

**BUSINESS DEVELOPMENT
ASSISTANCE TO
AGRI-BUSINESSES WITH
LINKAGES TO SMALL
FARMERS-ZAMBIA**

Final Report

U.S. Agency for International Development

Prepared by: Cargill Technical Services, Inc. (CTS)

**Sponsored by: Private Enterprise Development
Support Project III
Contract No. PCE-0026-Q-00-3031-00
Delivery Order No. 31
Prime Contractor: Coopers & Lybrand, L.L.P.**

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Prepared by: Gordan Biggar, Consultant to CTS
Paul Harnett, Consultant to CTS
Jim Mulholland, Consultant to CTS
David Neubert, CTS
Jim Turnbull, CTS

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ABBREVIATIONS AND ACRONYMS

ACE	Agricultural Commodity Exchange
ATAC	Agri-business Technical Assistance Center
BT	Bacillus thuringiensis
CDC	Commonwealth Development Corporation
CLUSA	Co-operative League of the United States of America
EWU	Early Warning Unit
FAO	Food and Agriculture Organization, of the United Nations
FAS	Food and Agricultural Service, USDA
FOB	Free on Board
GRZ	Government of Zambia
IPM	Integrated Pest Management
LGB	Larger Grain Borer
MAFF	Ministry of Agriculture, Food and Fisheries
MT	Metric Tonne
NAMBOARD	National Agricultural Marketing Board
NCA	National Cotton Association
NCBA	National Cooperative Business Association
NGO	Non-Governmental Organization
OP	Open Pollinated
RSA	Republic of South Africa
TA	Technical Assistance
ZNFU	Zambian National Farmers Union
ZPA	Zambian Privatization Agency

METHODOLOGY

The intent of this report is to identify constraints and opportunities in increasing economic linkage between agri-businesses and small farmers. The report suggests ways in which these linkages can be strengthened to add synergy to the agri-business - small farmer relationship through technical assistance intervention.

This report was researched and written between January and April, 1996 by Cargill Technical Services Inc. Consultants participating in its preparation included Gordon Biggar, Paul Harnett, Joe Mulholland, David Neubert and Jim Turnbull. Research was conducted through review of available literature and reports, numerous meetings with agri-business company representatives, trade associations, as well as small farmer groups and individuals.

In the course of developing this report, consultants met with private businesses and received a wide variety of proprietary business information. This information was given to the consultants with the understanding that it would not be made public and would be limited in circulation to USAID and other principal donors participating in the technical assistance project. In order to maintain the integrity of USAID and the groups associated with the development of this document, it is requested that prudence be used when distributing this document.

EXECUTIVE SUMMARY

The democratic election of Zambia's current government in 1991 has initiated dramatic policy changes, moving the economy away from central planning and towards a free market system. This process has not been without its problems. Privatization of state industries began slowly, but now the government is well on its way to divesting itself of its state-owned businesses. The central government has, in recent history, been a very active participant in the agricultural sector, through guaranteed prices for commodities, physically distributing commodities, supplying credit, as well as other inputs. These policies are also continuing to change. The government, for the most part, has removed itself from interfering in the marketing and distribution of food products and is reducing its activity in the credit sector. The one exception to this is the government's continued participation in fertilizer credit to small farmers. Many people, both inside and outside of government, feel that it is unlikely and unwise for the government to continue interfering with the fertilizer market.

To support the Government of Zambia in its move towards developing a demand-driven free market economy, USAID and other donors have identified specific areas within the agricultural sector which can benefit from technical assistance. As the State withdraws from its role of operating agricultural businesses, the vacuum which is left is rapidly being filled by private entrepreneurs. This is true in both the trading and distribution sectors, as well as in the food processing sector.

This report reviews opportunities which USAID and other donors can take advantage of to add momentum to the process of changing from State-controlled to a private sector economy. The report outlines specific technical areas which have become bottlenecks to future growth of agri-businesses and the incomes of small farmers. The strategy to increase the economic momentum between agri-business and small farmers is to provide technical assistance to agri-businesses that purchase products from small farmers, thereby improving the efficiency of the sector and driving aggregate demand for additional raw products. This, in turn, increases the potential market size and incomes for small farmers, as well as increasing agri-business profits.

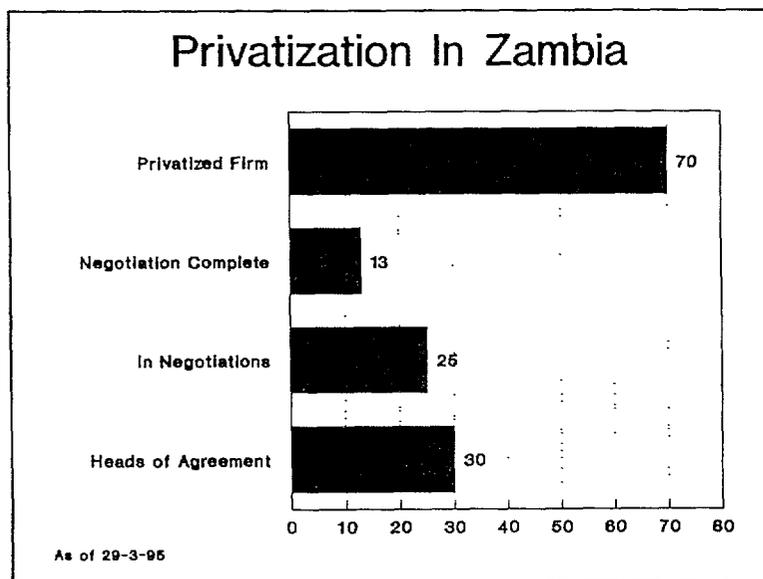
Today, Zambia's agri-business sector, which purchases raw inputs from small farmers, faces numerous constraints. These include lack of basic management skills in accounting, contracting, marketing and market research. On the operational side, the businesses suffer from limited knowledge of technical processes and hardware that can reduce costs and increase operating efficiency. This report addresses ways in which these constraints can be overcome through direct technical assistance intervention at the firm level.

By way of example, the report examines the impact of USAID and other donors contributing three million dollars towards the implementation of an Agri-business Technical Assistance Center (ATAC). The ATAC would act as a conduit for technical assistance to be supplied to firms purchasing products directly from small farmers. The ATAC would also work directly with groups of small farmers, as well as start-up businesses and associations by supplying highly-focused technical assistance targeted at reducing constraints, