsidized, since the rate charged is only 18 percent, while the inflation rate is nearly three times as much. This generosity is not available to producers of any of the CMS crops.

The provision of credit is accompanied by access to many purchased farm inputs, from fertilizers to ox-drawn equipment. Fertilizer is also highly subsidized by the Zambian government, which means that farmers producing maize benefit from the subsidy, while those producing cassava, sorghum, or millet do not, since none of these crops receive any inorganic fertilizer.

Furthermore, fuel and machinery are also available at prices well below real cost, because they are priced at the official exchange rate of the Kwacha. This rate is overvalued by a factor of 200 to 300 percent. Hence, maize producers using machinery and fuel are actually paying one-half or one-third of their real costs. In contrast, sorghum, cassava, and millet producers are not able to take advantage of these hidden subsidies, because they do not use any of this mechanized equipment.

Crop budgets for large-scale maize farmers estimate that up to 70 percent of their costs are imported inputs. This means that for two-thirds of their inputs they are paying one-third of the real costs. If the Kwacha were not overvalued, production costs for these farmers would jump by 133 percent over the current levels, not including the actual subsidies on fertilizer, seeds, credit, and so forth. Producers of cassava, sorghum, and millet who use imported inputs will also see their costs increase, but since their use of these inputs is minimal, the impact will be much less than for maize producers.

Subsidies on Maize Marketing

Another major advantage that maize producers have over producers of CMS crops is a guaranteed market at a guaranteed price, right next to their farms. Farmers harvesting maize are provided grain sacks by the cooperatives, and all they have to do is deliver the full sacks of shelled grain to the nearest collection depot, normally a short distance from the farm. The

provincial Cooperative Union takes care of storing and transporting the maize from these collection points to the central provincial depots. The farmer receives 80 Kwacha per bag of 90 kilos, with no discount for the subsequent transport. In the Eastern Province, the Cooperative Union estimates that it spends 35 Kwacha per bag to get it from the farmer to the central depots. This cost is reimbursed by the central Zambian government. Farmers producing sorghum, cassava, and millet are not offered these facilities, and until now, the cooperatives have not handled these commodities.

Until a few weeks ago, NAMBoard received the maize bags from the Cooperative Unions and in turn delivered them to millers, brewers, and other processors of maize. In the process, NAMBoard took care of transporting the maize bags all over the country, from surplus areas to deficit areas. NAMBoard also paid for the storage costs, losses, and financial costs of maintaining the entire national maize stock. All expenses incurred by NAMBoard are absorbed by the national government, allowing it to sell a bag of maize to millers at the same price that the farmer received for the grain, namely 80 Kwacha per 90 kilos.

Needless to say, neither the transport nor the storage of cassava, sorghum, or millet receives similar treatment from government agencies. Traders interested in buying and selling sorghum, for example, would have to go to rural areas to procure it themselves, and pay for all the transport and storage involved. As a result, producers would necessarily receive a lower price, and users would receive a higher price. In maize, the government takes care of all that at no charge.

Subsidies on Maize Consumption

Government generosity towards maize does not stop at the miller's door. All mills are now nationalized, but even when they were privately operated, the government paid millers a substantial subsidy for every bag of maize processed, depending on whether they produced roller meal or breakfast meal. This is still the case.

Much of the distribution of maize to urban consumers is done through the network of state-run supermarkets and shops, at prices fixed by the state. Since it is likely that these state shops operate at a loss, the government contributes a hidden subsidy to the consumption of maize.

Neither millers nor the state-run stores distribute any cassava or sorghum to consumers; therefore, consumers of these commodities do not benefit from the generosity that the government proffers to maize consumers. Some small amounts of finger millet have been sold at ZCBC and other state shops; however, most of the millet reportedly will be used for home beer making, or to blend with mealie meal to improve its flavor.

The conclusion is that maize production, trade, and consumption have been so favored by government pricing and subsidy policies that any crop that can be substituted for by maize cannot remain competitive for long. The observed disappearance of cassava, sorghum, and millet consumption in urban areas, and to a lesser extent in rural areas, could be directly attributed to

these policies. As long as these pricing and subsidy policies persist, the outlook for cassava, millet, and sorghum will remain bleak.

Remote Region Refuges

Consumption of CMS crops has remained an important part of the local diet only in those areas of Zambia so remote that they are relatively unaffected by the maize policies of the central government. More precisely, the government takes primary responsibility for providing cheap mealie meal to urban consumers, but not to rural dwellers. Zambians who reside far from major cities or towns do not have access to the cheap maize available to their urban cousins; therefore, they are forced to provide their own staples.

Whenever a farmer is able to acquire subsidized mealie meal on a regular basis, it will quickly become the basic staple for the family diet; therefore, it is not surprising that farmers along the main tarmac roads have adopted maize as the basic staple. These farmers find it advantageous to sell their maize production to the government and then buy back their own family needs at subsidized prices.

Even farmers in faraway areas without access to subsidized mealie meal might find it advantageous to switch their production to maize, and to take advantage of the production and marketing subsidies available to maize producers. The higher yields obtained for maize under normal rainfall conditions will induce these families to switch to maize consumption. In those cases, they find it necessary to mill the maize themselves or in hammermills owned by someone else in their communities. These families often produce and sell hybrid maize to the cooperative, but use local varieties for themselves, because they prefer its taste, and it is easier to process at home.

In areas with climate unfavorable for maize, such as the low-rainfall areas of the Southern, Western, and North-Western Provinces, sorghum and millet become viable competitors to maize because of their high drought resistance. Most of the sorghum acreage is concentrated in those provinces. Of the 42,000 hectares of sorghum in the 1987-88 season, 11,000 are in the Southern province, 7,000 in the Western province, and 6,000 in Northwest. The Central province has an appreciable production of sorghum, almost 8,000 hectares.

Only the Southern Province is expected to market a substantial amount of sorghum to the outside. The entire marketed output expected for 1987/88 only reaches 24,000 bags of 90 kg each, of which 19,000 are expected to originate in the Southern Province. In the other regions, sorghum production will remain mainly within the producing household, or be traded within the immediate community.

One of the principal uses of sorghum in the production areas is the manufacture of local beer. Sorghum is also used in nshima, either by itself or mixed with mealie meal, but for making local beer, red sorghum is the preferred grain, because it tastes better than maize beer. Finger millet is also a substitute for beer brewing. Beer brewing is permitted only in rural areas

by the authorities. In any urban concentration, the government has a state monopoly on the manufacture of beer, either the bottled kind, or more commonly, the opaque beer known as Chibuku beer.

Millet is used in a manner similar to that of sorghum: white bulrush millet is used mainly for nshima, while the reddish finger millet is used mainly for beer brewing, but the two uses are common for both types of millet. Distribution of millet production overlaps with sorghum to some extent, but the largest acreage of millet is found in the Northern Province with 10,000 hectares, followed by Luapula and Western Provinces with 8,000 hectares each. The Southern and Eastern Provinces are also important millet producers with 5,000 and 4,000 hectares. Eighty percent of all market sales of millet are contributed by Luapula and Western Provinces (4,000 out of a total market of 5,000 bags), a truly small amount equivalent to nearly 500 tons. As in the case of sorghum, most millet produced remains within the household, or is traded within the immediate vicinity.

Cassava production and trade are even more concentrated regionally than sorghum and millet. Production is concentrated in Luapula, perhaps the most remote of all provinces with regard to the urban markets of Lusaka and the Copperbelt. Of the national area planted in cassava (56,000 hectares), Luapula contains 19,000. Following in importance of area are the Northwestern Province (15,000 hectares), the Western Province (13,000 hectares), and the Northern Province (9,000 hectares). Nevertheless, cassava sales originate almost exclusively from the Western Province. Production in other regions is mainly for home or local consumption. Luapula does provide a small significant volume of cassava chip exports to Zaire. This trade is probably illegal, however, so there are no official data to assess its importance.

In conclusion, production of cassava, sorghum, and millet is heavily concentrated in the provinces most distant from the centers of commercial activity along the line of rail between Lusaka and the Copperbelt. These provinces are Luapula, Northern, Northwestern, Western, and Southern. High transport costs, as well as climate unfavorable for maize production, have helped these crops survive the competition with maize. Nevertheless, maize constitutes the principal cash crop even in those provinces where CMS are important. With the exception of cassava in Luapula, the area planted in any of these CMS crops is overshadowed by the area planted in maize.

Summary

The prospects for promoting cassava, millet, and sorghum consumption and production through improvements in the marketing system are discouraging at present. Although these crops have been spared direct government intervention, they suffer the indirect consequences of official aide to maize production, marketing, and consumption. There are several reasons why it does not seem advisable for A.I.D. to concentrate much effort on promoting the marketing of these three field crops identified in the project identification paper. Some of these reasons are

- These are minor crops within the context of the national economy.
- These are minor crops within the economy of traditional rural households.
- These are minor crops within the market economy.
- These crops are declining in importance in production as well as consumption in both urban and rural areas.
- CMS crops are declining over time in production and marketing.
- Given the current price structure, these crops do not seem competitive with the other crops. In particular, CMS crops seem to be fighting a losing battle against the onslaught of maize.
- Other crops seem more promising than these three in terms of potential markets, both domestically and for export to other countries.
- Production of CMS crops is limited to remote areas, far from the urban centers that constitute the principal prospective markets, and with high transport costs from other markets.
- These are crops grown by traditional farmers; they have been shunned by commercial farmers for both cultural and economic reasons.
- There is very little that AID, or for that matter the government, can do to affect the profitability of these crops significantly, since production is so dispersed in remote areas.
- There is a limited repertoire of intervention that can be used to promote these crops; varieties are limited, uses are limited, and each has a particular set of inconveniences that must be addressed before it can become a common product.
- These are crops that the Cooperative Unions do not want; however, the Cooperative Unions handle the bulk of the marketing of farm products, removing the incentive for potential traders to become involved in the three CMS crops.

Table 1 1987-88 PRELIMINARY PEFC CROP FORECAST, WITH 5 YEAR PERFORMANCE (PART 1 OF 2)

		MAIZE					SUNFLOWER						
		Area (ha)	% change	Prod. (bags)	% change	Sales (bags)	% change	Area (ha)	% change	Prod. (bags)	% change	Sales (bags)	% change
ZAMBIA	83-84	586500	n.a.	9686200	n.a.	6267637	n.a.	57700	n.a.	888167	n.a.	888585	n.a.
	84-85	581846	14.88	12478578	28.75	7869637	12.88	62788	8.53	848474	-1.36	589918	-26.93
	85-86	588498	1.14	13673265	9.64	10687414	58.84	57288	-8.78	611533	-27.93	537199	5.35
	86-87	689529	3.58	11816894	-13.58	7296844	-31.22	31688	-44.76	348818	-44.48	139362	-74.86
	87-88	779619	27.91	15383978	38.28	11187381	53.33	39853	26.12	248871	-27.69	245366	76.86
CENTRAL	83-84	181888	n.a.	2759888	n.a.	2117778	n.a.	12888	n.a.	192888	n.a.	182518	n.a.
	84-85	186675	17.58	3171952	14.97	2232632	5.42	12348	2.83	288888	4.38	165267	-9.45
	85-86	114988	-3.11	3289548	2.76	3254548	45.77	18538	58.16	179887	-18.28	179887	8.88
	86-87	186888	-7.81	3131368	-3.93	2114445	-35.83	16641	-28.99	138428	-27.46	61829	-77.18
	87-88	115422	8.89	3287368	4.98	2595558	22.75	14947	2.89	58638	-61.18	61885	12.57
COPPERBELT	83-84	18488	n.a.	182888	n.a.	133424	n.a.	678	n.a.	6288	n.a.	3378	n.a.
	84-85	15495	48.99	321483	75.67	24721	81.17	585	-15.22	3888	27.26	1813	-46.33
	85-86	16618	7.28	483848	25.62	389829	61.27	278	-68.68	2888	-74.65	1769	-2.43
	86-87	19817	19.21	526145	32.76	517543	32.76	188	-18.26	1916	-4.28	776	-56.13
	87-88	28852	1.19	878894	67.78	753198	45.83	428	127.66	1589	-17.87	1589	184.77
EASTERN	83-84	214888	n.a.	3318888	n.a.	1849229	n.a.	28788	n.a.	288188	n.a.	259549	n.a.
	84-85	286888	-3.74	3668854	18.53	1788637	-3.71	17488	-15.94	247888	-14.29	158619	-41.97
	85-86	241428	17.28	3567918	-2.85	2372971	33.27	16888	-2.99	147588	-48.38	69913	-53.58
	86-87	192544	-28.25	3551498	-8.35	2818778	-15.26	3786	-88.41	39354	-73.18	89433	-29.29
	87-88	288826	45.85	3328769	-6.27	2264327	12.61	5847	76.86	46747	18.18	45346	-8.27
LUSAKA	83-84	4588	n.a.	95888	n.a.	71891	n.a.	278	n.a.	3288	n.a.	2429	n.a.
	84-85	5258	19.87	189266	15.82	58738	-17.48	198	-54.88	1588	-54.88	1128	-54.89
	85-86	5748	7.13	127838	16.26	183872	76.89	118	-42.11	1888	-33.33	588	-54.93
	86-87	18995	91.25	199823	56.68	151618	45.96	87	-28.91	1974	97.48	356	-28.88
	87-88	9854	-17.65	288829	3.42	158347	4.44	122	48.22	1692	-14.29	1665	367.78
LUSAKA	83-84	25888	n.a.	468888	n.a.	113125	n.a.	3888	n.a.	68488	n.a.	61527	n.a.
	84-85	32325	29.24	728838	56.53	267384	136.28	3758	-1.22	67838	-8.83	32899	-46.54
	85-86	34128	5.52	663998	-7.78	877329	188.44	3728	-8.88	39944	-61.11	39944	21.61
	86-87	64324	29.94	293738	-48.78	374861	-32.88	2257	-38.44	23814	-48.38	11234	-71.87
	87-88	42825	-3.28	983483	129.46	889788	49.63	827	-62.88	4554	-88.87	4554	-59.43
NORTHERN	83-84	42488	n.a.	1888888	n.a.	788882	n.a.	358	n.a.	5888	n.a.	2929	n.a.
	84-85	46757	18.28	1873771	7.38	738451	-1.61	477	-43.88	8158	63.88	1758	-48.29
	85-86	48828	-2.88	1813718	-5.59	673911	-8.74	178	-44.26	1588	-81.68	1433	-18.25
	86-87	58384	9.77	1126888	11.16	928719	37.81	168	-5.88	2572	63.88	337	-76.48
	87-88	58824	-8.78	1192927	5.96	1819532	9.78	58	-63.75	488	-83.83	388	3.86
N.WESTERN	83-84	4288	n.a.	92888	n.a.	67143	n.a.	228	n.a.	3588	n.a.	3169	n.a.
	84-85	5288	23.98	118894	28.22	74444	11.17	188	-52.27	1683	-51.91	1683	-46.89
	85-86	5598	5.71	113778	1.86	83887	11.58	178	61.98	1588	-18.87	1578	-18.28
	86-87	9482	68.91	168527	67.88	114682	37.68	42	-75.29	314	-77.73	821	-48.29
	87-88	14871	49.83	272226	61.68	289845	82.41	68	61.98	978	192.81	736	-18.25
SOUTHERN	83-84	88888	n.a.	1687888	n.a.	1873813	n.a.	19188	n.a.	292347	n.a.	292347	n.a.
	84-85	134843	48.94	3886225	92.85	1583888	47.23	27761	45.25	313518	7.24	154341	-47.21
	85-86	184188	-22.24	4788413	29.24	2888111	89.92	17328	-37.87	237932	-24.14	237932	54.84
	86-87	158357	44.44	2587749	-41.69	988788	-67.13	18986	-27.87	129328	-41.68	85225	-65.18
	87-88	221987	47.44	4997449	89.29	3495821	253.28	17525	68.69	129884	-8.19	138882	292.62
WESTERN	83-84	15888	n.a.	178888	n.a.	87444	n.a.	128	n.a.	828	n.a.	629	n.a.
	84-85	17845	19.28	287377	21.49	91378	3.29	188	-23.88	421	-67.64	421	-31.68
	85-86	28888	12.22	228848	8.29	163844	78.61	68	-48.88	528	22.97	529	23.74
	86-87	25634	27.63	281222	-11.28	91585	-41.56	17	-71.67	166	-73.83	169	-71.83
	87-88	25328	-1.23	316493	87.28	131989	37.88	21	23.83	162	12.58	128	-14.89

NOTE: In 1986/87 129,340,000kg bags of sunflower were purchased by official channels. RIP purchased an additional of 4889 bags for a total known purchases of 185,871,000kg bags

Table 2. 1987-88 PRELIMINARY PCFC CROP FORECAST WITH 5 YR PERFORMANCE (PART 2 OF 7)

		SOYBEANS						GROUNDNUTS					
		Area (ha)	% change	Prod. (bags)	% change	Sales (bags)	% change	Area (ha)	% change	Prod. (bags)	% change	Sales (bags)	% change
ZAMBIA	83-84	9400	n.a.	146150	n.a.	106168	n.a.	29520	n.a.	165910	n.a.	14477	n.a.
	84-85	9834	4.44	143754	12.05	117795	10.95	31911	8.10	181448	9.38	50243	108.90
	85-86	13054	40.85	174732	7.93	143917	22.18	34360	7.67	227300	25.26	78506	159.50
	86-87	14857	21.68	149583	-15.26	25380	-82.26	149916	333.69	592830	168.81	22148	-71.79
	87-88	19812	17.53	241391	61.38	229264	803.23	58302	-68.88	400510	-32.44	49752	214.94
CENTRAL	83-84	1410	n.a.	18600	n.a.	10144	n.a.	2500	n.a.	18800	n.a.	51	n.a.
	84-85	1982	40.57	26050	40.05	22145	118.31	6015	140.60	12932	-31.21	27	-47.04
	85-86	2269	14.48	29502	13.25	29502	33.22	4420	-26.52	18110	48.04	1278	4633.33
	86-87	5608	147.14	25893	-12.23	1251	-95.74	13428	293.80	40327	122.68	119	-99.69
	87-88	6024	7.45	47638	158.90	66243	5203.20	4942	-63.05	22814	-43.42	2050	1622.49
COPPERBELT	83-84	1450	n.a.	22500	n.a.	3388	n.a.	450	n.a.	3200	n.a.	15	n.a.
	84-85	2222	53.24	39821	74.99	5486	61.92	1147	132.67	4438	101.19	3	-80.00
	85-86	460	-79.30	7153	-82.04	7153	50.39	1280	22.25	8960	39.17	54	1700.00
	86-87	493	7.17	23092	222.83	20736	189.89	2945	218.20	17204	92.91	0	-100.00
	87-88	2902	691.48	70539	205.47	70531	248.14	1400	-64.51	9204	-46.50	204	100.00
EASTERN	83-84	440	n.a.	4300	n.a.	632	n.a.	14700	n.a.	88000	n.a.	14991	n.a.
	84-85	600	36.36	4389	2.07	4082	545.89	11808	-19.67	83448	-5.15	29929	112.40
	85-86	2025	237.50	20249	361.24	20249	394.04	14906	18.56	113330	35.78	7202	140.88
	86-87	2643	80.89	20271	0.11	361	-98.22	48328	245.20	196238	73.14	21946	-69.54
	87-88	2380	-25.63	17451	-12.92	16621	4504.14	28441	-41.11	221152	12.70	62024	182.62
LUNPLA	83-84	20	n.a.	220	n.a.	25	n.a.	580	n.a.	4500	n.a.	8	n.a.
	84-85	85	325.00	582	164.55	551	1474.29	542	-4.55	2935	-34.78	1	-87.50
	85-86	310	264.71	3704	536.43	3704	572.23	740	26.53	5500	87.39	5	400.00
	86-87	340	9.48	3272	-11.64	0	-100.00	12072	1521.25	70504	1178.25	0	-100.00
	87-88	408	43.53	3284	0.43	3212	100.00	3114	-74.19	14587	-74.41	292	100.00
LUSAKA	83-84	5600	n.a.	79200	n.a.	78343	n.a.	220	n.a.	1500	n.a.	18	n.a.
	84-85	2250	-27.50	45000	-43.18	44925	-42.63	738	5.43	2558	78.53	5	-58.00
	85-86	3820	69.78	53480	18.84	45125	0.28	460	26.09	5380	118.32	299	5880.00
	86-87	2187	-42.75	27113	-49.30	2821	-93.75	1944	222.41	2121	-60.58	0	-100.00
	87-88	667	-72.25	7822	-74.10	721	-74.44	420	-68.11	2190	3.25	15	100.00
NORTHERN	83-84	140	n.a.	1910	n.a.	37	n.a.	3000	n.a.	28000	n.a.	1	n.a.
	84-85	621	343.57	5137	168.95	4464	11944.86	2425	-30.66	23022	-21.54	0	-100.00
	85-86	1397	124.94	13973	172.81	13973	213.82	2900	6.26	20140	-4.20	0	n.a.
	86-87	1724	-12.28	13824	-8.22	0	-100.00	3745	1244.46	204887	927.24	5	n.a.
	87-88	2210	88.73	26444	187.94	25993	100.00	3588	-91.47	28713	-84.12	2422	48540.00
N/WESTERN	83-84	20	n.a.	230	n.a.	113	n.a.	140	n.a.	2800	n.a.	245	n.a.
	84-85	179	795.00	1947	594.25	1427	1185.59	312	-8.24	2304	-24.84	145	-60.82
	85-86	610	240.78	7318	358.23	7318	482.82	310	-0.64	3870	83.94	145	0.00
	86-87	804	-20.33	7201	-1.40	299	-94.55	1982	524.25	15142	291.78	43	-78.34
	87-88	1444	242.29	19554	171.50	14554	4048.87	505	-84.64	2080	-84.28	427	893.82
SOUTHERN	83-84	2300	n.a.	19000	n.a.	13273	n.a.	4500	n.a.	19600	n.a.	45	n.a.
	84-85	1850	-19.57	46790	114.21	34682	160.49	8085	24.28	46950	139.54	98	117.78
	85-86	2930	56.38	41020	8.79	14560	-52.14	9299	12.43	47018	0.13	4362	4336.82
	86-87	2774	-5.26	29257	-28.43	84	-99.48	25240	177.67	30811	-24.46	25	-99.28
	87-88	2305	-14.97	28879	-1.63	28532	33074.74	15195	-34.80	92915	201.54	2121	5940.00
WESTERN	83-84	20	n.a.	190	n.a.	185	n.a.	370	n.a.	710	n.a.	11	n.a.
	84-85	47	135.00	478	151.58	85	-55.14	1129	242.12	3041	331.13	35	218.18
	85-86	33	-29.79	233	-30.23	233	301.20	1260	11.60	5000	43.25	271	474.29
	86-87	80	142.42	560	48.17	345	3.40	4422	251.75	13774	175.52	0	-100.00
	87-88	159	62.50	759	35.54	759	120.00	655	-85.22	4853	-64.77	187	100.00

NOTES: In 1984/87 25,380-50kg bags of soybeans were purchased by official channels. ROP and LUNTOB purchased an additional 119,294 bags for a total known purchases of 144,674/50kg bags.

Table C. 1987-88 PRELIMINARY PCFC CROP FORECAST WITH 5 YR PERFORMANCE (PART 3 OF 7)

		PADDY RICE						M. BEANS					
		Area (ha)	% change	Prod. (bags)	% change	Sales (bags)	% change	Area (ha)	% change	Prod. (bags)	% change	Sales (bags)	% change
ZAMBIA	83-84	8748	n.a.	11598	n.a.	6782	n.a.	777	n.a.	5998	n.a.	1170	n.a.
	84-85	18781	22.44	148411	21.16	78261	15.56	7746	19.54	61682	2.69	5263	249.83
	85-86	12484	-2.78	148898	-8.23	69376	-11.44	17487	175.84	113248	83.91	18877	186.67
	86-87	8671	-16.66	182988	-26.48	45676	-24.22	27437	28.89	171677	51.54	12872	18.99
	87-88	18717	27.68	125722	22.87	76883	68.25	14119	-48.27	91778	-66.54	4985	-42.29
CENTRAL	83-84	28	n.a.	518	n.a.	188	n.a.	678	n.a.	8288	n.a.	3	n.a.
	84-85	19	-48.88	381	-48.98	29	-83.89	1177	181.86	5938	-27.29	8	n.a.
	85-86	28	66.67	418	26.21	21	6.98	2527	226.21	44438	648.23	4443	n.a.
	86-87	91	283.23	543	32.93	42	28.68	6287	8.85	48888	8.84	9442	112.51
	87-88	26	-71.43	324	-38.77	274	552.28	184	-29.93	2316	-87.89	6	-99.94
COPPERBELT	83-84	78	n.a.	1788	n.a.	43	n.a.	52	n.a.	268	n.a.	248	n.a.
	84-85	47	-32.64	824	-64.87	75	57.86	243	178.88	946	176.67	1	-99.29
	85-86	188	112.77	729	72.17	78	-47.22	212	-9.87	1948	94.78	17	1188.88
	86-87	128	28.88	922	27.67	8	-188.88	218	26.26	1859	-4.18	8	-22.22
	87-88	159	24.22	887	5.28	8	n.a.	742	28.22	2182	12.12	266	6975.88
EASTERN	83-84	1728	n.a.	12788	n.a.	4413	n.a.	1288	n.a.	7788	n.a.	18	n.a.
	84-85	1518	-8.76	18488	43.78	5123	16.89	716	-48.86	2628	-82.91	295	1894.44
	85-86	1128	-26.22	17888	-11.26	6229	22.24	218	28.88	6248	72.88	611	54.48
	86-87	646	-42.22	12221	-24.28	2728	-57.82	1885	54.22	18682	71.19	27	-92.94
	87-88	867	24.21	17887	29.22	3482	25.87	1864	7.84	11881	7.67	262	488.11
LIAMBULA	83-84	588	n.a.	9288	n.a.	4721	n.a.	288	n.a.	2288	n.a.	5	n.a.
	84-85	521	-8.45	8928	-3.44	4848	4.59	285	-1.47	1819	-47.44	91	1788.88
	85-86	428	-15.25	8288	-7.57	2478	-29.98	488	79.18	2288	146.65	1	-98.98
	86-87	224	-48.88	4122	-58.24	781	-73.78	488	481.23	22366	823.21	8	-188.88
	87-88	197	-15.81	2247	-38.81	1872	129.49	781	-87.13	2644	-88.93	618	188.88
LUSAKA	83-84	28	n.a.	588	n.a.	9	n.a.	288	n.a.	2188	n.a.	8	n.a.
	84-85	2	-92.22	18	-98.88	5	-44.44	229	-5.83	2712	29.14	2271	n.a.
	85-86	n.a.	n.a.	n.a.	n.a.	252	n.a.	218	2.14	4788	76.25	8	n.a.
	86-87	18	n.a.	24	n.a.	8	n.a.	218	-8.65	776	-82.77	8	n.a.
	87-88	66	266.67	1756	4777.28	1748	188.88	111	-47.14	287	-58.13	8	n.a.
NORTHERN	83-84	2588	n.a.	6888	n.a.	41828	n.a.	2482	n.a.	22788	n.a.	979	n.a.
	84-85	4575	42.14	75888	17.19	41848	-8.82	4915	26.82	41887	28.13	2285	148.25
	85-86	2828	-27.62	68888	-12.26	28288	-22.85	12788	114.85	41888	8.79	2247	27.99
	86-87	2178	-17.58	41817	-27.84	28218	-28.81	8124	-82.88	26441	29.65	2192	-22.89
	87-88	2727	18.74	48248	17.87	22468	41.15	4781	-17.82	42271	4.41	4213	92.28
N-WESTERN	83-84	588	n.a.	4788	n.a.	2428	n.a.	528	n.a.	4188	n.a.	8	n.a.
	84-85	292	-51.14	5149	52.28	4286	7.28	478	-12.89	4885	4.46	185	188.88
	85-86	818	186.63	18278	79.68	2782	-18.88	718	59.88	2887	-27.16	293	179.85
	86-87	328	-58.83	5877	-43.11	1728	-54.21	1581	87.58	12428	248.14	48	-82.62
	87-88	547	66.77	4297	19.84	5829	237.22	2744	82.94	2288	-26.85	1128	2278.83
SOUTHERN	83-84	28	n.a.	188	n.a.	48	n.a.	288	n.a.	1288	n.a.	1	n.a.
	84-85	n.a.	n.a.	n.a.	n.a.	48	28.42	24	-98.24	178	-87.77	47	4188.88
	85-86	8	n.a.	28	n.a.	15	-76.92	188	194.12	588	194.12	429	824.84
	86-87	8	-188.88	8	-188.88	8	-188.88	279	479.88	1978	298.68	8	n.a.
	87-88	8	n.a.	8	n.a.	8	n.a.	879	71.48	2143	148.88	152	188.88
WESTERN	83-84	2488	n.a.	22788	n.a.	12814	n.a.	218	n.a.	248	n.a.	8	n.a.
	84-85	2218	-23.77	28249	25.65	22888	25.79	17	-94.25	29	-82.25	8	n.a.
	85-86	4888	27.18	27248	22.18	27881	22.92	188	488.28	2488	488.85	1821	n.a.
	86-87	4189	8.46	17274	8.84	28215	-27.82	249	-18.82	1448	-48.88	245	n.a.
	87-88	2122	-24.28	44286	25.84	21188	54.22	15	-92.83	85	-92.88	8	-188.88

Table d 1997-98 BUDGETARY DATA FOR THE FEDERAL GOVERNMENT

	Year	BUDGET				TOTAL			
		Area (bil)	% change	Expend (bil)	% change	Total (bil)	% change	Expend (bil)	% change
CANADA	97-98	21700	0.2	145700	0.2	167400	0.2	145700	0.2
	98-99	22011	1.4	147000	0.9	169011	1.0	147000	0.9
	99-00	22322	1.4	148300	0.9	170622	1.0	148300	0.9
	00-01	22633	1.4	149600	0.9	172233	1.0	149600	0.9
	01-02	22944	1.4	150900	0.9	173844	1.0	150900	0.9
CENTRAL	97-98	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	98-99	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	99-00	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	00-01	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	01-02	1000	0.0	70000	0.0	71000	0.0	70000	0.0
EASTERN	97-98	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	98-99	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	99-00	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	00-01	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	01-02	1000	0.0	70000	0.0	71000	0.0	70000	0.0
SOUTHERN	97-98	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	98-99	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	99-00	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	00-01	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	01-02	1000	0.0	70000	0.0	71000	0.0	70000	0.0
WESTERN	97-98	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	98-99	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	99-00	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	00-01	1000	0.0	70000	0.0	71000	0.0	70000	0.0
	01-02	1000	0.0	70000	0.0	71000	0.0	70000	0.0

NOTE: Estimates for 2001-02 are based on the 2001-02 budgetary control plan.

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Table e 1987-88 PRELIMINARY PEFC CROP FORECAST (PART 5 OF 7)

	V. TOBACCO						B. TOBACCO					
	Area (ha)	% change	Prod. (kg)	% change	Sales (kg)	% change	Area (ha)	% change	Prod. (kg)	% change	Sales (kg)	% change
ZAMBIA												
83-84	2080	-4.15	2489973	9.18	2489612	9.16	740	100.00	500959	100.00	497000	100.00
84-85	1459	-29.86	2137078	-14.17	2132766	-14.32	649	-17.79	575431	6.89	565930	13.85
85-86	2840	94.65	4209460	96.97	3352100	57.20	620	-1.39	547140	2.18	544749	-3.49
86-87	1254	-55.85	2910901	-31.11	2910901	-13.49	3557	455.78	651064	18.99	651064	19.47
87-88	4295	242.50	3743100	29.07	3743100	29.07	1460	-58.73	644545	2.46	644545	-1.00
CENTRAL												
83-84	710	-4.05	1109633	13.69	1109633	13.69	0	n.s.	n.s.	n.s.	n.s.	n.s.
84-85	393	-44.65	806888	-27.28	806888	-27.28	0	n.s.	n.s.	n.s.	143	100.00
85-86	1100	179.90	2217460	174.82	1360100	68.56	0	n.s.	n.s.	n.s.	n.s.	n.s.
86-87	338	-69.27	1095036	-50.62	1095036	-19.49	1	n.s.	175	n.s.	175	n.s.
87-88	1498	343.20	1798250	18.56	1798250	18.56	15	1600.00	7500	3746.15	7500	3746.15
COPPERBELT												
83-84	18	100.00	4200	100.00	4000	100.00	0	n.s.	n.s.	n.s.	n.s.	n.s.
84-85	18	89.00	3690	-12.14	137	-96.59	0	n.s.	n.s.	n.s.	14372	100.00
85-86	45	150.00	4920	1233.73	4720	35812.41	0	n.s.	n.s.	n.s.	n.s.	n.s.
86-87	15	-66.67	5007	-89.82	5007	-89.82	0	n.s.	14535	n.s.	14535	n.s.
87-88	40	166.67	24000	379.33	24000	379.33	0	-100.00	0	-100.00	0	-100.00
EASTERN												
83-84	380	-19.15	271800	-66.11	271717	-14.14	749	100.00	500959	100.00	497000	100.00
84-85	240	-36.84	120000	-55.85	119551	-56.76	649	-17.79	575431	6.89	565930	7.74
85-86	440	81.33	327420	172.85	327420	173.87	615	-6.78	519940	-2.50	517740	-3.31
86-87	204	-53.18	162831	-50.27	162831	-50.27	3264	456.76	611104	18.50	611104	19.00
87-88	348	78.64	241819	241819	48.50	977	-70.87	638710	-20.68	638710	-20.68	
LUSAKA												
83-84	n.s.		n.s.	n.s.								
84-85	n.s.		n.s.	n.s.								
85-86	n.s.		n.s.	n.s.								
86-87	n.s.		n.s.	n.s.								
87-88	10	100.00	4100	100.00	4000	100.00	247	100.00	43600	100.00	43600	100.00
LUSAKA												
83-84	n.s.		n.s.		n.s.		n.s.		0.00	n.s.	n.s.	n.s.
84-85	n.s.		n.s.		62404		n.s.		0.00	n.s.	4571	100.00
85-86	n.s.		n.s.		n.s.		25	100.00	27200	n.s.	27200	475.06
86-87	n.s.		n.s.		n.s.		29	-17.14	5273	-89.81	5273	-80.61
87-88	450	n.s.	270000	n.s.	270000	n.s.	0	-100.00	0	-100.00	0	-100.00
NORTHERN												
83-84	20	100.00	7500	-8.75	7262	1.30	0	n.s.	n.s.	n.s.	n.s.	n.s.
84-85	10	-50.00	4000	-45.21	3450	-52.89	0	n.s.	n.s.	n.s.	n.s.	n.s.
85-86	0	-100.00	n.s.	n.s.	n.s.	n.s.	0	n.s.	n.s.	n.s.	n.s.	n.s.
86-87	9	n.s.	5429	n.s.	5428	n.s.	0	n.s.	n.s.	n.s.	n.s.	n.s.
87-88	29	222.22	27580	408.11	27580	408.11	28	100.00	18800	100.00	18800	100.00
N/WESTERN												
83-84	n.s.		n.s.		n.s.		0	n.s.	n.s.	n.s.	n.s.	n.s.
84-85	n.s.		n.s.		n.s.		0	n.s.	n.s.	n.s.	n.s.	n.s.
85-86	n.s.		n.s.		n.s.		0	n.s.	n.s.	n.s.	n.s.	n.s.
86-87	n.s.		n.s.		n.s.		0	n.s.	n.s.	n.s.	n.s.	n.s.
87-88	25	100.00	18220	100.00	18220	100.00	22	80.00	11800	100	11800	100
SOUTHERN												
83-84	930	12.05	1195000	24.28	1195000	24.28	0	n.s.	n.s.	n.s.	n.s.	n.s.
84-85	730	-21.51	1162500	8.14	1162700	8.13	0	n.s.	n.s.	n.s.	11243	100.00
85-86	1180	56.16	1538400	32.25	1538400	32.27	0	n.s.	n.s.	n.s.	n.s.	-100.00
86-87	628	-46.71	1577422	3.52	1577422	3.52	71	n.s.	12955	n.s.	12955	n.s.
87-88	1694	169.75	1605590	1.79	1605590	1.79	145	174.23	60545	367.35	60545	367.35
WESTERN												
83-84	30	-74.82	22000	-88.94	21000	-81.82	0	n.s.	n.s.	n.s.	n.s.	n.s.
84-85	48	126.67	60700	81.82	39992	38.84	0	n.s.	n.s.	n.s.	n.s.	n.s.
85-86	115	49.12	76780	51.85	76780	51.89	0	n.s.	n.s.	n.s.	n.s.	n.s.
86-87	58	-49.57	54277	-29.71	54277	-29.58	0	n.s.	n.s.	n.s.	n.s.	n.s.
87-88	141	177.59	254850	343.44	254850	343.44	14	100.00	18100	100.00	18100	100.00

NOTES: Estimates for tobacco submitted by the National Tobacco Company Limited have been accepted as the official estimates.

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MILLET							CASSAVA						
		Area	%	Prod.	%	Sales	%	Area	%	Prod.	%	Sales	%
		(ha)	change	(bags)	change	(bags)	change	(ha)	change	(bags)	change	(bags)	change
ZAMBIA	83-84	19830	n.a.	150740	n.a.	181	n.a.	n.a.	n.a.	n.a.	n.a.	181	n.a.
	84-85	22374	17.57	214817	43.97	688	271.49	n.a.	n.a.	n.a.	n.a.	688	271.49
	85-86	19520	-17.23	129578	-48.82	2194	471.88	n.a.	n.a.	n.a.	n.a.	2194	256.33
	86-87	43549	175.25	354748	159.51	2187	-31.34	n.a.	n.a.	n.a.	n.a.	1119	-71.58
	87-88	35529	-18.58	248783	-13.52	5148	175.87	5545	n.a.	424743	n.a.	11478	947.61
CENTRAL	83-84	378	n.a.	1598	n.a.	0	n.a.	-	-	-	-	0	n.a.
	84-85	945	148.81	7573	374.29	0	n.a.	-	-	-	-	0	n.a.
	85-86	1178	24.86	7828	3.76	0	n.a.	-	-	-	-	0	n.a.
	86-87	488	-57.14	1545	-98.24	0	n.a.	-	-	-	-	0	n.a.
	87-88	588	4.17	2588	61.81	0	n.a.	0	-	0	-	0	n.a.
COPPERBELT	83-84	28	n.a.	328	n.a.	0	n.a.	-	-	-	-	0	n.a.
	84-85	87	225.00	414	91.88	1	n.a.	-	-	-	-	1	n.a.
	85-86	18	-80.51	78	-98.68	4	n.a.	-	-	-	-	0	n.a.
	86-87	46	248.88	448	557.14	0	n.a.	-	-	-	-	0	n.a.
	87-88	142	209.78	1274	177.34	0	n.a.	247	-	754	-	0	n.a.
EASTERN	83-84	1748	n.a.	7088	n.a.	0	n.a.	-	-	-	-	0	n.a.
	84-85	0	n.a.	n.a.	n.a.	0	n.a.	-	-	-	-	0	n.a.
	85-86	758	n.a.	3418	n.a.	0	-188.82	-	-	-	-	0	-188.82
	86-87	3334	775.48	24718	923.27	0	n.a.	-	-	-	-	0	n.a.
	87-88	4415	72.27	32254	25.42	0	n.a.	0	-	0	-	0	n.a.
LUSAKA	83-84	748	n.a.	9124	n.a.	0	n.a.	-	-	-	-	0	n.a.
	84-85	922	25.95	8122	-18.75	25	177.78	-	-	-	-	25	177.78
	85-86	78	-92.49	528	-93.48	18	-68.88	-	-	-	-	13	-68.88
	86-87	12922	19882.84	147843	28181.25	84	748.88	-	-	-	-	213	2387.49
	87-88	8895	-41.78	47434	-54.11	1444	1824.88	12474	-	318922	-	244	-15.82
LUSHA	83-84	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	n.a.	n.a.
	84-85	n.a.	n.a.	n.a.	n.a.	119	n.a.	-	-	-	-	119	n.a.
	85-86	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	228	n.a.
	86-87	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	0	n.a.
	87-88	192	n.a.	274	n.a.	0	n.a.	0	-	0	-	0	n.a.
NORTHERN	83-84	4288	n.a.	72888	n.a.	888	n.a.	-	-	-	-	888	n.a.
	84-85	9812	65.25	91847	25.82	192	77.78	-	-	-	-	192	77.78
	85-86	4288	-29.74	44788	-51.77	44	-76.88	-	-	-	-	0	-88.84
	86-87	12224	188.99	128915	172.25	474	2847.87	-	-	-	-	0	n.a.
	87-88	8525	-27.87	84824	-21.87	888	87.88	8497	-	82874	-	0	n.a.
N-WESTERN	83-84	188	n.a.	1778	n.a.	2	n.a.	-	-	-	-	2	n.a.
	84-85	1852	652.14	18422	682.44	15	678.88	-	-	-	-	15	678.88
	85-86	928	-51.48	4888	-37.42	1824	7148.88	-	-	-	-	242	2812.73
	86-87	1888	11.82	8472	-28.12	824	-42.24	-	-	-	-	884	182.44
	87-88	188	-89.42	1891	-74.45	18	-75.78	14424	-	11888	-	18	-87.84
SOUTHERN	83-84	2788	n.a.	4788	n.a.	28	n.a.	-	-	-	-	28	n.a.
	84-85	2752	-43.47	18852	58.82	94	45.52	-	-	-	-	94	45.52
	85-86	278	-58.14	2818	-74.84	289	117.71	-	-	-	-	724	654.17
	86-87	4124	1889.19	4571	245.17	18	-82.88	-	-	-	-	0	-184.88
	87-88	4888	17.45	52942	455.48	158	489.47	152	-	1888	-	0	n.a.
WESTERN	83-84	7288	n.a.	58888	n.a.	8	n.a.	-	-	-	-	8	n.a.
	84-85	6244	-12.45	87887	74.25	144	2558.88	-	-	-	-	144	2558.88
	85-86	9218	41.79	85888	-25.44	1871	1124.11	-	-	-	-	2889	1822.97
	86-87	7484	-28.47	25882	-44.88	897	-85.55	-	-	-	-	0	-188.88
	87-88	7721	4.24	24887	44.27	2223	122.97	12878	-	112274	-	11244	888.88

Table 2 1987-88 PRELIMINARY PCFC CROP FORECAST (PART 7 OF 7)

		WHEAT					
		Area	%	Prod.	%	Sales	%
		(ha)	change	(bags)	change	(bags)	change
ZAMBIA	83-84	-	-	-	-	-	-
	84-85	-	-	-	-	-	-
	85-86	6831	n.a.	312918	n.a.	33838	n.a.
	86-87	6883	14.13	446818	42.79	42232	24.84
	87-88	1735	-74.79	77588	-82.65	68138	61.32
CENTRAL	83-84	-	-	-	-	-	-
	84-85	-	-	-	-	28388	n.a.
	85-86	1828	n.a.	58588	n.a.	2	-99.99
	86-87	747	-24.76	52867	-9.63	18822	581888.88
	87-88	3	-99.68	68	-99.89	68	-99.68
COPPERBELT	83-84	-	-	-	-	-	-
	84-85	-	-	-	-	-	-
	85-86	988	n.a.	36588	n.a.	-	-
	86-87	1642	65.44	124888	119.47	7144	n.a.
	87-88	888	-51.28	55188	-55.56	55188	668.71
EASTERN	83-84	-	-	-	-	-	-
	84-85	-	-	-	-	-	-
	85-86	-	-	-	-	-	-
	86-87	-	-	-	-	-	-
	87-88	-	-	-	-	-	-
LIMPOPO	83-84	-	-	-	-	-	-
	84-85	-	-	-	-	-	-
	85-86	-	-	-	-	-	-
	86-87	-	-	-	-	-	-
	87-88	2	-	21	-	14	-
LUSAKA	83-84	-	-	-	-	-	-
	84-85	-	-	-	-	-	-
	85-86	2829	n.a.	133338	n.a.	468	n.a.
	86-87	2814	-3.81	188211	11.99	19811	2862.18
	87-88	-	-	-	-	-	-
NORTHERN	83-84	-	-	-	-	-	-
	84-85	-	-	-	-	-	-
	85-86	18	n.a.	-	-	567	n.a.
	86-87	88	388.88	2188	n.a.	2232	293.83
	87-88	638	1475.88	8221	381.78	-	-
N'WESTERN	83-84	-	-	-	-	-	-
	84-85	-	-	-	-	-	-
	85-86	-	-	-	-	-	-
	86-87	-	-	-	-	-	-
	87-88	-	-	-	-	-	-
SOUTHERN	83-84	-	-	-	-	-	-
	84-85	-	-	-	-	-	-
	85-86	1612	n.a.	48588	n.a.	18258	n.a.
	86-87	2888	26.88	118838	83.54	8722	-73.88
	87-88	388	-85.29	13888	-89.88	13918	247.93
WESTERN	83-84	-	-	-	-	-	-
	84-85	-	-	-	-	-	-
	85-86	-	-	-	-	-	-
	86-87	-	-	-	-	-	-
	87-88	-	-	-	-	-	-

Table 2. Marketed Output of Selected Agricultural Commodities

	Maize 90 kg	Sunflower 90 kg	Soybeans 90 kg	Rice 80 kg	Groundnuts 80 kg	Wheat 90 kg	Cotton	Sorghum 90 kg	Tobacco	Millet 90 kg
	-----Thousands-----						-Tons-	-Thousands-	-Tons-	-Thousands-
1978-79	5,192	238	14	23	34	73	1,490	1.7	4,600	0.0
1979-80	5,446	343	29	28	25	106	2,290	1.0	4,100	2.6
1980-81	7,734	383	41	33	16	128	1,680	1.4	2,400	2.4
1981-82	5,725	426	37	30	9	143	1,280	1.7	1,900	N.A.
1982-83	5,902	609	77	63	13	113	2,070	1.1	2,300	1.1
1983-84	6,347	808	106	68	14	49	4,390	3.2	2,500	0.2
1984-85	7,069	500	178	79	30	N.A.	3,030	12.4	2,200	0.5
1985-86	10,500	475	130	101	30	N.A.	3,230	20.0	3,400	1.0

N.A. = not available.

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VOLUME III. ZAMS MINOR CROPS STUDY

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I. INTRODUCTION AND SUMMARY

This report was written in response to a request by USAID/Zambia for a contractor to gather data on specific minor crops to assist consultants employed by USAID to assemble information relative to the ZAMS Project. The Terms of Reference for this study are given in Appendix I.

Two weeks of field work preceded a week of report writing by Agmark. During this period, Agmark maintained a constant liaison with USAID personnel and with the RRNA team. In particular, discussions centered on the predominance of maize in the agricultural economy and the degree to which this dominance affected the production and marketing of almost all other crops for the local market. As a result of these discussions, and from information gathered in the field, it was agreed that Agmark would look at a wider spectrum of minor crops than those specifically mentioned in the Terms of Reference, although this divergence was implied by the Terms of Reference.

Chapter I of this volume attempts first to give a historical overview of how maize became so dominant. An understanding of this process is fundamental to an understanding of the current situation. This chapter examines the main features and assumptions set out in the Project Identification Document, which is the basis for this study, and draws attention to the fact that the effect of the dominance of maize was, to some extent, underestimated. Comments are made on the validity of some of the assumptions made in the PID in light of the experience of Agmark in Zambia, and on the Terms of Reference.

Data on the production, marketing, and processing of the crops specified in the TOR -- sorghum, millet, cassava, and fruit and vegetables for the local market -- have been well documented in Volumes I and II and little can be added by Agmark, which concurs with the general findings of the RRNA team. The most important aspect to emerge is the low volume of these crops that are marketed in any formal sense, and the relative lack of opportunities for intervention in the current economic environment. In addition, under the IFAD Smallholder Services Rehabilitation Project, which is about to be implemented and which addresses the same minor crops as this study, most of the possible interventions such as the provision of village level processing machinery, were included. However, additional opportunities would exist, if any changes were to be made in government subsidy policies on fertilizer and maize, leading to changes in production patterns within the country.

In Chapter III, attention is drawn to other interventions that fall within

the scope of the ZAMS Project but are not related to the specified minor crops. These interventions are sub-divided into four areas:

- Crop related
- Input related
- Infrastructural support
- Financing

In each area, specific project or sub-project possibilities have been outlined, including in some cases, broad cost estimates. While some are brief, reflecting lack of time to collect the required data, others, which Agmark has previously examined, are given in more detail. In most cases, these projects include private enterprise components.

This report provides data for the compilation, by the RRNA team, of a final document for the ZAMS project. Many of the components in Chapter III form the basis of commercially viable projects, which are currently in very short supply in Zambia and which, in part, result from Agmark's previous endeavors. Although Agmark would welcome their inclusion in any USAID project, the information is 'intellectual property.' If they are not included in the ZAMS project, Agmark would like the information to remain confidential.

Historic Overview of Agricultural Development and the Dominance of Maize

Agriculture in Zambia today is the direct result of commercial, and later governmental decisions, made over the past 80 years, and not a natural development. At the turn of the century, Zambia had a population of less than half a million in clearly defined tribal and ecological areas. The limited population was able to live in balance with nature, and had developed sustainable food producing systems. Each group lived on food and livestock suited to their needs for the year, whatever the rainfall. Disease was the limiting factor on population expansion, not food.

Main tribal areas and foods were

Northern Bemba	Fish, cassava, millet, beans
Luapula	Fish, cassava, millet, beans
Eastern Angoni	Beef, sorghum, millet, beans, groundnuts
Central Lenje	Chicken, sorghum, maize, beans
Southern Tonga	Beef, fish, maize, sorghum, beans
Western Lozi	Beef, fish, millet, sorghum
Northwestern Kaonde	Fish, cassava, millet, beans, sorghum

The predominate food crops were cassava, sorghum, millet, and beans.

The first two decades of the century saw the industrial development of minerals (copper and lead) in the central and northern areas of the Kafue River Basin. Laborers for the mines were predominantly inhabitants of Northern, Luapula, and North Western Provinces, along with Europeans coming initially from Britain and America, and a later influx from the mining areas of South Africa.

Contrary to expectations, food consumption by mine laborers did not follow traditional tribal patterns, mainly because there was no established production or food distribution system in the demand areas. In addition, the mining areas were not considered suitable for agriculture.

Although beef was available from traders who could walk their animals to market, a basic cereal had to be available in increasing quantities. When a rail line to the south was established for exports, attention turned to South Africa for a food source. The foods most readily available were maize and beans.

In 1924, the areas defined as North Eastern and North Western Rhodesia were consolidated for administrative purposes into Northern Rhodesia, destined to become Zambia in 1963. About this time, the Administration decided that commercial farms should be established on the line of rail to produce food for the copper mines and for the expatriate community of commercial and administrative personnel. Initially, British ex-servicemen settled here; they were encouraged to take up land for food production. As word of good soils and climate spread, the farming population increased and produced not only maize and other food crops for the mines but also tobacco and cotton as cash crops. Beef was an offshoot of the need for motive power, being first used as draft oxen before being slaughtered for the meat trade.

However, commercial farming areas were limited from the start to that which was believed sufficient to feed the urban and mining population, and no thought was given to export crops except for cotton and tobacco. The area allocated for commercial production was approximately 25 percent of the total land area. Production from village farmers was limited to the Central and Southern Province close to the line of rail.

Until the 1960s, mine employees received basic food rations, and it was easier to supply them with maize and beans grown predominantly by the commercial farmers than to arrange marketing systems to bring in their traditional foodstuffs, which were grown by smallholders in inaccessible areas. Over time, this situation established the attitude that maize was a superior food for those who had entered the cash economy. Milling plants were established on the Copperbelt and line of rail towns, while the rural people continued to consume their traditional foods and locally grown maize, which was usually ground by hand in the villages.

Until the 1950s, the only suitable transport system was the North-South railway; therefore, commercial food production was not encouraged away from the line of rail. Thus, events of the first 50 years of the century established maize as the urban dwellers' food; the traditional crops remained only for local village consumption as food and beer. Marketing became formalized in

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1938, with the need to produce for the mines and to stop imports as the rail system was restricted by war usage, and South Africa moved into the world maize market. The initial marketing body was the Maize Control Board, which together with the Farmers' Co-Operative (Lusaka) was given monopoly rights on all commercial maize production, and later became buyers of village crops near the line of rail. Standard prices were fixed for deliveries to line of rail depots, and rural purchases reflected true collection costs. The Maize Control Board continued as a commercial operation until Independence, when it became the government's arm for spreading development into the rural areas. During the Federation (1956-63), trade restrictions between Northern and Southern Rhodesia were removed, and Southern Rhodesia was able to take advantage of the Copperbelt market with its advanced agricultural systems and efficient rail network. These maize movements were essentially backloads for copper exports and were charged at low rates.

During this period, commercial agriculture was a federal responsibility, while smallholder production remained a territorial responsibility. This led to a rapid improvement in commercial agriculture, as new methods and hybrid maize seed developed in Southern Rhodesia were adopted. Yields doubled on commercial farms, and by 1962, the country was self-sufficient in maize production. Tobacco was the major export crop, and cotton developed as a cash crop. Beef production was expanding, but 50 percent of requirements were still imported.

With independence, major improvements in the road networks allowed the official marketing system to be expanded into all areas of Zambia. The National Agricultural Marketing Board (NAMBoard) was established to absorb the Maize Control Board and to expand controlled marketing of most crops in all areas. Meanwhile, the Cold Storage Board was established as the official marketing system for beef, and the Dairy Produce Board was established as the controlling body for milk products.

The stage was now set for economic control of agriculture by the Ministry of Agriculture, without the safety valve of a free market. Fixed product prices for all agricultural production in the country became the official policy. This was followed by fixed input prices for seed and fertilizer countrywide. These moves led to an initial improvement in rural incomes. The costs of these policies were covered partly by government subsidies, and partly by the commercial farming sector, which lost its geographical advantage while having to absorb increased input prices and new labor rates.

The initial benefits enjoyed by the rural community, both small-scale farmers and the workers on commercial farms, eroded with time as product price fixing followed the policy of 'cheap food for the urban dwellers.' As rural incomes dropped, the attraction of urban living increased. Government staffing increased rapidly and the construction industry absorbed large numbers of unskilled workers.

Once again, consumption patterns changed as cheap maize meal became the standard cereal, alongside an increasing demand for wheat products in the urban areas. Production of cassava, millet, and sorghum dropped as official pricing held prices low in relation to maize. Meanwhile, commercial producers

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of all crops and livestock faced a financial crisis, and 60 percent of the units ceased production. For a number of years, these farms lay idle until State agricultural units were established and loans became available for Zambian farmer resettlement.

With increased urban demand and reduced local production, the country became a food importer, and it remains so today; however, there were some encouraging moves:

- Poultry production has never been officially controlled, and Zambia moved from almost 100 percent imports to self-sufficiency in 10 years. This was a success story that introduced a large number of Zambian producers to commercial agriculture.
- Vegetable production, except for a brief period, was unofficially marketed and priced. Growing from approximately 80 percent import dependency at independence, the industry now supplies a wide range of vegetables and fruit. An export market is being developed.
- Beef was 50 percent deficient in 1975, but then official marketing collapsed in favor of the free market, resulting in a rapid increase in production to the present position of self-sufficiency with some exports.
- Tobacco production fell from 15 million kg at independence to 15 million kg in 1983, but with the commercial fixed prices of recent years it is now expanding rapidly.
- Sunflower production expanded rapidly, although there has been a recent decline because of inadequate pricing. Cotton has followed the same trend.
- Soyabeans are becoming a success story with good producer pricing encouraging rapid expansion.
- Groundnuts, a major crop of the Eastern Province, were exported in large quantities until official pricing caused a major reduction in favor of maize, which has to be transported some 1,000 km to the consumption centers. Recent improved pricing is resulting in some expansion, but the ill effects of official policies will be felt for years to come.

With maize-meal and vegetable oils established as the major foods of the urban dweller, official control on standards and prices came into effect. It worked reasonably effectively while there was limited inflation, but it was not able to cope with rapid changes in production and transport costs. As commercial farmers moved away from maize, village production all over Zambia increased because of countrywide input and producer prices, thereby increasing the cost to government through subsidies. Production prices are fixed by the

Ministry of Agriculture without regard to the buying and transport charges faced by NAMBoard and the Co-ops.

With the oil crisis, transport costs increased at a higher rate than crop production costs. In 1988, the costs of collecting and transporting maize from many rural areas are up to 70 percent of the farmer producer price. These costs are covered by government subsidies, which are placing an increasing strain on the national budget. Thus, a removal of this collection subsidy, and the concomitant reduction in the price paid to farmers, would have a major effect on production in distant rural areas, which would then move away from maize to higher value crops such as beans, groundnuts, sunflower, tobacco, and possibly traditional food crops such as finger millet and sorghum. This move would be accelerated if the subsidies on fertilizer and its transport were removed, since little fertilizer is used on crops other than maize.

The current consumer subsidy on maize-meal has a major effect on demand as

- Rural families sell all their maize and buy back subsidized meal from towns. This increases both the transport and the consumer subsidy required from government.
- Urban dwellers in the smaller towns make no effort to produce their own requirements from land that is readily available.
- Smuggling becomes a very remunerative occupation. Zambia's subsidized meal is considerably cheaper than meal in Botswana, Namibia, Angola, Zaire, Tanzania, Malawi, and Mozambique, the majority of which border Zambia and have food deficits. It has been estimated that up to 20 percent of Zambia's subsidized maize-meal leaves the country unofficially.

Thus, future decisions on subsidies related to maize will have a major effect on the production of maize and all other crops. With the removal of all subsidies (fertilizer, transport, and milling), the maize requirement would probably fall to about 5 million bags allowing for official exports, encouraging other crops to be grown, and releasing some 1.5 billion kwacha per annum for development use.

Comments on the Project Identification Document

'Changes in the marketing system are required if the agricultural sector is to expand.' The implicit assumption in the Project Identification Document is that interventions in the marketing chain would lead to incremental production of minor crops, which are considered unaffected by current government interventions and control. During the field work for this study, the contractors were made very aware that this assumption is not correct. First, the subsidized price of processed maize has an overwhelming bearing on the production, consumption, and marketing of all other food crops, and to some extent industrial crops. Second, the Zambian economy is so run down that very little opportunity exists for expansion of demand in the local

market without an improvement in the general economy. However, this does not invalidate the requirement for improvements in operational efficiency of the private sector marketing system. These improvements would need to be geared to export promotion, where the only significant expansion can be made, and to those areas such as brewing for the internal market, where maize substitution could be achieved through a captured market. This, too, would require some government initiative, and would also lead to consumer price increases, although it would fulfill the aim of the ZAMS project to encourage the production and marketing of minor crops.

Within this context, the ZAMS project correctly assumes that there will be changes during its implementation period, which would lead to the reduction of subsidies in the agricultural sector, and thereby encourage the production of minor crops for the internal market. This process would be accelerated if Zambia became self-sufficient in maize. In areas of comparative geographic advantage, such self-sufficiency would probably result in a reduction of the fertilizer subsidy and a consequent swing to the production of traditional food crops that generally require less fertilizer. In addition, this swing would require a reduction in the consumer subsidy of maize products.

In addition, it must be assumed that the current value of the kwacha will be changed to bring it more into line with its real value. This would have a profound effect on the profitability of regional and international exports for agricultural production. Until such time, recourse will have to be made to facilities which effectively created a 'green kwacha.' These are outlined in Chapter III.

The target group specified in the PID is small-scale farmers and other rural inhabitants. Because that significant areas of expansion for agricultural production lie in exports and import substitution, it is likely that commercial farmers and large-scale enterprises may take the lead in this process. For example, in Kenya, the commercial farmers developed the export fruit and vegetable markets, but the smallholders now produce more than 70 percent of the exports. In addition, a number of alternative options for ZAMS outlined in Chapter III suggest ways in which both commercial and smallholder producers can work together to develop markets.

The PID recommends that handling and transport functions in the private marketing sector require improvement. Although there are constraints in these functions, any improvement would depend on increased throughput caused by increased demand; therefore, any intervention in these areas should be linked to a specific subproject rather than a national intervention.

Similarly, reducing marketing losses through improved storage and processing for the internal market would require an increase in demand for traditional food crops stimulated by an increase in the maize meal price and improvements in the purchasing power of the average Zambian. However, such interventions should be concentrated on a project-specific basis.

Grading and standardization of goods is a luxury that the Zambian public can not afford. Price alone dictates the quality of goods presented on markets, and any intervention that may increase prices would adversely affect

demand. However, in the export market, quality control is paramount, and there would be a natural spin-off in the local market for the quality-conscious expatriate community and a limited number of Zambians who are in a position to afford such luxuries.

Improvements in the skills required in the private marketing sector would be most in demand for promoting export and import substitution programmes. The traders and producers involved in marketing minor crops and fruit and vegetables for the internal market are relatively efficient within the overall constraints of the national economy and within the constraints of limited demand.

Comments on the Work Plan

In its proposal to carry out this assignment, Agmark drew attention to a number of apparent omissions in the work plan. During the completion of the field work, and given the comments made above on the PID, additional areas were identified that were not specifically mentioned in the work plan, although they fall within the aims and objectives of the ZAMS project. These additional areas of interest to USAID are outlined in Chapter III.

II. REVIEW OF POSSIBLE INTERVENTIONS IN THE SPECIFIED MINOR CROPS

Introduction

The contractors have been unable to quantify any reasonable interventions in the production, marketing, and processing of millet or cassava. There is a small, unofficial, and probably illegal export trade of both these commodities along the long Zaire border, but little trade within Zambia itself. In addition, the IFAD Smallholder Services Rehabilitation Project has addressed the matter of cassava chipping machinery. Minor but important interventions have been identified for sorghum for the brewing of Chibuku beer, and the processing of fruit and vegetables for the local market.

Sorghum for the Chibuku Beer Industry

The formal marketing of sorghum grain is negligible and surplus production is almost exclusively marketed for consumption and brewing within the traditional areas of production; however, a potential market for a substantial quantity exists. National Breweries (Chibuku) prefers sorghum to maize grain as a raw material. They would switch to a 100 percent sorghum-based brew if they could obtain enough sorghum of the requisite varieties at a price comparable to maize.

Present Production Levels of Chibuku

National Breweries produces approximately 500,000 liters of Chibuku per day from 14 factories based in the main urban centers of the country: Lusaka, Kafue, Livingstone, Choma, Chipata, Kabwe, Ndola, Mufulira, Luanshya, Kitwe, Mansa, Chililabombwe, Mongu, and Solwezi. Consumption patterns are seasonal depending on weather conditions, and between the hot and cold months, consumption fluctuates from 20 to 30 percent above or below the mean output shown above.

National Breweries believes that a sorghum-based brew, which is preferred by the public, would have a significant impact on the level of consumption. They anticipate a potential increase of between 15 to 25 percent, if a switch from maize to sorghum could be achieved.

Several factors contribute to the present levels of formally marketed sorghum:

- GRZ policy is to expand the production of maize into non-traditional areas by maintaining high fertilizer subsidy levels and introducing drought-tolerant, short duration maize varieties.
- The availability of subsidized maize meal, which requires less preparation than sorghum, has changed consumption patterns. The gazetted NAMBoard purchase price for sorghum of K 76 per bag does not compare favorably with the traditional market price for brewing, which ranges from K 120 to K 175 per 90-kg bag, depending upon availability.
- The present price of Chibuku is gazetted at K 0.43 per litre. This price is calculated to cover capital and recurrent costs of production with no margin for profit. Thus, the breweries are not in a position under the present price structure to offer a premium to farmers for sorghum grain.

Potential Demand for Sorghum as a Replacement for Maize

Brewing requirements are based on 210 90-kg bags per 120,000 liters of Chibuku at a consumption level of 500,000 liters per day and a brewing cycle of six days per week. The potential requirement for sorghum is 27,300 tons per annum. Present smallholder yields in traditional growing areas such as the Gwembe Valley range between 0.5 and 0.8 tons per hectare. With improved brewing varieties, such as Swazi Red, yields of 1.0 to 1.2 tons per hectare would be realistic. Average traditional farm sizes in these areas range from 1.0 to 1.5 hectares per family. On this basis, an incremental production to satisfy the breweries' requirements would involve the participation of approximately 60,000 to 80,000 farmers, assuming 25 percent of gross farm area was allocated to a cash sorghum crop.

Possible Intervention

With the objective of weaning the market off the maize brew, National Breweries should offer sorghum-based Chibuku at a premium price and market it alongside the existing maize-brewed product under a distinctive label, thereby offering the public a choice. Since sorghum is self-pollinating and since the distinctive red varieties are preferred by National Breweries to the traditionally grown white grain varieties, a price differential for the preferred types would be relatively easy to administer. USAID may wish to investigate the possibility of providing financing for National Breweries to upgrade their storage and brewing facilities and to encourage the GRZ to deregulate price controls on a sorghum-based premium brew.

Preserved Fruit and Vegetables

Rivonia Limited

Background

Rivonia has been in operation for six years. During that time, turnover has increased from K 5,000 per month to K 350,000 per month. It is a private company that presently employs 60 semi-skilled staff on 25 terminals. Products include tomato sauce, mango and tomato chutney, pickled onions, spiced chillies, spiced tomato sauce, and various preserves. Production is marketed directly to Lusaka supermarkets and food stores on a contract basis, and through NIEC and Mwaiseni to other urban centers.

Constraints

Processing is undertaken manually, and the company has been unable to obtain FEMAC approval to import equipment to semi-automate production and diversify into additional lines. Under the present system of manual pulping and bottling, hygiene is a problem and shelf life is considerably reduced.

Potential

Under the present production system, management cannot supply market demand. With the addition of automated pulpers/sievers, vegetable chopping equipment, bottle washers, vacuum cooking pots, and an automatic plastic bottle extrusion and filling machine, turnover would increase to approximately K 600,000 per month, and quality and hygiene would be assured. The total additional investment cost to streamline the plant is estimated at approximately US \$35,000. In addition to rationalizing existing production technology to meet potential demand, management also wishes to establish a small canning plant to produce baked beans, spaghetti/beans, tomato puree, tomato soups, and grapefruit and orange segments. Since cans are produced in the Copperbelt the only requirement to diversify into canning would be a vacuum and sealing machine costing US \$4-6,000. Anticipated gross turnover with this addition would increase to K 1 million per month.

It is understood that export potential also exists and enquiries have been received from Mozambique, Angola, Sweden, and Tanzania. Supplies of raw materials are not considered a problem, and deliveries are made by a few commercial farmers and marketeers on contract. Spices and preservatives, including sodium benzoate and sodium metabisulphate are imported in small quantities.

Soft Drink Industry

Background

The soft drink industry in Zambia is dominated by Zambia Bottlers, Copperbelt Bottling, Cadbury Schweppes, Sunquick, and Lyons Brook Bond. In an attempt to preserve foreign exchange and develop a locally based industry for the supply of raw materials, the government has recently banned imports

of concentrates. As an interim measure, the industry is being allowed to import artificial flavorings. Due to this constraint and the inability of the industry to import spares and equipment to maintain plants, the supply of soft drinks presently accounts for only 20 percent of the potential demand. Sunquick Lusaka is the only organization that has a suitable plant for crushing, extracting, and concentrating juice from raw materials. The present availability of raw materials to crush -- oranges, grapefruits, and pineapples -- is extremely limited and supplies less than 15 percent of the industry's capacity. For many fruits, the locations of the growing area and the crushing plant are inappropriate. For example, Copperbelt Bottling is presently processing grapefruits that are grown locally, transported to Lusaka for crushing and concentration by Sunquick, and then redirected to the Copperbelt for bottling.

Possible Intervention

Various alternatives are available depending on the expansion of crushing and concentration capabilities and the adequate supply of raw materials, particularly citrus (oranges, lemons, grapefruits, and tangerines). The industry is unlikely to invest in extraction plants and equipment, unless there is a parallel investment in the planting of fruit trees by both commercial operations and smallholders. At present, the demand for citrus in the smallholder sector exceeds the seedlings available from provincial MAWD nurseries. The economic viability of a joint private sector/institutional nucleus plantation based in a strategic locality and coupled to satellite smallholder production is well worth further investigation.

III. OTHER PROPOSED INTERVENTIONS

As mentioned in Chapters I and II, a number of additional interventions that warrant consideration within the ZAMS project were identified during the completion of the field work. For most of these options only a limited amount of information was gathered; however, for others such as groundnuts, a little more information is generally known because of the importance of the crop and previous field work carried out by Agmark in identifying projects.

These interventions can be subdivided into the following categories:

- Crop related
- Input related
- Infrastructural support
- Financing

Crop-Related Interventions

The crops for which marketing interventions were identified are groundnuts, fruits and vegetables for the export market, barley for the clear beer industry, and beans, rice, and maize.

Groundnuts

Historical Overview

Zambia's officially marketed groundnut production peaked in 1967 at 14,800 tons. Total national production at this time was estimated to be about 24,000 tons. The Eastern Province's share of this market was approximately 75 percent.

By 1983, the officially marketed crop had declined to less than 1,000 tons with the Eastern Province continuing to produce more than 70 percent of the crop. Despite this decline in the officially marketed crop, it has been estimated that the total marketed crop remains around 9,000 [tons]; in other words, the vast majority passes through unofficial trading channels. A recent

report on the status of groundnuts in the Eastern Province¹ estimates that of a total 147,000 farming families, 73,500 grow groundnuts, producing a total of 20,000 tons of shelled nuts. Around half of this production is marketed, particularly to the Copperbelt through private traders, and the rest is consumed locally or retained for seed.

The main reason for the decline in the officially marketed crop has been the increasing imbalance between the price of maize and groundnuts. Farmers perceive that the labor requirement to produce one tonne of shelled groundnuts is three times that required to produce one tonne of maize. This 3:1 parity is borne out by an analysis of the historical price and market record. The highest years of groundnut production coincided with those in which the groundnut price was around three times that of maize and fell steadily from 1976 with an ever-increasing divergence from the perceived parity.

Until late 1985, when the price of groundnuts was decontrolled, the Eastern Province Co-operative Union was responsible for all official groundnut purchases and exports. Groundnut exports declined from a high of around 4,000 tons in the early 1970s to zero from 1981 onwards.

Varieties

The variety Chalimbana traditionally commanded high export prices; to protect this specialist market, the government for many years discouraged the introduction of other varieties in the Eastern Province. This policy was discontinued in 1975. However, despite the introduction of higher yielding varieties since 1975, including the locally developed Makulu Red which has twice the yield capability, the strong local taste preference for Chalimbana and the demise of the export trade has ensured the continuing dominance of Chalimbana in the Province.

As the Zambian and Malawian trade in Chalimbana nuts declined, European processors were forced to look elsewhere for suppliers. The United States filled the gap chiefly with its 'flo runner' type of nut, which has now become the confectionery industry's standard and for which processing plants have been re-equipped. Recently the industry has become nervous about its reliance on a single source of supply and has been investigating the possibility of re-establishing its old links with Central Africa. While Zimbabwean plant breeding has kept abreast of the changes in the requirements of the processing industry, Zambia and Malawi have continued to rely on the old Chalimbana type mainly to satisfy their domestic markets. Chalimbana nuts no longer command their old premium in the international market. In fact, they are discounted by some US \$100 per ton against the market standard, making their export a far less profitable business, particularly where transport costs to the coast are high, as they are in Zambia.

1. *Groundnut Production and Marketing in Eastern Province: A Market Analysis*. Planning Division, Ministry of Agriculture and Water Development, Lusaka, Zambia, December 1983.

Possible Intervention

A project could aim to re-establish Zambia's role as an exporter of confectionery groundnuts by encouraging the traditional smallholder growers to produce a variety that is acceptable to the confectionery groundnut trade. The incentive for growers to switch varieties would be the premium farm-gate prices paid under the project. A company would be incorporated, which would own and operate handling and grading equipment capable of an annual throughput of 6,000 tons of shelled nuts. The company would sub-contract the buying process to an existing marketing institution or private traders, and would process nuts at its plant and export the higher quality nuts, while disposing of those that do not make export grade on the local market.

Project Objectives

The objectives of the company would be achieved by the implementation of six main components:

1. Incentive prices for smallholders
2. Improved seed supply
3. Input distribution
4. Buying service
5. Processing
6. Marketing (export and local)

Incentive Prices for Smallholders. The incentive for up to 8,000 smallholders to adopt a new variety will be the premium price paid under the project for groundnuts that are acceptable to the export confectionery market. In addition, under the proposed buying structure, payment would be made to the farmers for their crop within 14 days, thus avoiding the long delays currently experienced. These indicators are considered to be adequate incentives to achieve the conservative projections for the replacement of traditional varieties with the new variety as it becomes available.

Improved Seed Supply. The most important initial constraint on the project is the unavailability of commercial stocks of the right variety of seed. Although Argentina and the United States could be the source of new varieties to replace Chalimbana, the adaptation of those varieties to Zambian conditions is unknown and would take time to test. At least two recent Zimbabwean releases, which have a proven record in this region, and which are included in the current Zambian research program, are known to conform with the market requirements and, subject to the normal controls, could be bulked up immediately. These varieties are Flamingo and Swallow, with a strong preference for the former.

In order to bulk up the right variety for commercial production in Zambia, there are two options. The first is to establish a seed multiplication facility (possibly at Msekere in the Eastern Province, which is the current Zambian groundnut research station) with the assistance of Zamseed and in close collaboration with the intended market. The second option is to provide foundation seed and supervision and sub-contract the bulking process to

reputable and well-established commercial growers in the Eastern Province, again in close collaboration with the intended market.

Assuming the rate of build-up of a new variety passing from foundation seed through the bulking process to smallholder production commences with a 20-kilogram sample planted in the summer of Year 0 and again under irrigation in the winter of Year 0, a smallholder commercial production of around 2,000 tons would be achieved by Year 2, rising to 6,000 tons by Year 4. The number of hectares that must be committed to bulking in the first few years of the project are summarized below:

Required Hectares for Bulking			
Year 1	Year 2	Year 3	Years 4-10
71	86	167	42

Input Distribution. In the early stages of the project the only input planned would be improved seed. There would be a 20 percent per annum replacement after the initial build-up. An exchange scheme, channeled through the buying agents (see below) would be contacted for this purpose. Additional inputs such as gypsum and spray chemicals, particularly synthetic pyrethroids, would gradually be introduced as seed uptake was established.

Buying Service. An established marketing agency such as LINTCO would be contracted by the company to act as buying agents, through which the cotton buyers already posted throughout the region could be utilized. LINTCO is obliged to post buyers wherever cotton is grown. In the plateau areas, where cotton is grown less than groundnuts, these buyers are often underutilized; therefore, a project of this nature would allow LINTCO to make better use of buyers and buying capacity. In the past, one of the main causes of the decline in officially purchased groundnuts has been a lack of cash at buying points. LINTCO has a high reputation among growers for rapid and assured payment (in the cotton markets), with delays seldom exceeding two weeks.

The current ECU pricing structure favors purchases of nuts in shell. This approach would be reversed by the project's pricing structure to favor shelled nuts. This process would have both benefits and costs.

Benefits include

- Reduced transport costs
- Reduced losses (or higher percentage for exports)
- Easier quality determination at purchase
- No shelling costs

Costs include

- Quality losses through breakage by handling before and after grading
- Poorer storage characteristics

There would be a two-grade price structure, which would have the effect of encouraging the sale of high grade nuts and keeping lower quality nuts for home consumption and the domestic market.

Processing. The ECU has shelling and grading equipment situated in Chipata, Petauke, and Sinda. The equipment in Petauke and Sinda is obsolete and has been cannibalized beyond recovery, and the equipment at Chipata is not available for hire; therefore, it will be necessary to purchase all equipment required for handling and grading 6,000 tons of shelled nuts during a five-month operating period. In addition, support equipment such as conveyors and bagging plant and vehicles will be required.

The exact location for the processing plant would be decided during a feasibility study. A site on the Chipata to Lusaka road (as far west as the requisite facilities and housing can be found and yet not so far as to be outside the 'center of gravity' of production) such as Petauke or Sinda, would be the most logical choice.

Marketing. It is assumed that export quality nuts would amount to 63 percent of throughput (after deducting losses) for the traditional Chalimbana nuts, rising to 67 percent for the improved variety. The remainder would be sold onto the local market. Export nuts would be consigned by container via Dar es Salaam to UK ports. In order to minimize interest charges resulting from delays in payment, an insurance scheme that guarantees payment once the crop is ready for dispatch could be negotiated.

Project Costs

It is anticipated that up to 8,000 smallholders would benefit from increased prices under the project. Total project costs have been estimated in the region of US \$750,000. Total project benefits would be around US \$4 million per annum at full development with foreign exchange earnings in excess of US \$3 million.

Fruits and Vegetables for the Export Market

Agroclimatic Conditions

Agroclimatic conditions in Zambia are favorable for the production of fresh fruits, flowers, and vegetables for exports both regionally and to Europe during the high-price 'off season' period from October to May. Areas surrounding Lusaka are particularly advantageous, since they have abundant shallow groundwater reserves, good soils, and a suitable micro-relief for

surface and overhead irrigation. However, relatively high humidity and rainfall between December and February offset some of these advantages for specific crops that are susceptible to fungus and insect attack. Regular applications of systemic pesticides, and appropriate planting schedules and crop hygiene measures are essential for ensuring the production of high quality produce during these months.

Since the early 1970s, both private and public sector enterprises have exploited this potential and exported produce to Northern Europe and to adjacent regional markets including Botswana, Zaire, Gabon, The Congo, and Angola. Items exported to date include strawberries, bobby beans, fine beans, okra, ginger, melons, sweet corn, mange-toute, chillies, aubergines, courgettes, and gladioli to Europe; and citrus, onions, potatoes, cabbages, tomatoes, peppers, and bush beans to regional markets.

Past Experience

Private Sector Exports to Northern Europe

Within the private sector, exports to Northern Europe are dominated by about five well-established commercial farming enterprises, which have diversified into horticultural exports over the past few years as a means of securing the 50 percent foreign exchange retention incentive applicable to non-traditional export earnings. The retention, in turn, is used mainly to secure essential imports required to sustain traditional non-export farming activities. Despite this ulterior motive, producers are becoming increasingly aware that horticultural exports provide an attractive financial return in their own right. In the 1986/87 season, Walkover Estates, Galaunia Farms Ltd, Mpongwe Investments Ltd, Curray Farms Ltd, and York Farms accounted for more than 75 percent of total exports destined for Europe. Production, processing, and marketing activities in this subsector are characterized by individualistic efforts with negligible cooperation between the various producers. Exporters have operated to a large extent in isolation, having identified their own market contacts, developed their own production technology, and invested independently in processing and cold chain facilities. In the past they have also competed for subsidized air freight capacity offered on Zambian Airways scheduled flights. Marketing standards achieved have reached a relatively high level; however, the lack of cold storage facilities at Lusaka airport continues to have an adverse impact on the quality of produce. In summary, the subsector is narrowly based, and the withdrawal of one or two producers could reduce present export volumes by as much as 50 percent.

Private Sector Exports to the Region

Regional exports of fresh horticultural products within the private sector are dominated by a single trading company based in Lusaka. Whitby Enterprises Ltd combines exports with fruits and vegetables on regularly chartered air freighters to Congo Brazzaville, Gabon, and Angola. In contrast to the production-oriented subsector described above, Whitby operates as an intermediary, relying on small-scale outgrowers for supplies of produce. They have had considerable difficulty in achieving the quality and packaging

standards desired, despite the lower requirements prevailing in these markets. Attempts to draw up meaningful production contracts with suppliers have failed, primarily because of a lack of both reliability and understanding among smallholders of the importance of quality. The company therefore intends to concentrate on producing its own exports in the future, and has invested in land and irrigation equipment for this purpose. A number of large scale commercial farmers also export potatoes, onions, and citrus to Zaire on a sporadic basis, but these efforts are opportunistic and are pursued when local markets in Zambia are oversupplied.

Public Sector Exports

In 1974, NAMBoard and the National Import-Export Corporation Ltd exported a few consignments of mangoes, melons, and capsicums to the United Kingdom. In order to promote these efforts, the government initiated an export development program for fresh horticultural produce supported through a parastatal body, Zambia Horticultural Products Ltd (ZAMHORT), established in 1978 with a capital of K 1 million. Its objectives were to

- Establish depots in all provincial centers for purchasing and wholesaling fruits and vegetables throughout the country
- Stimulate and develop an efficient export trade
- Develop a commercial processing industry

ZAMHORT was equipped with a modern packing house and cold storage facility in Lusaka, and between 1978 and 1980, the company exported small quantities of items to Europe, including capsicums, french beans, chilies, melons, okra, and aubergines purchased from a number of smallholder producers and cooperative groups around Lusaka.

From its inception, ZAMHORT experienced considerable difficulties in attaining European quality standards and developed a poor reputation as a fresh produce exporter. This stigma resulted from the recruitment of inexperienced growers, inadequate on-farm supervision, irregular supplies of packaging materials, inappropriate grading and quality control measures, and inadequate management controls. By 1980, the Board of Directors, faced with accumulated losses of K 0.75 million, temporarily discontinued further exports, and ZAMHORT was transferred to the National Import-Export Corporation Ltd. Its regional marketing activities were stopped, and its operations continued processing horticultural produce and organizing export sales of small quantities of fruits, vegetables, and preserved products.

Export Volumes

Reliable statistical data on exports of horticultural produce and flowers are limited. During 1979/80, 1980/81, and 1981/82, ZAMHORT exported 63, 68, and 94 tons of vegetables, respectively. The major independent exporter during this period was Walkover Estates, which exported between 200 and 250 tons of produce each year. Data collated by the Central Statistics Office for 1984 indicate a gross export volume of 700 tons of produce valued at

approximately US \$0.9 million (CIF). During the 1986/87 season, recorded export volumes up to April 30, 1987 increased to approximately 550 tons to Europe and 650 tons regionally, with a total CIF value of about US \$1.5 million. Although the expansion of export production by individual producers since 1984 is significant, overall export volumes are modest compared with those of regional competitors, particularly Kenya, which exported more than 20,000 tons of horticultural produce during the 1985/86 season.

Government Policy

The government has actively encouraged the horticultural export industry since the mid-1970s, with the temporary participation of NAMBoard and the National Import-Export Corporation (NIEC) in export promotion and sales in 1974, the establishment of ZAMHORT in 1978, and the introduction of foreign exchange retention incentives in 1985.

The government's objective in directing ZAMHORT to act as a purchasing, processing, and export intermediary was to link smallholder producers to potentially lucrative European and regional marketing outlets. This initiative has largely been unsuccessful because of fundamental misconceptions of the capability of inexperienced smallholders to achieve adequate quality standards, the high quality requirements of the export market, and the ability of ZAMHORT to intervene effectively in purchasing, quality control, and marketing activities for highly perishable products. While ZAMHORT continues to operate residually as an exporter, there is a growing realization within government that a rapid expansion of horticultural exports will depend largely on private sector initiatives as undertaken in Kenya and Zimbabwe. The establishment of the Export Board of Zambia, a statutory body set up in 1986 with support from the I.T.C. and the Irish government to promote private sector agricultural and industrial exports, appears to be a move in this direction.

Existing Institutional Arrangements

Zambia Export Growers Association (ZEGA)

In 1984, a group of prominent commercial farmers established ZEGA to act as an agent on behalf of commercial and emergent growers interested in exporting traditional agricultural and exotic crops. It was proposed that the Association would identify potential markets, consolidate export orders, process documentation, exert quality control measures, rationalize input procurement, and negotiate with government and air freight authorities on behalf of its members. Since its inception, the Commercial Farmers Bureau has assisted ZEGA, from time to time, with short-term loans to finance office and other operating expenditures. A voluntary committee directs its activities. By 1987, ZEGA had 95 members, each contributing a nominal annual membership fee of K 100.

Since exports of dryland crops, particularly maize, soya, and wheat, are restricted by government regulations and the PL480 food aid agreement with USAID, early efforts by the Association were directed solely towards coordinating horticultural exports. Although the establishment of ZEGA has

been a move in the right direction, it has failed to live up to expectations because of a number of constraints. ZEGA has no permanent premises and no operating funds other than those generated by membership subscriptions and a nominal levy on the sale of seed and packing cartons. Day-to-day activities undertaken on its behalf by the Midland Farmers Co-operative Society are confined to input supply, secretarial and accounting services, and negotiations with Zambian Airways on general matters relating to air freight.

Initially, export consignments from a few members were dispatched under the ZEGA label; however, because of inadequate quality control by ZEGA, quality variations between exporters using the label were considerable. Therefore, members have tended to avoid this avenue, and it is significant that the most active members of the Association are established exporters who least require the services of ZEGA to develop their operations. The less experienced commercial and emergent producers, who represent the majority of members, have failed to play a significant role in the activities of the Association. In essence, ZEGA is presently a dormant organization without a clear definition of its proposed role and without adequate financial support and managerial depth to implement the services necessary to expand export production.

ZAMHORT

Despite a retrenchment in 1980 of its staff complement, from 250 to 50 employees, and a reduction of its activities as described above, ZAMHORT continues to operate on a subsidized basis. It reported an operating loss of K 21,500 on a turnover of K 25 million in 1985, and had accumulated losses of up to K 45 million by 1986. Recent financial problems and difficulties in exporting are the result of the absence of technical facilities for processing, including juice extraction, concentration, and freezing equipment. Clearly, in its present form as a subsidized, inefficient organization, ZAMHORT is an inappropriate vehicle for the expansion of horticultural exports.

Horticultural Research and Extension Services

Research. The National Irrigation Research Substation located in Southern Province is responsible for vegetable and pasture research. Since 1978, the substation has carried out screening trials on amaranthus, beans, cabbage, carrots, kale, rape, pumpkins, watermelons, musk melons, tomatoes, onions, okra, and chillies. It has also been involved in seed production of these items in addition to testing various herbicides, insecticides, and fungicides; however, there is no link between the horticultural export subsector and the substation, since its activities are directed towards technical support for producers selling to the local market.

Extension. Horticultural extension is provided to smallholder and emergent growers through Provincial Horticultural Officers and District Horticultural Assistants seconded to the Provincial Agricultural Office in each region. Technical direction emanates from the Horticultural Department of the Ministry of Agriculture and Water Development (MAWD) in Mulungushi House

in Lusaka. The Department is neither designed nor has the necessary expertise to provide meaningful assistance to the export sector.

Issues and Constraints

Production

A high level of technical expertise and knowledge is required in the production of export quality flowers, and fresh fruits and vegetables. A review of the present endeavors of the subsector indicates that a handful of commercial producers are approaching required quality standards and have developed a satisfactory reputation with importers. However, in the absence of technical support this has involved a considerable investment in market research and on-farm experimentation relating to appropriate cultural practices, varietal screening, pest control measures, and grading and packing techniques.

As a result, experience gained by these companies in terms of marketing and production technology remains a closely guarded secret, and there is little evidence that the sector as a whole is generating a knowledge base that could be tapped by companies or individuals wishing to enter the business at a later stage. Although this is understandable in the prevailing circumstances, the general lack of access to up-to-date technology by most potential producers remains a severe constraint on the expansion of the subsector. Many potential producers do not have the time or financial resources to undertake experiments and absorb the losses that the larger companies incurred in the learning process. In addition to technical constraints, producers require access to medium- and long-term credit to invest in the installation of boreholes and in the purchase of irrigation and other equipment.

Processing

Field heat extraction and cool chain facilities are an essential prerequisite to successful export marketing of fresh horticultural produce. No emergent export industry is likely to achieve sustained development without considerable investment in these facilities, and it is significant that those exporters who have successfully penetrated the export market without exception have invested in cool chain plant and equipment. Specific on-farm requirements will depend upon the range of commodities grown, but will include a packing and handling shed, a field heat extraction unit, a cold store, and an insulated truck for those growers living in areas distant from the airport. Commercial and emergent farmers wishing to participate in the export subsector will also require medium- and long-term credit facilities to invest in these facilities and equipment.

Marketing

Airport Facilities. The lack of airport handling and cold storage facilities poses a severe problem for the expansion of horticultural exports. Documentation procedures at Lusaka airport require that consignments be delivered and offloaded at least five hours before departure, during which time deterioration of produce invariably occurs.

Two clearing agents with warehouses at the airport have small cold stores: Manica Ltd, with a cold room of 5m x 5m; and AMI Ltd, with a 40-foot reefer container parked outside the company's warehouse. The former is unsuited to handling pallet loads, and the latter, by virtue of its shape, is inefficient in terms of net storage space. For practical purposes, the combined storage capacity of these facilities is no more than 15-16 tons, taking into account requirements for incoming perishables. Daily consignments during the peak export period already exceed this volume, and exporters complain about the deterioration of their product and the occasional need to return consignments to their farms when airline departures are delayed or cancelled.

Before the industry can expand significantly, adequate handling and cold storage facilities are essential. These facilities should include a handling bay, a forklift, palleting equipment, and a segregated cold store with a minimum of three cold rooms held at 2 degrees C, 5 degrees C, and 12 degrees C. Discussions with the Civil Aviation Authority indicate that although several companies inquired about leasing plots in the Phase II freight village area, no investments are foreseen in the near future. Leases issued by the Civil Aviation Authority are only valid for 14 years. This period of tenure is inadequate in relation to the level of investment necessary in the construction of cold storage facilities.

Air Freight Capacity and Costs. The availability of air freight space and its cost is one of the most crucial elements in assessing export potential for perishable crops. At present, all fresh fruits, flowers, and vegetables are exported on scheduled passenger aircraft. The existing situation is outlined in the table below:

Airfreight Capacity from Lusaka to Europe

Carrier	Aircraft	Weekly net capacity ^a tons	Net flights	Weekly capacity tons
Zambia Airways	DC-10	6-8	3	18-24
UTA	747COMBI	14-18	1	14-18
B/CAL	DC-10	5-6	2	10-12
Total weekly capacity				42-54

a. Net capacity allows for passenger baggage requirements and freight allocations for source and en-route destinations.

Assuming an 18-week delivery period, existing Europe-bound capacity exceeded export volumes in 1986/87 by about 400 tons or 60 percent.

However, because of a substantial differential between subsidized Zambian airfreight charges of US \$1/kg and charges by foreign carriers of K 5.20/kg (\$1 = ZK 8), producers competed exclusively for Zambian Airways capacity, only using alternative services when forced to do so. For the forthcoming season, Zambian Airways intends to charge competitive rates for air cargo and bring their prices into line with other carriers. The situation is likely to be as follows:

Airfreight Charges to Northern Europe

Carrier	Destination	Item	Charges per kilogram (U.S. dollars)
Zambia Airways	London	Vegetables/fruit	0.65
	London	Flowers	0.90
UTA	Paris	Vegetables/fruit	0.59
	Paris	Flowers	1.05
B/CAL	London	Vegetables/fruit	0.62
	London	Flowers	1.05

Producers have complained about the proposed removal of Zambian Airways subsidies; however, in the long run, this move is seen as a positive development, as it will discourage the production of lower value items that cannot absorb economic airfreight costs. It will also force the industry to become more quality conscious, and to look for 'value-added' options. In general, these costs are in line with those paid by Zimbabwe and Kenya, where rates per kg are US \$0.57-0.68 for vegetables and US \$0.85-0.91 for flowers. In addition to scheduled flights, Zambian Airways operates two Boeing 707 freighters through its subsidiary, National Air Charters. These aircraft haul dry cargo from Europe at a charge of about £1.30/kg. Northbound, the freighters are routed once a week via Luanda and Nairobi, and once a week via Brazzaville and Nairobi. During recent negotiations with ZEGA, Zambia Airways indicated its willingness to allocate one 707 freighter during the export season to carry horticultural produce on consignment to London at US \$0.65/kg at a conversion of K 8 = \$1.00. The existing dry cargo charter rate to London is US \$45,000 for a maximum load of 39 tons; however, it is not yet clear how National Air Charters will allocate capacity to fruit and vegetable exports to Europe without affecting existing contracts to carry beef and vegetables to regional markets (Luanda and Brazzaville).

Thus, discounting unforeseen re-routing by existing carriers, available capacity will be 74-88 tons per week or approximately 1,300 tons for the 1987/88 season. Skepticism remains as to whether the industry will be sufficiently organized to utilize fully this capacity, considering the lack of a co-operative approach to marketing. Although adequate at present, capacity remains extremely modest compared with that available to competitors, and

future expansion will be inhibited unless Zambian Airways abolishes present licensing restrictions on competitive airfreight carriers.

Marketing Strategy

The individual approach to export production and marketing that presently characterizes the industry does not favor accelerated or sustained growth. The Kenyan experience clearly indicates that the active participation of emergent and small-scale producers in the production of exportable horticultural crops requires the development of a group approach to quality control and marketing. This could be accomplished either through a revitalized association of growers, or through entrepreneurial ventures that concentrate on processing and marketing rather than production. While any proposed intervention must support such initiatives, it is vital that the industry itself adopt a more positive attitude to this requirement.

Market Potential

Fresh Fruits and Vegetables

Various studies commissioned by the Zambian government, including the 1984 Hendrikson Associerte GmbH report financed by the EEC, and the 1986 Produce Studies report financed by the Commonwealth Fund for Technical Cooperation, conclude that a substantial market exists for selected high value fruits, vegetables, and flowers, assuming that the industry can achieve the quality standards required by the trade. Over the past decade, a significant change in fresh produce marketing has taken place in Northern Europe -- particularly in West Germany, the Netherlands, and the United Kingdom -- with the aggressive entry of supermarket chains into retailing. In the United Kingdom, supermarkets now control more than 60 percent of the retail business, and they demand from their suppliers (packing and distribution companies such as Geest, Macks', and Hunter Sapphire) exacting standards for quality, continuity of supply, and presentation. Since their entry into the market place, they have taken advantage of changing health attitudes, a more widely traveled public, and the presence of large ethnic minorities to both increase consumption and broaden the range of items on sale. The packing organizations, in turn, have invested heavily in cool chain storage and distribution facilities and are continually looking for alternative sources to rationalize year-round supply and maintain quality standards.

An examination of import volumes of exotic fruits and vegetables into Northern Europe is of limited value in determining market potential; however, as presented in the table below, they give an indication of the huge size of the market in relation to Zambia's present output.

Imports of Selected Fresh Fruit and Vegetables
(tons)

Commodity	United Kingdom		Netherlands		W. Germany	
	1984	1985	1984	1985	1984	1985
Asparagus	865	897	134	283	18,758	20,619
Aubergines	814	6,629	2,924	3,121	11,302	12,053
French beans	3,442	4,570	13,072	15,006	7,945	10,009
Courgettes	8,668	11,645	900	1,204	7,335	8,614
Mange-toute	1,500	1,800	304	N/A	N/A	N/A
Mangoes	5,178	6,468	2,033	2,515	1,511	1,746
Sweet melons	73,700	75,400	27,000	22,000	18,500	23,500

Marketing costs including airfreight, insurance, packaging, and offshore commissions account for more than 75 percent of total production, processing, and marketing costs, and for most fruits and vegetables amount to US \$1.00-1.15/kg. It is realistic to assume that only products with a wholesale value of US \$1.50/kg or more, during the off-season period between November and April, are likely to be attractive. The products with such price potential are identified as follows:

Market Opportunities
(1986/87 UK Wholesale Prices November/April)

Produce with good potential	Price/kg (Sterling)	Produce with moderate potential	Price/kg (Sterling)
Asparagus ^a	2.00-5.00	Aubergines	0.70-1.00
Fine beans	0.90-2.20	Courgettes	0.80-1.30
Mange-toute ^b	1.10-2.00	Okra ^b	0.90-1.50
Sweet corn	1.20-1.40	Avocados	0.80-1.10
Mangoes	1.20-3.30	Paw-paw ^b	1.00-1.75
Peaches/nectarines ^c	1.50-2.00	Passion fruit	1.40-1.70
Strawberries	2.50-4.50		
Cantaloupe	1.00-1.50		
Cayenne chilies	1.00-1.40		

a. EEC duty September-January, 96 percent; February-August, 16 percent.

b. Small markets.

c. EEC duty is 22 percent.

In addition to these items, many other tropical fruits are imported to Northern Europe. The wholesale prices of Cape gooseberries, guavas, lychees, persimmons, and tamarillos consistently exceed US \$1.50/kg, and often return prices in excess of US \$2.00/kg; however, these markets are small and are sensitive to oversupply and price collapse.

The potential of regional markets is more difficult to assess. Eighty percent of produce exported by Whitby Enterprises Ltd in 1986/87 went to Angola, where shortages relate to a large extent to the current political situation. Gabon, with a population of about 750,000, a well-developed mining, petro-chemical and timber industry, a high standard of living, and a large expatriate community is a natural target for Zambian exports. At present, fruits and vegetables are imported from France at high cost. Good market potential exists in Congo Brazzaville, although to a lesser extent than in Gabon. Both countries import consignments of beef from Zambia; thus, combined beef/fruits/vegetables exports would be possible. Improvements in the quality standards for fruits and vegetables would be necessary if Zambian producers wish to capture a significant share of these markets.

Flowers

The European market for flowers includes an enormous number of different varieties. Marketing procedures are highly sophisticated, particularly in the Netherlands, where the Dutch auction floors operate a redistribution network that covers most of Europe, and represents 83 percent of the European import market.

The immediate potential for Zambia appears to be for gladioli, roses, and carnations, since they are imported in large quantities in the European winter and offer prices high enough to be attractive. Mpongwe Investments Ltd successfully exported 7,900 boxes (250 stems each) of gladioli to the United Kingdom in 1986/87 at prices ranging between US \$0.15 and US \$0.39 per stem, from an area of 17 hectares. Summer annuals exported to the Netherlands in the winter season are also an attractive alternative, and an established commercial farmer in the Lusaka area is investing in a joint venture with an international organization to export 8 million stems annually, based on successful experience gained in Zimbabwe. In general, the world demand for cut flowers has been increasing steadily by 5-10 percent per year over the past decade, while demand for the summer flower varieties has increased faster than twice that rate.

Gladioli, rose, and carnation imports to the United Kingdom, West Germany, and the Netherlands amounted to 2,523 tons in 1984. Average prices for quality stems were as follows:

Item	US \$/100 stems	Market
Gladioli (standard)	27.0	West Germany
Roses (large flowers)	31.0	Netherlands
Carnations (standard)	17.0	Netherlands

In summary, the market for high value fruits, vegetables, and flowers is attractive for Zambia. Constraints relate mainly to producers' access to relevant technical information and to their ability to attain appropriate quality standards, rather than to the market situation. Regarding price competition, Zambia has lower labor costs than other regional competitors, an important advantage in view of the large labor requirement for horticulture.

Possible Project Interventions by USAID to Support the Expansion of the Horticultural Export Industry

In April 1987, a World Bank Mission completed a preparation report for an export diversification project for Zambia. Included in this study were tobacco, groundnuts, cotton, beef, and fruit and vegetables. The concept of the project was for the Bank to provide foreign exchange, through the commercial banks, for the provision of short- and medium-term loans that producers could use to procure equipment and inputs. These loans would be recovered, through the commercial banks, from the export retentions.

As a result of Zambia's break with the IMF and the introduction of the Interim Economic Development Plan, the World Bank will not be implementing this project in the time scale originally planned. However, in April 1988, the Bank of Zambia gave approval for up to US \$12 million worth of pipeline debt to be dismantled in order to provide kwacha support for a horticultural export project. Under this approval the funds can be used for development work such as land clearing, on-farm buildings, and working capital for farmers wishing to expand their current production or for incremental producers wishing to enter the export market. In addition, the funds could be used for the local portion of the construction of improved marketing facilities at Lusaka International Airport, such as cold storage facilities.

These funds will be administered through a commercial company, in conjunction with commercial banks. The company will provide technical and marketing information and supervision and will carry out feasibility studies on behalf of potential clients in order to assess the viability of their proposed production, while the commercial banks will administer the financial aspects as envisioned in the World Bank project.

In addition to local funds, medium- and short-term foreign exchange loans and equity will be required to implement the project. The medium-term loans would be used for the procurement of machinery and equipment, while the short-term loans would be 'pump-priming' foreign exchange, in the initial phase, for the importation of improved seeds, chemicals, and packaging materials. In addition, longer-term loans or equity would be required for the development of the cold storage facilities at the airport.

Airport Facilities

As detailed earlier, airport facilities for pre-shipment, storage, and handling are presently inadequate. Credit could be provided under the ZAMS project to an association, company, or individual wishing to invest in appropriate handling and cold storage facilities at the airport. Plots 65 and 66 in the Phase II freight village are available for this purpose, where Manica Ltd has already invested in some infrastructure including tarmac access roads, power facilities, and drainage. Under the project financing, up to 75 percent of the capital costs through medium- or long-term loans could be considered.

Applicants wishing to invest in the village would be required to submit proposals to the Civil Aviation Authority (CAA) together with architectural drawings, which thereafter would require approval by the CAA's Buildings Department. A 14-year renegotiable lease would cost a one-time fee of K 28,000 payable to the Commissioner of Lands, who would pass it on to Manica Ltd. To stimulate interest in establishing suitable airport facilities, the government must increase the initial lease period to at least 20 years.

The appropriate size of the cold storage facility at the airport would depend upon the rate at which export volumes are expected to increase; however, design provisions could easily be made for the expansion of capacity alongside increasing export volumes. Various systems are available including sophisticated Ice Bank and Humi cold stores. In view of the high maintenance requirements of these units, a conventional forced air system with or without humidity control would seem more appropriate. Peak daily export volumes are currently about 15 tons; therefore, a unit with a total initial storage capacity of 50 tons would be more than adequate to cover a threefold increase over the next two to three years. Specifications and typical costs of such a unit are detailed in the following table.

The justification for this facility is that exporters are not getting top prices for their produce, in part because of the decline in quality at the airport when the cool chain is broken. Increases in prices of at least 10-12 percent for produce passing through the facility would be realistic and would be worth an additional US \$150,000 per annum to producers. Annual income to the investor assuming a charge of K 0.30/kg for each consignment would amount to about K 450,000.

Specifications for Cold Storage Facilities at Airport

4 coldrooms:	8m x 8m x 3m	
Passage area:	16m x 4m x 3m	
Loading bay:	20m x 4m	
		Costs (kwacha)
Coldroom equipment and doors		480,000
Insulation of cold rooms		144,000
Electric panels for coldrooms, lighting, etc.		36,000
Building works (concrete block plinth, asbestos roof fixed on spider trusses) including contractor's margin		1,000,000
ZESCO supply and connection fees		40,000
Main electrical panel		12,000
Cold store specialists margin -- fees for installation		80,000
Forklift truck		160,000
 Total		 1,952,000

Barley Production for the Clear Beer Industry

Background

Zambia Breweries currently brews beer at two sites (Copperbelt and Lusaka) and a total of 800,000 HL is produced. This amount is significantly below demand and shortages are frequent. Lack of foreign exchange to import the malted barley is currently the greatest constraint to meeting demand.

To meet current production levels, some 7,500 to 10,000 tons of malted barley are imported annually at a cost of about US \$3.8 million. INDECO, a government parastatal and owner of Zambia Breweries, is anxious to substitute locally produced malt for imported malt.

The basic ratio of raw materials by weight used in brewing clear beer are as follows:

Malted barley	50 percent (imported)	7,500-10,000[tons]pa
Maize grits	25 percent (local)	3,750- 4,250[tons]pa
Sugar	25 percent (imported)	3,500- 4,000[tons]pa

Although malted sorghum is successfully used as a basic ingredient for brewing in both South America and West Africa it is not favored by Zambia Breweries because the installation of special bulking facilities would be required. Zambia Breweries favors the total replacement of maize grits by rolled barley from a quality standpoint; however, this is unlikely to be economically viable unless the maize subsidy is removed or unless Zambia Breweries is forced to pay the full commercial price for maize.

Barley has been grown on a very small scale in Zambia since the early 1960s, mainly on irrigated commercial farms for feed purposes. Government-controlled prices and lack of a comprehensive policy towards import substitution have restricted, until now, production to minimal levels. Barley yields in Zambia have traditionally been rather low (2 to 3 tons/ha), because of the poor performance of unimproved varieties; however, in neighboring Zimbabwe, where a policy of import substitution has been in force for a considerable time, improved varieties and technology have raised yields to between 5 and 6 tons/ha, and where malting barley is grown alongside wheat, yields have been very similar. Improved varieties of wheat in Zambia are currently yielding around 6 tons/ha under irrigation.

Barley can easily be substituted for wheat in the well-proven wheat/soyabean rotation practiced for many years in Zambia and Zimbabwe. However, the government would be concerned if barley production replaced wheat production on any significant scale among traditional commercial farmers. A great effort has been made recently to meet the country's demand from local sources. Thus, any incremental barley production should come, ideally, from dedicated incremental irrigation projects. This condition can be met by restricting barley to areas with slightly lighter soils, in order to control nitrogen levels better, which is not possible on the rich, heavy red soils traditionally selected for wheat production.

Possible Intervention

Some large tracts of land in areas agro-ecologically suited to barley production have been set aside by the government for large-scale commercial development. One of the main areas of government priority for this type of development is in the Mpongwe block, where there are already a number of similar development projects, and where soils/irrigation potential is suited for barley production.

Any such project would rotate irrigated barley with rainfed soyabeans and would, initially, send the barley to Zimbabwe for malting, although a malting capability could be established once production warranted it.

Project Costs and Benefits

Development costs indicative for a 5,000-hectare project are given in the following table.

Component	Cost per hectare	Total cost
Land clearing	1,200	6,000,000
Agricultural machinery	200	1,000,000
Storage/housing/roads	250	1,250,000
Irrigation and pumping	750	3,750,000
Electrical reticulation	100	500,000
Working capital	200	1,000,000
Contingency	200	1,000,000
Sub total		14,500,000
Malting plant and installation		3,500,000
Total		18,000,000

At full production, such a project conservatively would produce 20,000 tons of barley per annum, of which approximately 15,000 tons would be used for local clear beer production; the balance would be exported regionally. The most likely markets would be Tanzania, Zaire, and Malawi. In addition, 50 percent of the soyabean production, totaling 7,500 tons, would be exported. The gross value of production would amount to approximately US \$10.0 million per annum. The total value of the exported production would be approximately US \$4.0 million annually.

Financing

In Zambia, this type of project would be eligible for debt/equity swapping or discounting using trade creditor debt held in the pipeline. Through this mechanism, the amount of incremental foreign exchange required is minimized, although any such investment is denominated as foreign and is eligible for externalization of dividends in foreign exchange payable from the retention granted by the government on the export earnings.

In addition, foreign exchange loans would be required for the purchase of machinery and equipment as well as for irrigation infrastructure. Any such loan could be serviced through the same retention.

Beans

Beans form a significant part of the diet of most Zambians, but they are not traded in any substantial quantity through the formal market. The following table gives an indication of the estimated area under production and tonnage produced, by province, for the period 1976 to 1986.

Mixed Beans Area under Production and Tonnage Produced

	1981/82	1982/83	1983/84	1984/85	1985/86
Area (hectares)	14,350	17,650	7,550	8,346	13,665
Tons	4,209	6,025	5,405	5,550	6,024
Yield/hectare (kilograms)	293	341	716	665	441

The high production of the Northern Province probably reflects the lack of animal proteins in that region, and it is unlikely that the northern provinces would be suited to the cash crop production of beans. More likely, the Eastern Province would respond best to incentive pricing.

The beans grown in Zambia, known as 'sugar beans,' 'ration beans,' or 'mixed beans' are imported into Swaziland, Botswana, and South Africa; much of the supply is currently grown in Zimbabwe. In Botswana and South Africa these beans are used in the mine rations. There appears to be a potential to export these beans in the regional market, using mechanisms similar to those described for the groundnut project -- small-scale outgrowers selling through a commercial company that would export the produce to the market. The incentives to grow beans would be a better price and prompt payment to the producers.

As is the case for all export crops, the overvalued kwacha mitigates against this type of project when the project has no access to any financing scheme that would bring the value of the kwacha more in line with its real value.

Rice

The main production areas for rice are the Northern Province and, to a lesser extent, the Eastern and Western Provinces; however, on a per capita basis, Luapula Province also produces significant amounts. Production figures and the area under cultivation for the period 1982 to 1986 are summarized in the following table.

Rice: Area under Production and Tonnage Produced

	1981/82	1982/83	1983/84	1984/85	1985/86
Area (hectares)	5,920	7,014	8,740	10,863	10,410
Tons	5,272	9,631	9,271	11,233	11,206

During the completion of the field work, a number of agencies reported the poor quality of Zambian milled rice compared with that of Malawi. Zambia currently imports rice from Malawi. This problem is simply one of mixed varieties in the planting material; mill settings cannot cope with varying grain sizes. During the 1960s, Malawi suffered a similar problem and entered into a large-scale seed purification scheme that has now resulted in a more uniform seed quality. Since there have been two schemes to support rice production in Zambia, the EEC in Kasama and the Dutch government in the Western Province, it is surprising that this problem still exists.

A possible intervention by USAID would be to investigate the extent of this problem and, if warranted, to implement a project to coordinate research between Malawi and Zambia, and to produce and distribute quality seed. It should be noted that the preferred Zambian variety is the Malawian indigenous Faa.

Alternatively, the seed could be imported directly from Malawi for retail sale in Zambia. In recent discussions between the Seed Company of Malawi (which is responsible for maintaining Faa purity) and Agmark, the management indicated a strong desire to market their products into Zambia but were constrained by Zambia's lack of foreign exchange. The provision of foreign exchange, specifically for the importation of improved rice seed, could also be an area of intervention for USAID in cooperation with Zamaseed.

Maize and Fertilizer

Chapter I outlined the development of agriculture in Zambia from the turn of the century and demonstrated how maize gradually rose from being a relatively insignificant crop to one that dominates the entire agricultural economy. Any intervention that can increase the role of the private sector in maize marketing and reduce the cost of subsidies, without jeopardizing the government's pan-territorial producer and consumer pricing structure, would have significant economic advantages.

Currently, the cooperative societies at village level are the sole buyers of maize (and other crops). The fixed producer price for maize is currently K 80/bag. The controlling Cooperative Unions are responsible for arranging transport from the societies to the Unions' main depots. This transport can take many forms depending on the size and accessibility of the primary market, and ranges from scotch carts to 30-ton articulated trucks. The pan-territorial nature of the producer price means that the value of maize at the primary market is the same as at the Unions' main depot, the transport cost from the outlying market to Union depot being covered by a government subsidy. The Eastern Province Cooperative Union reported that this subsidy currently amounts to K 35 per bag of maize giving a true cost of maize delivered at the depot of K 115/bag. There are no incentives for Unions to minimize transport costs.

The introduction of a dual producer pricing system, where a higher price was paid for maize delivered to Union depots than that paid at primary societies, would have the following advantages, provided the incremental price was less than the transport subsidy:

- Reduce Union transport organizational problems
- Reduce subsidy payments by government
- Introduce private transporters
- Encourage primary societies to organize their own transport
- Benefit the producers in a position to take advantage of the higher prices

Disadvantages include first, the fact that those closest to the Union depots would benefit most; and second, that Union depots are probably not adequately geared to receiving the large numbers of small consignments that would result from such a policy. The first problem could be overcome by zoning price differentials, and the second problem could form the subject of an aid project aimed at encouraging privatization in the market sector linked to a reduction in government subsidies.

If the same argument was used in the case of fertilizer -- a lower price at the Union depot than the controlled price at the primary society outlets -- the benefits for private transportation would be further increased by encouraging the backloading of inputs.

Input Related

The following interventions were identified in this category:

- The supply of inputs through the Zambia Cooperative Federation Commercial Services Department
- The production and supply of lime

Input Supply through the Zambia Cooperative Federation Commercial Services Department

The Zambia Cooperative Federation Commercial Services (ZCF CS) Department is empowered to procure all inputs, apart from fertilizer and maize bags, for the Cooperative Unions. It was established in 1984 as a department of the Zambia Cooperative Federation to undertake import and export business for the Cooperative movement, and, generally, to carry out commercial services that otherwise could not be performed easily by the parent organization. Since its establishment, ZCF CS has been involved in the importation and supply of farm equipment and tools such as ploughs, ridgers, cultivators, hoes, wheelbarrows, and forks as well as tarpaulins, tires, and tools. It has also supplied essential consumer goods. In 1986, for instance, the company sold more than 14,000 ploughs in addition to other commodities to the Cooperatives. It had a turnover of K 14 million and realized a profit of K 3.6 million.

ZCF CS has to build up its capacity both financially and in terms of manpower resources, before it can assume greater responsibilities of handling import and export business for the Cooperative movement. Among other problems, ZCF CS has experienced, in the past, some difficulties in obtaining approval for foreign exchange at the right time for its purchases from overseas. This constraint was raised by the Commercial Manager of ZCF CS with the RRNA team and Agmark during the completion of the field work (end April), at which time no funds had been allocated for the procurement of inputs either on the local market or through the Foreign Exchange Management Committee (FEMAC). It would be impossible now to have the requisite inputs available for the farmers for the upcoming growing/marketing season.

These constraints were recognized by IFAD in the preparation of the Smallholder Services Rehabilitation project (July 1987). Part of this project (which is about to be implemented) includes an Input Supply and Credit Services component that would involve improvement of the national level cooperative farm input supply and marketing operations by supplementing the procurement funds of ZCF CS and by helping it to develop into a viable and more efficient subsidiary company of ZCF.

Despite this IFAD intervention, it is possible that similar incremental funding could be made available through the ZAMS project, particularly related to marketing and transport. The main items identified in this category are

- Scotch carts
- Tarpaulins
- Tires
- Marketing equipment

Scotch Carts

Transport between place of production and the primary market point, and for the collection of inputs and delivery of outputs is a constraint identified in the rural areas. The demand for scotch carts is high, and those produced locally are insufficient to meet this demand. In addition, because of the current duty system in Zambia, raw materials such as steel required to produce the carts make local production more expensive than the importation of self-assemble kits, which are available in Zimbabwe and the United Kingdom. ZCF is, in turn, constrained by cash flow problems, which limit the number of imported carts. Medium-term credit is available for farmers, through the Zambia Cooperative Federation Financial Services Department, which usually involves a three-year repayment period. The Cooperative staff generally feels that the purchase of scotch carts under these terms is a very profitable investment, and repayments within 18 months are frequent.

Tarpaulins

A major impediment in the preservation of the quality of produce in the marketing chain is a lack of tarpaulins. Some types of tarpaulin are produced locally in limited quantities, and the rest of the country's requirements are imported. Timely intervention with foreign funding to obviate crop damage by rain would result in significant reductions in crop damage and losses.

Tires

There is an ongoing shortage of tires in Zambia. Some tires are produced locally, but production is sporadic because of to shortages of foreign exchange for the importation of raw materials. Tires and spare parts for vehicles are notoriously difficult to procure, reducing the effectiveness of the available transport fleet to almost 50 percent of capacity at times, and having an obvious spin-off effect in the agricultural sector, particularly in relation to perishable commodities. While it would be impossible for ZAMS to intervene in the spare parts procurement market, funds allocated for the procurement of tires or support to the tire industry in making raw materials more readily available would have a considerable impact in the agricultural marketing system. In 1988, ZCF CS imported 7,300 tires, all of which were pre-paid and sold in less than a month.

Marketing Equipment

This includes scales, trolleys, cash registers, safes and so forth. Although, in the course of field work this component was not raised frequently since there are many other more serious constraints, additional responsibilities for the Cooperative Unions could make the provision of marketing equipment an essential component of that sub-project.

Production and Supply of Lime for Agricultural Uses

Normally, in an agricultural economy, lime is a relatively inexpensive input compared with fertilizer. In addition, lime has a long-term effect, whereas the effect of fertilizer on the current crop is immediate. However, in the Zambian economy, because of the heavy subsidy on fertilizer, the cost of lime is relatively high. Because of the time lapse for the benefits to be realized, farmers tend to defer application of this important input in favor of quicker acting crop, rather than soil, nutrients.

Lime is required on almost all Zambian soils, but in the higher rainfall areas the requirement is greater. Currently, agricultural lime is only produced at three locations along the line of rail, Lusaka, Kabwe, and Ndola. The entire southern and northern regions of Zambia are unserved unless farmers are prepared to pay high haulage costs. For example, lime purchased in Kabwe for a Mkushi farm doubles in price, because of these costs.

There are a number of reported dolomitic lime deposits in Zambia that are not being exploited, all of which would probably require further geo-chemical investigation before development. Agmark believes that, as with so many other interventions, the most appropriate starting point would be to service the commercial farming sector through private enterprise exploitation of deposits at locations adjacent to the demand areas. Later, these commercial lime works, whose existence and profitability would be underwritten by the commercial farmer demand, would be able to expand production and distribution to small-scale producers in more remote areas.

Two locations have been identified that meet these requirements. They are Monze, serving the southern region commercial farmers; and Mkushi, serving the Mkushi commercial farmers and, to a lesser extent, the commercial farms extending up the Tazara railway.

The farmers whom we visited during the completion of the field work felt that the biggest constraint to the exploitation of existing deposits is managerial skills and not, as might be expected, the lack of foreign exchange for the procurement of equipment and services, although that undoubtedly would need to be addressed by any proposed project. This is possibly an area for USAID technical assistance with minimal capital investment. For such a technical assistance program to work effectively it would have to gain the support of local commercial farmers who would then be in a position to offer practical assistance and a committed market.

Infrastructural Support

During field work, interviewees were almost unanimous in regarding the poor state of the country's roads as the single most important constraint on orderly and timely marketing of all crops. The catalogue of disastrous examples to back up this claim was endless.

Attaching a road rehabilitation program to any market-oriented project would seem to be not only desirable but essential. For example, such a road sub-project could be attached to the suggested groundnut or bean project in the Eastern Province.

In addition, two locations have been identified in Zambia that warrant consideration for aid-assisted market infrastructure development. They are the Mpongwe area of the Copperbelt Province and the Zambezi Valley area of the Southern and Central Provinces. In both cases, the government is encouraging investment in large-scale agricultural ventures. In both cases, individual projects are designed with all their own internal requirements for processing, transport, roads, and electricity reticulation, but interlinking facilities between the projects and the markets are non-existent. In the Mpongwe area, there are currently four major projects (only one of which caters to smallholders) and at least three more on the drawing board. Although these projects are primarily export (or import substitution) oriented, their crop rotational requirements result in the production of large quantities of maize. The Cooperatives are obliged to purchase this maize and transport it to the Copperbelt, but their facilities for handling, storing, and transporting grain, and the standard of interlinking roads and communications remain equivalent to those that existed before the projects came on stream, when the area produced no more than a few tons of surplus annually. Similar circumstances are beginning to materialize in the Zambezi Valley.

From the point of view of USAID, the Zambezi Valley infrastructural and marketing requirements appear to warrant particular attention, since all the projects in that area have a degree of U.S. private or quasi-government participation, and any intervention would support these enterprises. In addition, USAID is currently supporting the rehabilitation of the Kafue to Chirundu Road, which is the main artery linking the Zambezi Valley to Lusaka, and extensions from this road would form part of a logical network.

Financing

Emphasis has been placed throughout this report on how important export-oriented agricultural production is in overcoming the burden of government intervention in the local markets and in overcoming the short- to medium-term lack of internal demand. Reference has also been made to the overvalued kwacha and the adverse effect that it has on Zambia's capability to export its commodities competitively.

In order to overcome these constraints, export producers require either 'cheap' investment funds/working capital or some form of price support in kwacha, or a combination of the two. Recognizing this problem, the

government has introduced a number of measures through the Bank of Zambia, through which these conditions can be met. In the sphere of providing 'cheap' investment funds, debt held in the trade creditor pipeline can be discounted or swapped for equity. In the case of debt for equity swapping, there is little leverage in increasing the real kwacha:dollar rate, but it is a mechanism through which substantial funds can be invested and where incremental foreign exchange for such investment is extremely hard to find. Kwacha funds released through either mechanism are recognized as foreign denominated, and as such, attract foreign exchange dividends. For export-oriented projects these dividends are payable through the retention.

For any dismantling of trade debt, the Bank of Zambia has an obligation to provide kwacha at the current rate of exchange for debt that entered the pipeline at a much lower rate of exchange. Debt holders are obliged to make up the difference between the rate at which they deposited kwacha against the debt and the Bank of Zambia's ruling terminal rate. The Bank's terminal rate for bills entering the pipeline prior to January 5, 1983 is K 0.96:US \$1 and for bills entering the pipeline between January 1983 and October 1985 the rate is K 2.19:US \$1. Thus, for bills whose terminal rate is K 0.96, the Bank has to find K 7:US \$1 value; and for bills whose terminal rate is K 2.19, the Bank has to find K 5.79:US \$1 value.

The funds generated for the 'top-up' by the Bank of Zambia represent new money in circulation, and since the GRZ already has a budget deficit, with no allocation to any expenditure category to cover this commitment, the only way to make up the difference is to print more money, with all the concomitant inflationary effects.

The Bank of Zambia is well aware of this problem, and is currently restricting the number of projects with approval to use pipeline debt as a step towards controlling inflation. This will have serious implications on the ability of a number of ongoing and planned commercial development projects to be implemented.

An imaginative intervention for the U.S. government would be to apply a portion of their counterpart funds as a grant to the Bank of Zambia to cover all or part of the bank's portion of the top-up for USAID/Bank-approved projects. For example, it is understood that USAID has an interest in the Chiawa cotton project, which will undoubtedly apply to the Bank for use of pipeline funds to finance the development work. Any apprehension on the part of the Bank to finance the top-up would be considerably alleviated if the GRZ were not liable for the entire amount. This concept could also be linked specifically to the dismantling of U.S. trade debt and to supply contracts for goods and services originating in the United States.

APPENDIX 1. STATEMENT OF WORK

A. INTRODUCTION

USAID Zambia is in the process of designing a project in Agricultural Marketing. The mission has narrowed the initial focus of the project to four marketing functions -- transportation, storage, processing, and grades and standards -- and to the three general commodity groups -- oilseeds (sunflowers, soyabeans, and cottonseed), minor field crops (millet, sorghum, and cassava), and fresh fruits and vegetables.

The Study - A study of the oil seed sector in Zambia has provided the mission with very good information and data on the oilseed sector; however, such information does not exist for the minor field crops, and the fruit and vegetables subsectors. This information/data gap must be filled before the Project Paper design team begins its task.

B. OBJECTIVE

The objective of the study will be to establish that data based on the production, marketing, and processing of fresh fruit and vegetables; and the production, marketing, and processing of millet, sorghum, and cassava all for the domestic market. This will include determining the following:

- Number, size, and location of fresh fruits and vegetable producers who supply the large population centers and processors
- Number, size, and location of firms or individuals engaged in the marketing of fresh fruits and vegetables to the large population centers or processors
- Number, size, and location of the major processors of fresh fruits and vegetables
- Type of processing presently available for fruits and vegetables
- Number, size, and location of significant production areas of millet, sorghum, and cassava
- Number, size, and location of firms or individuals engaged in the marketing of millet, sorghum, and cassava

- Number, size, and location of processors of millet, sorghum, and cassava
- Type of processing presently available for each of the commodities

The study will also identify the major constraints in transportation, storage, processing, and grades and standards faced by the marketing and processing firms in the fresh fruits and vegetables subsector, and in sorghum, millet, and cassava. Further, the study will identify the type and kind of assistance that USAID appears to be best qualified to supply to overcome these constraints, in the context of the proposed ZAMS project.

The three items above for each of the general commodity groups will be accomplished through reviewing secondary information and holding interviews with individuals involved in the fruit and vegetables and sorghum, millet, and cassava subsectors.

USAID/Zambia will utilize two consultants from Robert R. Nathan Associates, Inc. to manage, under the general guidance of the mission's agricultural economics officer, the activities to be conducted under this PIO/T. The consultants will not have a general knowledge of Zambia, and will need assistance in collecting the necessary data/information. The purpose of this PIO/T is to provide that assistance to the consultants.

C. SCOPE OF WORK

Under the guidance of the USAID/Zambia consultants, the contractor will:

- Review the secondary data that can provide information on the structure of the fresh fruits and vegetables and sorghum, millet, and cassava production and marketing
- Identify the major production areas for fresh fruits and vegetables and sorghum, millet, and cassava
- Conduct field surveys and investigations to determine the number, size, and location of firms involved in transportation of fresh fruits and vegetables and sorghum, millet, and cassava and the constraints faced by those firms
- Conduct field surveys and investigations to determine the number, size and location of firms involved in storage of fresh fruits and vegetables and sorghum, millet, and cassava subsectors and the constraints faced by those firms
- Conduct field surveys and investigations to determine the number, size, and location of firms involved in storage of fresh fruits and vegetables and sorghum, millet, and cassava subsectors and the constraints faced by those firms

Using the information gained from the above activities, the contractor will:

- Provide the USAID/Zambia consultants with draft reports on their findings and conclusions
- Discuss the draft reports with the consultants
- Assist the consultants in writing the draft final report to be submitted to USAID/Zambia

The studies will begin as soon as arrangements can be made: all field work must be completed by May 13, 1988.

D. REQUIRED REPORTS

The contractor will be required to furnish the USAID/Zambia consultants with draft reports of the field findings, including the constraints identified during the field investigations. The Contractor will also furnish the USAID/Zambia consultants with copies of any secondary data used in the investigations.

**ANNEX 1. COOPERATIVES AND AGRICULTURAL MARKETING
IN ZAMBIA**

Introduction

It is the stated policy of the Government of Zambia to make the Cooperative Unions the main marketing agents for agricultural products. To a considerable extent, the Cooperatives have become just that.

The Ministry of Cooperatives has been renamed the Ministry of Marketing and Cooperatives in recognition of the fact that Cooperatives totally control the marketing of the principal crop, maize. Coops also enjoy a dominant position in the marketing of other commercial crops such as groundnuts, cotton, soyabeans, and sunflower.

The dominant position of the Cooperatives in agricultural marketing has been further strengthened recently by the disbanding of NAMBoard, the National Agricultural Marketing Board, which until recently had been charged with the distribution of maize to millers and the distribution of fertilizers to farmers. Most of the functions and responsibilities of NAMBoard have now passed to the Ministry of Cooperatives.

Government Support and Government Control

Government support of cooperative societies in the agricultural sector takes various forms, beginning with special legislation facilities for the formation and regulation of cooperatives. A whole Ministry has been set up to encourage the formation and improve the operation of cooperative societies. Government officials and the UNIP party are constantly extolling the merits of forming cooperative societies and the advantages that these societies have in accessing government services.

Government participation in the management of cooperatives goes beyond advisory and supervisory services. The principal officials of all major cooperatives are government appointees rather than officials elected from the cooperatives' members. Public financial assistance to cooperatives ranges from the provision of loans at negative real rates of interest to direct payment of subsidies to cover the losses of the cooperative societies. Cooperatives also receive preferential treatment in the allocation of scarce inputs such as fertilizers, grain bags, import licences for vehicles, equipment, spare parts, and raw materials. In some cases, the government specifically bans the activities of traders; for example, until very recently it was illegal for private individuals to engage in maize trading and movement.

Cooperative Principles

Membership in these agricultural cooperatives is rather diffuse, since all peasant farmers in a given district automatically belong to that District's cooperative. At the same time, these supposed members have little say in running the cooperative, in electing the leadership, or in supervising their operations, or in allocating the cooperative's funds. Financial results are presented to the government, but not to the membership.

Under these circumstances, the District and Provincial Cooperative Unions can be called cooperatives only in name, and for all practical purposes have become merely commercial agents of the government for the collection of rural produce and the distribution of farm inputs. Neither the democratic management principles nor the financial independence expected in the cooperative movement exists in these organizations.

Stifling of Private Trade

Given the advantages conferred by the government upon cooperatives it is not surprising that they have almost completely taken over the marketing of all commercial crops in the country. The adverse consequence has been that the development of private Zambian trading activities in the countryside, and even in urban areas, has been stifled. No private business can compete in trade against a cooperative whose total operational costs, including losses, are covered by the central government. In the Eastern Province, for example, the government subsidizes the Provincial Cooperative Union with 35 kwacha per bag of maize handled from villages to central depots. Private traders could surely do the job for less, but cannot since the cooperative gets reimbursed and they do not.

Confusing Rationale for Cooperative Trade

It is not clear why the government (and several donors, Scandinavia especially) place such stock in promoting the marketing of farm products through cooperatives. The principal reason seems to be ideological. Cooperative trading seems to agree with socialist and humanist principles. It bypasses the suspect private trader, who is in trade purely for personal gain. Private profit is viewed as slightly dishonorable, while profitless trading is acceptable, and money-losing trade is, to a certain extent, socially desirable.

There are valid economic reasons for farmers to organize themselves into cooperatives for selling their products, and purchasing inputs. But a cooperative is supposed to be a self-supporting business enterprise in which capital is provided and activities carried out by the cooperative's members. The society may benefit from economies of scale in product collection and distribution and greater bargaining power, or it may operate where there are no private traders or suppliers, or it may enhance the creditworthiness of its members. Cooperatives may also undertake certain activities such as price information dissemination that individual producers or traders will not undertake because the benefits cannot be captured.

All these advantages should permit cooperatives to compete with traders on a favorable footing without any special privileges and support from the government or foreign donors. In such cases, the cooperatives play an important complementary role to private efforts and are preferable to direct government participation.

No Need for Subsidies

However, if cooperatives are indeed well adapted for agricultural trade in Africa, they should not need to be subsidized. When the cooperative societies depend on permanent government and donor support, their economic justification is put in doubt. Their survival and progress no longer indicate higher commercial efficiency than private firms, but merely the result of the advantages and privileges created for them by the government. These are especially injurious when the support is in the form of general financial grants, as in Zambia, in addition to restrictions on the activities of private competitors, such as bans on trading in maize, and preferential treatment in the allocation of foreign exchange and import licences.

Serious and obvious inefficiencies can result from such restrictive practices. Many observers, for example, remark on the surprising absence of small trucks that would normally be used by traders to carry produce from farms to towns and markets. One apparent reason is that foreign exchange allocations at the official overvalued rate and import licences for vehicles are granted first to government agencies and agricultural cooperatives. Of course, these institutions prefer large 10-ton trucks for hauling products and vehicles for their managers, rather than the dual-purpose, small pick-ups that private traders would find most appropriate. Private traders also will find it enormously difficult, if not impossible, to overcome the foreign exchange and import license barriers.

Advisory Services and Technical Assistance

A case can be made for providing initial support for farmers cooperatives in the form of advisory services and technical assistance to help them get acquainted with problems of organization and marketing. But this should not be construed as rationale for permanent state support, which in Zambia has become government control. Such assistance undermines the very self-reliance that cooperatives are supposed to foster. It conveys the opposite message, that economic advancement can be gained only through special privileges granted by government, rather than effectiveness in satisfying the needs of members or customers.

Conclusion

The combination of subsidized government cooperatives in the marketing of maize and pan-territorial pricing for maize has effectively suffocated the development of an indigenous group of private traders, not just in maize, but in other commodities as well. Now that government subsidization has become institutionalized, it has become practically impossible for the government to

refuse or reduce their liability, especially since they have developed a constituency of members grown accustomed to the favors for the coops.

Policy Implications

A couple of implications for the ZAMS project derive from the preceding analysis. First, the present system of agricultural marketing dominated by subsidized cooperatives makes it extremely difficult to encourage the development of private sector trading activity in crops directly and indirectly affected. Second, efforts should be initiated to explore ways to make the cooperatives truly self-sustaining and reduce the magnitude of subsidies from the central government. Only then will private trade have an opportunity to emerge. Third, we need to identify specific areas and functions where the cooperatives could begin to withdraw, to allow gradual participation of private traders in carrying out marketing activities. Fourth, advisory services and technical assistance in agricultural marketing could be offered to both cooperatives and private concerns on a cost-sharing basis and for well-defined periods of time.



ANNEX 2. AGRICULTURAL MARKETING POLICY IN ZAMBIA

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Introduction

In the domain of agricultural marketing policy, Zambia constitutes one of the extreme cases of state-managed marketing systems. Many years after other far less developed African countries have relaxed or abandoned direct government involvement in crop and livestock marketing as impractical and ruinous, Zambia is headed in the opposite direction. The state is taking over a larger and larger role in marketing farm products and is restricting private sector participation more and more. The outcome is the same whether it is by design or the unintended result of other policies.

The specific activities and orientation of the Zambia Agricultural Marketing Support project must take into account the rather disheartening climate for the promotion of private sector activities in trade and marketing, at the present time. Since the current sorry state of affairs is more the result of policies and government activities, *ad hoc* interventions to relieve this or that constraint will not address the fundamental causes of the problem. Rather, ZAMS should be designed, in partnership with the government, as a program of gradual development and promotion of private trading activities, especially in those areas the government finds most onerous.

From Field to Fire

The government's helping hand reaches across the entire marketing chain, from the moment farmers begin planning for the next planting season until the consumer prepares the meal in the kitchen. The government's role in agricultural production is fairly well known in the case of maize, the dominant crop in the farm sector. It ranges from setting producer prices for grain to subsidized prices for fertilizers and other inputs, credit for farmers, seed distribution and production, and extension services during the growing season.

State Monopoly in Maize Marketing

Less conspicuous is the government's complete control of the marketing of maize from the farm onwards. It begins with the importation of grain bags by a state monopoly, and their distribution at controlled prices to the district cooperatives for subsequent distribution to farmers. Primary societies collect the grain from farmers, store it, and forward it to regional collection depots run by so-called cooperatives which are run by the government. Another parastatal, NAMBoard, was responsible for taking the maize, storing it, transporting it, and distributing it to millers in the principal consumption centers.

The millers are also owned by the government, and their losses are covered by the State. Mealie meal is sold by millers to State-owned retailing chains like Niec and ZCBC. Consumers buy their grain from these stores at controlled and subsidized prices for less than farmers are paid for the grain. Even the matches used in the kitchen to light the fire to cook the meal are bought at a strictly controlled price.

Shrinking Private Sector

Two recent government actions have resulted in the near total elimination of the private sector in the marketing of maize, the basic staple of the Zambian diet. In May 1987, when Zambia abandoned the economic recovery program agreed upon with the IMF and the World Bank, the government also decided to nationalize all the maize milling companies in the country. Until then, many of those companies were privately owned and operated, although their prices and costs were closely controlled by the government.

Another blow to private marketing came in February 1988 when, under newly passed, extraordinary powers, the government made a major crackdown on private trade, closing many of the few remaining private shops (which were owned by expatriates to a large extent) on the suspicion that they were supplying the black market that has developed for basic commodities like maize, cooking oil, sugar, bread, soap, and cigarettes.

As part of the campaign against the black market in basic goods, the government arrested and jailed large numbers of unauthorized vendors, many of them engaged in petty trade in fruits, vegetables, chewing gum, and so forth. Their property is confiscated or destroyed, and often the vendors are physically abused and fined. Enforcement of the ban on street selling is effectively done by both police and UNIP party vigilantes. Despite the high unemployment reported across the nation, Lusaka is today conspicuously devoid of street vendors of any kind.

Illegal Trade

The fight against the black market demands constant vigilance, and party and government officials are constantly being exhorted to bring to justice those engaged in it. Street vending is synonymous with black market, in Zambia's case, since even chewing gum, matches, and cigarettes have price controls. But even those vendors selling goods free from price controls run afoul of the law.

For example, 20 women street vendors from Lusaka's Garden Compound, reports the Daily Mail of February 8, 1988, were rounded up, beaten, taken by District Council police in trucks, and dumped 50 kilometers away from Lusaka, after having their goods confiscated. The women operated around a bus stop selling maize cobs and mushrooms. Similar treatment of street sellers is a common feature in the daily papers.

Another common sanction used against established traders is reported by the Daily Mail of February 24: "Government has started withdrawing

citizenship from naturalized Zambians whose licenses were revoked last weekend, and has offered rewards for information leading to businessmen abetting black marketeers and hoarding currency." Many of those shops were taken over on the suspicion that they sold to customers who later resold in the black market. Once these traders are stripped of their citizenship, they are deported. Few of these traders have been convicted or even brought to court, but their shops are now being opened under the management of one of the government-owned supermarket chains. The government "appealed to the public to be vigilant and expose traders who stock the black market and those hoarding goods and money."

Ideology

What these government activities suggest is a generally negative attitude towards traders or merchants, whose activities are viewed as akin to daylight robbery, and therefore state take-over of trading is a necessary and desirable economic policy. The view of merchants as the bad guys is not peculiar to Zambia, or for that matter to Africa. It is, in fact, shared by most farmers and people in Europe and the United States, but in the latter these attitudes have not become embodied in economic policy. In Africa, however, and in Zambia in particular, these negative images of trading as exploitative have resulted in the state takeover of the distribution sector. Moreover, the predominance of foreigners among the trading community has exacerbated the negative feelings against trade itself.

Inherent Inefficiencies

Unfortunately, the scarcity of trained managers and the very nature of agricultural commodities make it extremely difficult for the Zambian government to implement a centralized decision-making system for the sector.

State takeover is particularly unsuited to the marketing of food and perishable products. A state trading sector inevitably involves greater centralization of decision making, larger scale and more complex organization, and personnel with high technical and managerial skills. And the results are invariably less satisfactory than the private trade. The contrast is most clearly seen in the supply of fruits and vegetables in the state-run supermarkets in Lusaka compared with the variety, quantity, quality, and prices of that found in public markets. However, in the public market decisions and transactions are made by a large number of traders without any formal education whatsoever, while ZCBC and Mwaseni, with certified accountants and administrators, perform a deplorable service.

Waste of Talent

State trading therefore involves a serious waste of manpower resources. On the one hand, the skills, training, experience, and talent of the few educated managers are wasted selling cucumbers and tomatoes, while depriving the general government administration of their talents. On the other hand, the raw energy, hard work, and initiative of the community of private traders is stifled. It is a serious misallocation of human skills to have trained people running retail shops at government salaries while street vendors are

being put in jail. "Nothing in Marxism-Leninism says that the State should involve itself in selling tomatoes," President Nyerere has reportedly said. The principle is as applicable in Zambia as it is in Tanzania.

Enterprises in Zambia operate under extremely difficult conditions. Distances are great, the markets small, climate unpredictable, communications uncertain, managerial skills scarce, spare parts and raw materials hard to find, and foreign exchange hard to buy. Even the simplest company is a challenge to run, and those in the agricultural marketing sector have special problems besides. The timing of decisions is crucial, production is scattered, roads are nearly non-existent, prices are uncertain, credit needs granting, pilferage is rampant, rodents are everywhere, transport is difficult, there are no grades, no standards, no measures, and so on. In these conditions, centralized decision making and control are hopelessly impossible to put into effect. At best, state trading ventures become heavy burdens on the public treasury; at worst, they can wreck the whole agricultural marketing system. In Zambia, we are close to doing both.

Price Controls, Corruption, and Smuggling

Unable to cope with the constant need to make decisions about buying, selling, prices, storage, transport, and so on, the maize marketing parastatals in Zambia resort to the crudest possible solution: one single price for maize, for all seasons, for all places, for any quality, for both producers and consumers. The problems created by such a system of rigid prices, and the concomitant need to enforce price controls at all levels, are already well known and documented.

Not as well understood, however, is the deleterious effect that such price policies have on the breakdown of public abidance of the law. Both daily newspapers in Lusaka report, every day, rampant black marketeering on essential goods, corruption in state-run enterprises with access to those goods, smuggling of subsidized foods to neighboring countries. All of these are logical and obvious consequences of the system of fixed prices.

The cost to the public of these self-inflicted problems, and the profits to be generated by avoiding them, create the incentives for breaking the law. Bread right now is in short supply all through Zambia. People stand in line for hours before sunrise in front of the State-run bakeries. Some enterprising and unemployed youths are willing to stand in queues for hours to get two loaves of bread. They later offer to sell the same loaves to passing motorists on the way to work, at prices higher than officially mandated. Right away they become black marketeers. Police round them up but others take their place. Some of them are now being shipped to resettlement camps to relieve their idleness. Motorists now have to stand in line.

Smuggling is another scourge generated by the pricing policies of Zambia. When the price of mealie meal in the Copperbelt towns is one-tenth the price across the border in Zaire, the incentives for smuggling and corruption of customs officials and border police are unbearable. People are literally being shot to death trying to smuggle bags of maize across the border.

It is utopian to believe that political exhortation alone will reduce the incidence of this type of economic criminality. When self and public interest is so evidently at variance with official mandates, it is not long before people start losing faith in their leaders and respect for the laws.

What Is to Be Done?

The important question may not be whether state trading is doomed to failure or how much less efficient it is than private trading. Rather, for the ZAMS project, we need to ask what alternatives can be suggested. To the extent that there are already a few African traders ready to perform marketing functions in the agricultural sector, the obvious goal should be the work toward a gradual transfer of these activities from the state to these individuals. The major impediment to this alternative is ideological, the fear that a rich and exploiting class of native traders would develop, with the potential for accumulating economic as well as political power.

For much of the agricultural product marketing however, there are practically no indigenous traders to speak of. This is perhaps the most severe indictment of the state trading system in Zambia, that it has prevented any private national group of traders to emerge for the most important crops. In such a case, the groups most likely to benefit from a withdrawal of the state from trade would be the better financed and established expatriate traders. Nationalist feelings are too strong to accept a racially different group of people gaining a predominant role in a visible and strategic sector of the economy. Economic rationale may be irrelevant in that case.

Perhaps the best to hope for is to use ZAMS as a way to develop and nurture Zambian trading professionals through well selected measures on credit for commercial uses and investments, advisory service and technical assistance, training programs, and mutually advantageous arrangements with the existing state trading agencies or cooperatives. This approach is not without its pitfalls, in that it becomes administratively difficult to select some individuals to receive special favors in the hope of encouraging those who have demonstrated ability in competing and surviving in the market place. Inevitably, such a selection will be affected by personalities and political and ethnic considerations. But these problems already exist within the current state-dominated trading system, without the restraints imposed by a more open and competitive market.

ANNEX 3. RURAL TRANSPORT AND OXCARTS

Rural Transport and Ox carts

Rural Transport Bottleneck

In the course of several visits to the field and some provincial capitals, it has become more and more evident that one of the principal constraints in agricultural marketing for all commodities is the transport from the farm to town or from farm to nearest paved road.

As an example, the General Manager of the Eastern Province Cooperative Union reports that farmers deliver grain to the Primary Societies collection points in each village. The Union then arranges for the grain to be picked up at the villages and transported to the Union depot in one of the major towns or in Chipata itself. The average cost of transporting and handling to the Union was 35 kwacha per 90-kg bag. In contrast, the cost of hauling the same bag from Chipata to Lusaka, a distance of more than 600 kilometers, was 23 kwacha. It costs, therefore, more to move the bag from the farm to the Union depot, an average distance of say 15 kilometers, than to move it to Lusaka.

The Eastern Cooperative Union pays farmers 80 kwacha per sack, and sells to either NAMBoard or to millers at the same price. The costs of the Cooperative Union in transport and handling are covered by the central government. Periodically, the Union gets a subsidy of 35 kwacha per bag handled.

Under the current arrangement, there is no incentive to the Union to economize on transport costs since they get automatically compensated by the central government for whatever they spend. At the same time, the development of private transport services has been discouraged by the lack of any price incentive to farmers to arrange by themselves for the delivery of grain to the Union depot.

There is a potential therefore for private traders and transporters to emerge, which until now has been stifled by the lack of price differentials for grain. Since maize constitutes such a large proportion of marketable output, the lack of transport services has affected other crops as well.

Import and Distribution of Oxcarts

In order to alleviate the lack of rural transport, ZAMS will arrange for the import and distribution of alternative rural transport modes. The most obvious alternative is the provision of oxcarts, since many farmers already have the oxen that they use for farm traction. At the moment, there is ample demand for oxcarts, according to the Commercial Manager of the Zambia Cooperative Federation, demand that is unmet because of the absence of foreign exchange for importing them, and lack of capital to finance local production.

Other transport alternatives should also be considered, for example, human-powered vehicles such as bicycle rickshaws, bicycles, push-push carts (lots of them in and around Lubumbashi), donkey carts, and even donkeys. [One intriguing issue is why no donkeys are used for transport in Zambia, when they are so prevalent in the rest of Africa, even in Zimbabwe].

Of course, whenever there is local production of these items, the impact of imports on the local industry should be considered. However, if the cost of local production turns out to be excessively above the import cost, imports should be admissible. Local prices for the imported item, for example, could be set sufficiently high to avoid undercutting the local manufacturer unnecessarily.

Whenever technically possible and financially viable, imports of components for assembly in Zambia should be contemplated. Again, the cost of local assembly should be balanced against the imported cost.

Deteriorating Rural Roads

A serious concern in the Eastern Province, and possibly in other provinces as well, is the worsening state of the rural road infrastructure. The Eastern Cooperative Union last year was having difficulties getting trucks to go into some districts with poor road maintenance and, in some cases, had to subcontract farmers with oxcarts to get the grain out to more accessible pick-up points.

Responsibility for maintaining rural roads has now been transferred from the Ministry of Agriculture to the District Councils, but they have not been given the necessary budget for doing the job. Slowly but surely, the roads will become less and less passable for motorized vehicles.

ZAMS can help. Local currency proceeds from the sale of the marketing implements imported could be allocated for the rehabilitation and maintenance of rural roads. Clearly, the proceeds will be insufficient for the needs, so that some kind of cost-sharing arrangements with the local District Councils will be needed.

Central Depot Pricing

More than 80 percent of farm produce marketed is maize. The merits of improving rural transport will be seriously compromised if the transport of maize is excluded. At present, no private transport takes place because the price at the Union depot is the same as in the village.

An essential element for the success of private rural transport requires compensating farmers or village-level primary societies for the transport costs incurred in bringing the product to the Union depot. This compensation is best accomplished by offering a higher price for bags of grain delivered at the Union depot than for bags received at the primary societies.

The increase in price should, of course, be smaller than the current average transport and handling cost per bag of grain. The Union will save some money from not having to pay for the transport, thus reducing the subsidy that it must request from the central government. Farmers will benefit from higher prices for their grain, even after allowing for transport in oxcarts of their own or hired ones.

Farmers in remote villages with transport costs much above average will surely complain that their net price under the new system is not as favorable as before. Equity issues will have to be weighed in deciding whether those farmers in far away villages are entitled to a higher price than farmers near the Union depot. One possible alternative is to continue purchasing grain from those far away villages at the current price of 80 kwacha per bag.

Coordinating Deliveries

During the peak harvest season, the Union depot might be faced with the simultaneous arrival of many small trucks and oxcarts with grain. This could lead to long lines of vehicles waiting to be unloaded. Right now this problem does not arise because the Union itself coordinates the transport of the grain throughout the season.

It will become necessary for the Cooperative Union to take steps to handle grain deliveries from many farmers and primary societies at the same time. Increasing storage facilities and grain handling capacity will become necessary to address this potential problem. Some simple solutions might be adopted as stop-gap measures for the first years, while more permanent solutions are found. For example, unloading trucks onto pallets will release the trucks to do more trips instead of waiting to be unloaded. The pallets could later be moved with forklifts to warehouses or elevators.

ZAMS could help finance some of these facility expansions with the counterpart local currency generated from the sale of imported commodities.

Distribution of Oxcarts

As much as possible, the distribution of oxcarts and other rural transport equipment will be done through established farm input delivery channels, rather than trying to set up new ones. Right now, farmers have access to farm implements and inputs through either the Cooperative Unions or through NAMBoard. There is a plan to transfer many of the functions performed by NAMBoard to the Cooperatives and leave NAMBoard mainly as a buyer of last resort and in charge of maintaining a security stock of grain. This plan is fairly advanced and the reorganization will likely take place within the next few weeks. The main stumbling block is the large number of NAMBoard employees who will be laid off (4,000 according to some sources).

The Zambia Cooperative Federation Ltd. (ZCF) is a nearly private group charged with doing most of the procurement for the Provincial Cooperative Unions. Although the Cooperative Unions are entirely controlled by the State, the ZCF is allowed to follow some commercial practices, including adding a considerable mark-up and profit on items it distributes. Under the new plan for NAMBoard restructuring, ZCF will take over the Implement and Chemical Division of NAMBoard; that is, it will be charged with the procurement and distribution of farm implements and chemical inputs. However, fertilizers and grain bags will remain the responsibility of NAMBoard; ZCF has not accepted these items because their prices are controlled. The prices of grain sacks are controlled; and, not surprisingly, there is a serious shortage of grain bags for the next harvest.

Since ZCF already has a well-established network of distribution of farm implements through the Cooperative Unions, they are already well placed to serve as the importers and distributors of the ZAMS oxcarts and other transport equipment. The Commercial Manager at ZCF is well-experienced in the entire procedure for ordering farm equipment from overseas suppliers, including documentation requirements, foreign exchange regulations, custom clearance, and shipping arrangements. The main constraint at the moment for ZCF to expand its limited imports of farm implements is the lack of foreign exchange and the kwacha to purchase foreign exchange. This is where ZAMS might be able to help.

Once imported into the country, oxcarts could be distributed through the Provincial Cooperative Unions to farmers. Other alternative outlets could also be considered, such as tractor distributors, service station chains, truly private cooperatives, or private traders of similar products. It is anticipated that the Cooperative Unions could easily handle the distribution of the first few shipments.

Market Pricing of Oxcarts

Farm implements do not have controlled prices. (That explains why a \$1,000 dollar pump can cost a farmer 35,000 kwacha.) It will be possible to price the imported ZAMS oxcarts at realistic prices, rather than at the kwacha equivalent at the official exchange rate. ZCF, for example, has recently

imported more than 7,000 tractor and light-truck tires which were sold within one month, generating a K 14 million profit for ZCF.

As an illustration, ZAMS could provide the foreign exchange to import a \$500 oxcart that is received by ZCF. ZCF, in turn, could sell it to, say, the Eastern Cooperative Union for K 12,000, keep K 2,000 for ZCF, and turn the remaining K 10,000 to ZAMS. ECU, in turn, might sell it to a farmer in the Eastern Province for K 15,000, after allowing for transport cost and mark-up.

An important consideration in pricing decisions is the impact on local workshops now making oxcarts. Pricing at the official exchange rate could severely undercut their business, if not destroy it. A market price orientation would be preferable, as much as possible.

Local currency proceeds from the sale of oxcarts received by ZAMS could subsequently be used for marketing development activities. Perhaps the highest priority should be given to the rehabilitation and maintenance of feeder roads in agricultural areas. Since most of the cost of maintenance is labor, the main beneficiaries would be the local rural population.

Central Point Pricing of Inputs

A possible extension of the same scheme concerns the pricing of fertilizers and other farm inputs which are priced the same at the village level and at the central distribution points. The availability of oxcarts will enable many farmers to transport these inputs from the central points if an appropriate price discount was made, thus saving the Cooperative Union the cost of transporting them to villages. Discussions with NAMBoard along this line could be initiated as part of the ZAMS design process. The same type of benefits could be realized by allowing farmers to transport the inputs themselves: lower cost to farmers, reduced subsidies from the government, and more timely availability of fertilizers.



ANNEX 4. ZAMS DOLLARS AND ZAMBIA'S DEBTS

Zambia's Debt Cannot Be Paid

USAID/Lusaka's Country Development Strategy Statement concludes that it is unrealistic to expect that Zambia will be able to honor its enormous foreign debt before the end of the century. Even under the most optimistic of circumstances regarding the performance of the economy and likely favorable prices for copper, the level of export earnings for the foreseeable future will be insufficient to cover the debt servicing burden.

Debt servicing obligations in 1986 had risen to more than 95 percent of exports of goods and services. As a percent of the budget deficit, debt service reached 93 percent in the same year. The financial situation has only deteriorated since, especially once Zambia abandoned the economic recovery program that it had negotiated with the World Bank and the International Monetary Fund. As a result, both institutions have withdrawn all support to the country, including suspension of disbursements on projects currently in progress. So far, Zambia has been unable to pay the US\$400 million in arrears to the Bank to allow the resumption of financing for the suspended projects. Similarly, Zambia is technically in default with the U.S. government for failure to pay about \$3 million in arrears on U.S. loans and risks suspension of further USAID funding under the Brooke's Amendment.

The Peruvian Solution

Unable to stay current on its foreign debt, not to mention the need for foreign exchange to pay for essential imports, the Government of Zambia has unilaterally imposed a limit of 10 percent of export earnings for the repayment of debt. This solution releases funds for essential imports to keep the economy moving, but at the cost of mounting debt as interest on arrears accumulates on top of the original debt.

Needless to say, all commercial credit to Zambia has come to a stop. All imports must be paid cash in advance, and the government is unable to borrow from any bank or international organization. The country is living from one day to the next, using only current earnings for its exports. Creditors will have to wait indefinitely to collect on their outstanding balances. Most of the outstanding debt is owed to multilateral lending agencies, but considerable amounts are also held by commercial banks and private enterprises, many of which are based in the United Kingdom.

Overvalued Kwacha

To make matters worse, the Zambian government has adopted a fixed exchange rate policy that has resulted in a vastly overvalued currency. For the past year the kwacha has been exchanged by the Bank of Zambia at K 8:US\$ 1. But the last market rate at the foreign exchange auctions, which were also suspended a year ago, was running at more than 20 kwacha per dollar. Predictably, the officially cheap dollars have led to an excess demand for imported goods, while penalizing exporters who now receive only one-half or one-third of the kwacha that they would get at a more realistic exchange rate.

The severe shortage of foreign exchange has led to administrative allocation of import licenses by FEMAC, the Foreign Exchange Management Committee. Every week the newspapers publish the list of the lucky applicants whose import permits have been approved, along with the amount and purpose of the imports. It also includes a much longer list of those petitioners whose applications were not successful.

White Market Kwacha and the Official Rate

The suspension of the auction system has left the official rate as the only legal exchange alternative. Tourists and consultants are obligated to change their foreign currency at this rate through the banking system. Transactions currently made with U.S. government funds are also made through this "White Market" exchange rate. This sometimes leads to ludicrous results, such as making it cheaper to import potatoes and tomatoes by air freight from South Africa for the U.S. Commissary than buying the local produce with kwacha bought at the official rate.

USAID development funds currently being transferred to Zambia are therefore greatly undervalued at the official rate. The impact of these funds on the local economy will accordingly be diminished. The beneficiaries of this imbalance are the Bank of Zambia which gets cheap dollars and the lucky recipients of import licenses.

Black Market Kwachas and the Parallel Rate

When the real value of foreign exchange is so much greater than the official rate, the temptation for individuals and companies to make private exchange transactions outside official channels proves irresistible. Nevertheless, it is surprising that there is no conspicuous black market for dollars in Lusaka or in Ndola, when profits of 200 percent can be made in a single transaction. The absence of a black market is due to the strict and severe penalties against individuals who engage in these exchanges, and the general discipline and law abidance of the Zambian population.

Across the border in Zaire, both in Lubumbashi and in the border towns, kwachas are openly traded against zaires for three to four times the official

rate. This trade is the counterflow for both legal and illegal trade between the two countries taking place all along the permeable border.

No currency needs to be transferred to engage in the black market trade. Any Zambian national with a bank account abroad can have dollars deposited in that account; in exchange, he or she gives a corresponding amount of kwachas in Zambia to whoever arranged for the deposit. All these transactions are illegal and rightly denounced by the authorities.

Green Market Kwachas and 50 Percent Retention

Aware of the severe damage to imports from the overvaluation of the kwacha at an unrealistic rate, the Government of Zambia has sought to alleviate the damage to exporters by instituting a 50 percent retention scheme. Under this scheme, half of the foreign earnings from exports are changed at the official rate of 8:1 and the other half the exporter can either use for his own imports or transfer to someone else to do imports. The imports in question still have to get the approval of the FEMAC committee and fall within the priorities established.

A private market for these so called "green kwacha" has developed, whereby importers in need of foreign exchange can purchase it from the 50 percent retained by exporters, at whatever rate the parties agree. Each transfer is a private matter between the exporter and the prospective importer; the Bank of Zambia is notified and has to agree to the transfer, but the rate at which the foreign exchange was purchased is not recorded.

One advantage of the green kwacha market is that it allows the government to maintain the fiction that the official rate is still the operative rate. It doesn't need to acknowledge that importers are actually paying three or four times the official rate. Separate licenses are issued for those importers using the 50 percent retention funds (green kwachas), apart from those using the official rate (white kwachas).

Red Market Kwachas and Debt Dismantling

There is another foreign exchange market not as well known as the green kwacha, but it is also quite legally used by some large exporters. Let's call this the red kwacha market, since it involves outstanding debts.

Remember all those private concerns overseas whom the Bank of Zambia owes but cannot pay in the foreseeable future? All they can do is wait and hope that their balances will get paid sometime in the future. Many of them prefer not to wait, and are willing to accept cash now rather than the uncertain IOU they hold.

Now comes a Zambian exporter of, say, strawberries, who can use half of his/her foreign earnings anyway he or she pleases. The strawberry exporter offers a deal to the overseas creditor, call it the Koka-Loka Company for the sake of illustration. The strawberry exporter will pay cash in dollars to

Koka-Loka, say, 20 percent of the outstanding IOU it holds with the Bank of Zambia. In exchange, Koka-Loka transfers the IOU to the strawberry exporter.

The next step is for the strawberry exporter to approach the Bank of Zambia and suggests another deal: The strawberry exporter is willing to settle the full value of the IOU for the equivalent in kwacha at the official rate. The Bank of Zambia will be tempted to accept, since it can settle a debt in dollars, by the simple expedient of printing more Kwacha to pay the strawberry exporter. Since the official rate is used, there is no question about the legality of the transaction. For \$1 million the strawberry exporter gets K 8 million, but recall that he only paid 20 percent or \$200,000 for them, i.e., an exchange rate of 40:1.

The advantages of the red kwacha market are obvious. Koka-Loka is glad to get some cash now rather than promises for cash later. The strawberry exporter benefits by getting K 40 for each \$1 of retention. The Bank of Zambia benefits by wiping out a debt in dollars, by paying it in kwacha at the cheap official rate. The country benefits from the reduction of its foreign debt. European consumers enjoy off-season strawberries.

Who loses? Koka-Loka, for one, has lost 80 percent of its IOU, but they had already lost hope of being paid fully anyway, so they aren't complaining. Also, if the Bank of Zambia simply prints kwachas to pay the debt, the additional money supply will contribute to inflation within Zambia. However, if the Bank merely reallocates funds from other government uses, the inflationary effect will not happen.

Who is Getting Red Kwachas?

The red kwacha market was, until now, a rather secretive market, each exporter guarding carefully the foreign creditors involved. The Bank of Zambia does not talk much about it either. It is, nonetheless, a perfectly legal market, insofar as we have learned.

Given the rather complicated nature of the trade in red kwachas and the need to make arrangements with unknown foreign creditors, access to this market has so far been limited to the larger exporters, and especially those with good links to financial centers in Europe or the United States. Foreign creditors would likely be large enterprises and banks who will not bother dealing in small amounts. Moreover, transfer of the IOU requires the consent of the Bank of Zambia, and this requires prolonged negotiations with the Bank and the Ministry of Finance. All these factors limit access to red kwacha for ordinary business people.

Each IOU transfer would normally be in the tens of thousands of dollars, perhaps even in the millions. It is possible to make open agreements for large debt transfers that are settled on an installment basis, i.e., a few tens of thousands of dollars at a time. Each case of debt transfer apparently is negotiated independently with the foreign creditor and the Bank of Zambia.

Since there are no standard rates, bargaining for the best deal is part of the routine.

We know of at least two exporters of agricultural commodities who take advantage of the red kwacha market, in both cases well-established and well-managed institutions. Both concerns have several open debt transfer agreements on which they make periodic payments.

It is conceivable that smaller exporters could participate under the umbrella agreements negotiated by larger outfits, if the smaller exporters were willing and able to transfer their green kwachas to the red market. It is not certain that the Bank of Zambia would be agreeable to such transfers.

Large investors are also reportedly interested in similar red kwacha agreements. A firm looking forward to establish a business in Zambia, or to purchase an ongoing concern, say, a large farm, would probably not find it attractive if the dollars invested are brought in at the official rate. Instead, the potential investor could purchase the same IOU held by Koka Loka against the Bank of Zambia at a suitable discount and then obtain the full value in red kwachas at the official rate. This arrangement is roughly equivalent to swapping debt for equity in the country, except that the owner of the equity is a different person.

Can ZAMS Also Play?

The ZAMS project is in a similar position to that of the above potential investor. The Government of the United States wishes to invest some U.S. dollars in raising the efficiency of the agricultural sector in Zambia, through a selective set of marketing improvements. Many of these improvements will be financed with kwachas transferred through the Bank of Zambia.

The impact of a given amount of ZAMS's dollars will depend greatly on the exchange rate used. Five times as much could be accomplished inside Zambia if the red kwacha rate could be used instead of the official rate. In fact, at the official rate, it is doubtful that many of the proposed market improvements would prove financially viable.

About half of the funds allocated for ZAMS are allocated for financing importation of inputs deemed essential to facilitate the marketing of agricultural products. Obviously, if these dollars are needed for imports, they cannot also be used for buying up debt. However, much of the other half of ZAMS will be brought into the country to finance projects in local currency. Those dollars could be used in the red kwacha market. These funds could amount to several million dollars, and for every million the issue is, should AID settle for K 8 million or insist on getting K 40 million as some private investors are getting?

Can USAID, being a U.S. government agency, engage in negotiations with the Zambian government about the exchange rate used to transfer aid funds? These are questions for lawyers and diplomats to answer. My understanding is that AID is required to use the highest legal rate available. So far, the

highest legal rate has been interpreted to mean the official rate. But as has been pointed out, the red market kwacha is perfectly legal as far as anyone can tell, and the Bank of Zambia and the Government of Zambia are already parties to similar agreements negotiated with private concerns. Moreover, since the official rate is, in fact, used to redeem the debt, the issue of the exchange rate does not even need to arise. Rather, the issue seems to be whether U.S. federal funds can be used to purchase private debt at a discount.

Among Zambia's many foreign creditors there are several American companies and banking institutions. Some of these institutions are likely to be willing to enter into red kwacha arrangements, especially if their forgone debt can be put to good use by the U.S. government. From their point of view, the red kwacha market is a form of private foreign aid to Zambia! The tax write-offs that they might derive would be an added incentive for them to make these concessionary arrangements. The challenge is therefore to find an appropriate mechanism to transfer their private foreign outstanding loans to USAID, its contractors, or the Zambian government for development purposes.

Steps Ahead

In order to pursue the prospects of using the red kwacha market to enhance the effect of ZAMS on the development of Zambia, several immediate tasks are ahead. First, some effort needs to be placed on identifying prospective private holders of Zambian debt in the United States. This information might be obtained in Lusaka, but more likely through the commercial banking system in the United States. Three different institutions have been mentioned as possible brokers for this and similar types of financial arrangements, namely, Equator Bank, Deloitte Haskins and Sells, Citibank, and Citicorp International (London). Given the traditional economic links of Zambia with the United Kingdom, London financial institutions might be the best sources of information. Once prospective debt holders are identified, some discussions regarding the terms of possible settlements can be advanced. Currently, settlements on the order of 22 or 23 cents on the dollar are reported, and could serve as the basis for negotiations. However, final decisions must await the concurrence of the Zambian government.

Second, the Bank of Zambia and the Ministry of Finance might be approached early on about the need to channel some of the ZAMS funds through the red kwacha market (or the debt pipeline dismantling windows, as it is sometimes described). Their agreement seems to be conditional on the use of kwachas thus generated. In the case of the known exporters using the red kwachas, agreement was granted on the basis of their investing in agricultural development, particularly in the production of export generating items. Since ZAMS local currency will be used in promoting agricultural development and improving road and market infrastructure, USAID would stand on good grounds regarding the desirability of these expenditures.

One final note: A portion of ZAMS funds is allocated for imports of spare parts for transport vehicles and other agricultural production and marketing. Proceeds from the sale of these items in Zambia will also be used

for financing activities in agricultural marketing in the country. The price of these imports, therefore, should be as close to a market price as possible. AID, therefore, must be wary of suggestions to price these imports at cost using the official exchange rate. There are no price controls on spare parts and equipment, as far as we have learned. So, in principle, the issue of price controls on equipment imports will not arise. The importing institution, therefore, must be free to price these imports at commercially competitive prices.

ANNEX 5. SCOPE OF WORK

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ACTION AID-00

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ACTION OFFICE STRD-01
INFO AAAT-03 AFEA-03 AZIA-01 AFDP-06 SEDP-01 AFPO-04 SERP-01
AFTR-06 PDPA-01 PPPB-02 SEOS-02 SIFA-01 STAG-02 PPR-01
SAST-01 AFPE-07 ES-01 AGRI-01 RELO-01 PRE-06 /M33 A3 4116
INFO LOS-00 AF-00 CIAE-00 IS-00 DODE-00 /000 W
-----000000 151410Z /04/38

P 151244Z MAR 88
FM AMEMBASSY LUSAKA
TO SECSTATE WASHDC PRIORITY 0979
INFO AMEMBASSY NAIROBI

UNCLAS LUSAKA 01182

AIDAC

AID/K, PLS. PASS TO S AND T/RO/EE, R. BIELOW,
AFR/PD/SA, AND AFR/SA
NAIROBI FOR REDD/ESA PROJECTS OFFICE

F.O. 12256 N/A
SUBJECT: ARIES SUPPORT IN STUDIES FOR PP DESIGN OF
ZAMBIA AGRICULTURAL MARKETING SUPPORT PROJECT
(ZAMB-613-021K1); CONTRACT NO. DAN/000C 001134,
ROBERT R. NATHAN ASSOCIATES

REF: (A) 87 STATE 22718 (B) LUSAKA 00483

1. THE PURPOSE OF THIS CABLE IS TO REQUEST THE ASSISTANCE OF S AND T/RO/EE IN ISSUING A DELIVERY ORDER TO RMA UNDER THE ARIES LOC. THE WORK ORDER WILL UNDERWRITE TWO STUDIES TO ASSIST IN THE DESIGN OF THE IAMS PROJECT. IT IS IMPORTANT THAT THE STUDIES BE COMPLETED BEFORE A PP DESIGN TEAM BEGINS ITS WORK ON MAY 13, 1988. TO ACCOMMODATE THIS SCHEDULE, THE RMA CONSULTANTS SHOULD ARRIVE IN ZAMBIA BY APRIL 11. THEREFORE, WE ARE WORKING WITH A TIGHT TIME FRAME.

2. BACKGROUND ON THE PROJECT CONCEPT, AND SCOPE OF WORK FOR THE TWO STUDIES ARE PROVIDED BELOW. IT MIGHT ALSO BE HELPFUL TO REFER TO THE IAMS PID FOR ADDITIONAL INFORMATION. COPIES OF THE PID CAN BE OBTAINED FROM AFR/PD/SA O/A MARCH 20.

3. IAMS PROJECT CONCEPT. THE PROJECT GOAL IS TO INCREASE AGRICULTURAL PRODUCTION AND RURAL INCOME THROUGH IMPROVEMENTS IN THE AGRICULTURAL MARKETING SYSTEM FOR BOTH OUTPUTS AND INPUTS. THE GOAL WILL BE ACHIEVED, IN PART, THROUGH THE PROVISION OF MORE MARKET OUTLETS, EXPANDED DEMAND THROUGH LOWER PRICES BROUGHT ABOUT BY REDUCED MARKETING COSTS, OR HIGHER PRICES FOR PRODUCERS, AND THROUGH IMPROVED MANAGEMENT OF THE INPUT DISTRIBUTION SYSTEM.

THE PROJECT PURPOSE IS TO IMPROVE THE OPERATIONAL EFFICIENCY OF THE AGRICULTURAL MARKETING SYSTEM IN ZAMBIA FOR SELECTED COMMODITIES, AND PROMOTE MARKET DEVELOPMENT AS NECESSARY. THIS WILL BE ACHIEVED BY IMPROVING THE EFFICIENCY OF THE HANDLING AND TRANSPORT FUNCTION, REDUCING MARKETING LOSSES THROUGH IMPROVED STORAGE AND PROCESSING FUNCTIONS, IMPLEMENTING GRADING AND STANDARDIZATION PROGRAMS FOR SELECTED COMMODITIES, AND IMPROVING THE MANAGERIAL AND TECHNICAL SKILLS OF THOSE ENGAGED IN AGRICULTURAL MARKETING.

THE PROJECT CONSISTS OF THREE BASIC COMPONENTS; YA, TRAINING AND COMMODITIES. THE THREE COMPONENTS WILL

BE DIRECTED PRIMARILY TOWARD THE PRIVATE SECTOR; HOWEVER, LIMITED TA AND TRAINING MAY ALSO BE PROVIDED TO THE PUBLIC SECTOR. THE COMMODITIES, PRIMARILY FOR THE PRIVATE SECTOR, WILL GENERATE COUNTERPART IC/PJ FUNDS WHICH WILL BE JOINTLY PROGRAMMED BY THE MISSION AND THE GRZ TO ENHANCE THE TA AND TRAINING PORTIONS OF THE PROJECT, AND TO PROVIDE SUPPORT FOR INFRASTRUCTURE DEVELOPMENT NEEDED TO ACHIEVE THE PROJECT PURPOSE.

THE FOCUS OF THE IAMS PROJECT WILL BE ON THE MARKETING FUNCTIONS OF TRANSPORTATION, STORAGE, PROCESSING, AND GRADES AND STANDARDS. INITIALLY, THE PROJECT WILL FOCUS ON OILSEEDS (E.G., SUNFLOWERS, SOYBEANS AND COTTONSEEDS), AND THEN EXPAND TO MILLET, SOPHONUM AND CASSAVA, AND FRESH FRUITS AND VEGETABLES. ALL OF THESE COMMODITIES WOULD BE FOR THE DOMESTIC MARKET. AS THE PROJECT PROGRESSES, AND AS GRZ POLICIES CHANGE, IT MAY BE DESIRABLE TO FURTHER EXPAND THE LIST OF COMMODITIES AND TO INCLUDE AN EXPORT MARKET FOR SELECTED COMMODITIES. IT IS ALSO POSSIBLE THAT THE PP TEAM, AFTER FURTHER REVIEW AND STUDIES HAVE BEEN DONE, MAY DECIDE TO RESTRICT THE FUNCTIONS AND COMMODITIES EVEN FURTHER THAN IS CONTAINED IN THE PID.

THEREFORE, ONE OF THE MOST SIGNIFICANT DESIGN ISSUES FOR THE PP TEAM WILL BE TO: MAKE THE FINAL DETERMINATION AS TO WHAT AGRICULTURAL COMMODITIES AND LOCAL INSTITUTIONS TO SUPPORT; DETERMINE THE PROPER SEQUENCING FOR UNDERTAKING THIS SUPPORT; AND ESTABLISH WHICH OF THE FOUR IDENTIFIED MARKETING FUNCTIONS SHOULD RECEIVE PRIORITY ATTENTION FOR EACH COMMODITY. THE STUDIES REQUESTED PRIOR TO THE PP DESIGN WILL ASSIST THE PP TEAM IN MAKING THESE JUDGMENTS.

A. SCOPE OF WORK

4. OBJECTIVE. THE OBJECTIVE OF THE ASSISTANCE BEING REQUESTED FROM THE ARIES PROJECT IS TO PROVIDE THE PP TEAM WITH SUFFICIENT INFORMATION TO MAKE AN INFORMED CHOICE CONCERNING THE SPECIFIC AGRICULTURAL COMMODITIES, MARKETING FUNCTIONS, INSTITUTIONS AND /OR GEOGRAPHICAL REGIONS ON WHICH IAMS SHOULD FOCUS, AND IN WHICH SEQUENCE. A STUDY UNDERTAKEN FOR USAID/ZAMBIA ON THE OIL SEED SECTOR IS ALREADY AVAILABLE, AND CAN BE USED AS AN ADDITIONAL RESOURCE REGARDING MARKETING FOR THIS SECTOR.

B. TASKS.

(1) TO CARRY OUT A STUDY OF FRESH FRUITS AND VEGETABLES MARKETING IN ZAMBIA. THE STUDY WILL:

(A) PROVIDE A DATA BASE ON THE PRODUCTION, MARKETING AND PROCESSING OF FRESH FRUITS AND VEGETABLES FOR THE DOMESTIC MARKET. THIS WILL INCLUDE DETERMINING THE FOLLOWING:

- NUMBER, SIZE, AND LOCATION OF FRESH FRUITS AND VEGETABLE PRODUCERS SUPPLYING SIGNIFICANT POPULATION CENTERS AND PROCESSORS;
- NUMBER, SIZE, GENDER, "CLASS," AND LOCATION OF FIRMS OR INDIVIDUALS ENGAGED IN THE MARKETING OF FRESH FRUITS AND VEGETABLES TO SIGNIFICANT POPULATION CENTERS OR PROCESSORS;
- NUMBER, SIZE AND LOCATION OF SIGNIFICANT

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PROCESSORS OF FRESH FRUITS AND VEGETABLES; AND

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REPORT WILL CONTAIN THE DATA, BACKGROUND INFORMATION, AND RECOMMENDATIONS CALLED FOR UNDER TASK 1, MARKETING OF MINOR FIELD CROPS, MILLET, SORGHUM, AND CASSAVA.

THE TYPE OF PROCESSING PRESENTLY AVAILABLE.

(U) IDENTIFY THE MAJOR CONSTRAINTS IN TRANSPORTATION, STORAGE, PROCESSING, AND GRADES AND STANDARDS FACED BY THE MARKETING AND PROCESSING FIRMS IN THE FRESH FRUITS AND VEGETABLES SUBSECTOR.

(U) IDENTIFY THE TYPE AND KIND OF ASSISTANCE THAT USAID APPEARS TO BE BEST QUALIFIED, IN THE CONTEXT OF THE PROPOSED IAMS PROJECT AND PROGRAMS OF OTHER DONORS, TO SUPPLY TO OVERCOME THESE CONSTRAINTS. THE THREE ABOVE SUBTASKS WILL BE ACCOMPLISHED THROUGH:

- REVIEWING SECONDARY INFORMATION;
- HOLDING INTERVIEWS WITH INDIVIDUALS INVOLVED WITH THE FRESH FRUITS AND VEGETABLES SUBSECTOR; AND
- CARRYING OUT FIELD OR ON-SITE VISITS TO VERIFY INFORMATION GAINED FROM OTHER SOURCES.

(U) TO CARRY OUT A SECOND STUDY OF MARKETING FOR MINOR FIELD CROPS (MILLET, SORGHUM, AND CASSAVA), THE STUDY WILL:

(U) PROVIDE A DATA BASE ON THE PRODUCTION, MARKETING AND PROCESSING OF MILLET, SORGHUM, AND CASSAVA FOR THE DOMESTIC MARKET. THIS WILL INCLUDE DETERMINING THE FOLLOWING:

- NUMBER, SIZE, AND LOCATION OF MAJOR PRODUCTION AREAS OF MILLET, SORGHUM, AND CASSAVA;
- NUMBER, SIZE, GENDER, "CLASS," AND LOCATION OF FIRMS OR INDIVIDUALS ENGAGED IN THE MARKETING OF MILLET, SORGHUM, AND CASSAVA;
- NUMBER, SIZE AND LOCATION OF PROCESSORS OF MILLET, SORGHUM, AND CASSAVA;
- THE TYPE OF PROCESSING PRESENTLY AVAILABLE FOR EACH OF THE COMMODITIES.

(U) IDENTIFY THE MAJOR CONSTRAINTS IN TRANSPORT, STORAGE, PROCESSING, AND GRADES AND STANDARDS FACED BY THE MARKETING AND PROCESSING FIRMS IN THE MINOR FIELD CROPS SUBSECTOR.

(U) IDENTIFY THE TYPE AND KIND OF ASSISTANCE THAT USAID APPEARS TO BE BEST QUALIFIED TO SUPPLY TO OVERCOME THE CONSTRAINTS.

THE THREE ABOVE SUBTASKS WILL BE ACCOMPLISHED BY:

- REVIEWING SECONDARY INFORMATION;
- HOLDING INTERVIEWS WITH INDIVIDUALS INVOLVED WITH THE MINOR FIELD CROPS SUBSECTOR; AND
- CARRYING OUT FIELD OR ON-SITE VISITS TO VERIFY INFORMATION GAINED FROM OTHER SOURCES.

G. REPORTS AND DELIVERABLES.

THE CONSULTANTS WILL PROVIDE TO THE USAID/ZAMBIA MISSION DIRECTOR NO LATER THAN MAY 8, 1988 ONE TYPEWRITER, DOUBLE-SPACED DRAFT OF EACH STUDY. ONE REPORT WILL CONTAIN THE DATA, BACKGROUND INFORMATION, AND RECOMMENDATIONS CALLED FOR UNDER TASK 1, MARKETING OF FRUITS AND VEGETABLES. THE SECOND

THE CONSULTANTS WILL PROVIDE TO THE USAID/ZAMBIA MISSION DIRECTOR NO LATER THAN MAY 10, 1988 A TYPEWRITER, SINGLE-SPACED FINAL VERSION OF EACH REPORT, BOTH OF WHICH INCORPORATES THE COMMENTS AND SUGGESTIONS USAID/ZAMBIA MADE ON PREVIOUS DRAFTS. THESE TWO REPORTS WILL BE SUBMITTED IN FINAL BEFORE THE CONSULTANTS DEPART ZAMBIA. BEFORE DEPARTING ZAMBIA, THE CONSULTANTS WILL ALSO PROVIDE USAID/ZAMBIA WITH 5.25 INCH COMPUTER DISCS (5) CONTAINING THE TEXT AND TABLES OF THE ABOVE MENTIONED REPORTS.

D. PERSONNEL.

IT IS ESSENTIAL THAT EACH CONSULTANT BE FLUENT IN THE ENGLISH LANGUAGE, HAVE PROFESSIONAL ACADEMIC TRAINING AT THE MASTERS LEVEL OR ABOVE IN AGRICULTURAL ECONOMICS, MARKETING, OR A RELATED FIELD, BE FULLY PROFICIENT IN THE USE OF WORD PROCESSING AND OTHER RELEVANT COMPUTER PROGRAMS, HAVE CONSIDERABLE EXPERIENCE WORKING IN AFRICAN COUNTRIES (PREFERABLY IN AGRICULTURAL MARKETING WITH THE PRIVATE SECTOR), AND HAVE FAMILIARITY WITH A.I.D.'S POLICIES, PROCEDURES AND CAPABILITIES.

IT IS HIGHLY DESIRABLE, THOUGH NOT ESSENTIAL, THAT EACH CONSULTANT HAVE PRIOR EXPERIENCE IN ZAMBIA, AND HAVE CONDUCTED PREVIOUS ANALYSIS OF AGRICULTURAL PRICING AND MARKETING ISSUES FOR CROPS WHICH THE IAMS PROJECT WILL POTENTIALLY FOCUS UPON.

IT WILL NOT BE NECESSARY FOR THE CONSULTANTS TO HAVE ACCESS TO CLASSIFIED INFORMATION.

THE WORK PROPOSED WILL REQUIRE THE SERVICES OF TWO CONSULTANTS. THE CONSULTANTS SHOULD INDIVIDUALLY DEVOTE NO LESS THAN FOUR WEEKS FOR SUBSTANTIVE WORK IN ZAMBIA, IN ADDITION TO UP TO FIVE WORKING DAYS FOR INITIAL BRIEFINGS NOT TO EXCEED ONE DAY IN AID/US AND PREPARATION OF A TEAM WORK PLAN.

E. ROLES AND RESPONSIBILITIES

THE CONSULTANTS WILL WORK UNDER THE OVERALL GUIDANCE OF THE MISSION DIRECTOR, OR THE ASSISTANT DIRECTOR ACTING ON HIS BEHALF. THE CONSULTANTS WILL RECEIVE DAY TO DAY DIRECTION FROM THE MISSION'S AGRICULTURAL ECONOMICS OFFICER. THE AGRICULTURAL ASSISTANT AND THE AGRICULTURAL ECONOMICS ASSISTANT WILL BE ASSIGNED TO THE TEAM FOR THE PERIOD IN WHICH THE TEAM CONDUCTS ITS WORK IN ZAMBIA. THE MISSION'S PROJECT DEVELOPMENT OFFICER WILL ALSO BE AVAILABLE TO GUIDE THE LINES OF INQUIRY AND DATA COLLECTION.

ONE OF THE TWO CONSULTANTS WILL BE DESIGNATED AS TEAM LEADER TO SPEAK ON THE TEAM'S BEHALF, AND SERVE AS THE CONSULTANT WITH OVERALL RESPONSIBILITY FOR THE QUALITY OF THE TEAM'S WORK PRODUCT.

IN ORDER TO FACILITATE THE COLLECTION OF DATA AND ASSIST WITH OTHER ASPECTS IN PREPARING THESE TWO STUDIES, USAID/ZAMBIA WILL CONTRACT WITH LOCAL FIRMS USING COUNTERPART FUNDS TO SUPPORT THE STUDIES TO BE CARRIED OUT BY THE U.S. CONSULTANTS. THE LOCALLY CONTRACTED CONSULTANTS WILL WORK UNDER THE GUIDANCE AND SUPERVISION OF THE TWO ARIES CONSULTANTS.

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FIG/T NO.: 650-0206.11-3-70014
APPROPRIATION NO.: 72-117/01007
BUDGET PLAN CODE: 6257-01-21011-0414
AMOUNT OBLIGATED: DOLLARS 40,000

NAME

THE ARIES CONSULTANTS WILL BE RESPONSIBLE FOR:

- 1) MANAGING THE OVERALL PROCESS OF INFORMATION AND DATA COLLECTION;
- 2) MAKING SELECTED SITE VISITS TO DETERMINE THE QUALITY AND ACCURACY OF THE INFORMATION AND DATA BEING COLLECTED;
- 3) PARTICIPATING TO THE FULLEST EXTENT POSSIBLE IN INTERVIEWS AND FIELD VISITS;
- 4) PROVIDING A UNIFORM REPORTING AND WRITING FORMAT FOR THE TEAM;
- 5) WITH ASSISTANCE FROM THE ZAMBIAN CONSULTANTS, DRAFTING THE TWO REPORTS.
- 6) PROVIDING USAID/ZAMBIA WITH 5.25 INCH COMPUTER DISKETTES CONTAINING THE TEXT AND TABLES OF THE ABOVE MENTIONED REPORTS. THE DISKES MUST BE COMPATIBLE WITH WANG PC EQUIPMENT

F. LOGISTICS.

USAID/ZAMBIA WILL PROVIDE HOTEL RESERVATIONS, TRANSPORTATION TO FIELD SITES, OFFICE SPACE, SECRETARIAL SUPPORT, OFFICE SUPPLIES, AND FOR THE TWO ARIES CONSULTANTS, COMMISSARY PRIVILEGES. THE MISSION HAS TWO WANG PC'S, WITH WANG WORD PROCESSING AND LOTUS, WHICH CAN BE MADE AVAILABLE TO THE CONSULTING TEAM. THE WANGS ARE IBM COMPATIBLE. IF THE TEAM WISHES TO BRING PERSONAL COMPUTERS, THE COMPUTERS MUST BE COMPATIBLE WITH THE MISSION'S WANG PC'S.

G. LEVEL OF EFFORT.

IT IS ESTIMATED THAT EACH CONSULTANT WILL BE REQUIRED TO DEVOTE NO LESS THAN 30 PERSON DAYS (NOT INCLUDING HOLIDAYS AND WEEKENDS) TO PERFORM THE WORK REQUIRED. A 5-DAY WORK WEEK SHOULD BE AUTHORIZED. IT IS ANTICIPATED THAT ONE OF THE CONSULTANTS SELECTED FOR THE WORK DESCRIBED ABOVE WILL BE REQUIRED TO SERVE ON THE PP DESIGN TEAM. THUS, THE POSSIBILITY OF A FOLLOW-ON TO THE I&D DELIVERY ORDER FOR ONE CONSULTANT IS REQUESTED. THE PP DESIGN TEAM IS SCHEDULED TO BEGIN ITS WORK ON MAY 22, 1988. THE PP IS SCHEDULED TO BE COMPLETED BY JULY 25, 1988.

H. BUDGETARY AND FISCAL DATA.

IT IS ANTICIPATED THAT SUFFICIENT PP AND R FUNDS ARE AVAILABLE TO COVER THE COSTS OF THE CONSULTANT TEAM IN PREPARING THE TWO STUDIES. THESE FUNDS HAVE ALREADY BEEN OBLIGATED FOR AN ARIES PROJECT BUT-IN PER REF A. ADDITIONAL FUNDING MAY BE REQUIRED TO UNDERWRITE THE COSTS OF AN EXTENSION FOR ONE CONSULTANT TO SERVE ON THE PP DESIGN TEAM. USAID/ZAMBIA SHOULD BE ADVISED BY AID/M IF ADDITIONAL FUNDS WILL BE REQUIRED FOR SUCH AN EXTENSION, AND THE AMOUNT, ONCE THE COSTS OF THE WORK ORDER HAVE BEEN ASCERTAINED WITH THE I&D FIRM (WANG). IT IS THE MISSION'S DESIRE THAT ALL IN-COUNTRY COSTS FOR THE CONSULTANT BE COVERED THROUGH THE USE OF COUNTERPART FUNDS.

FUNDING SITES FOR THE I&D DELIVERY ORDER ARE AS FOLLOWS:

UNCLASSIFIED

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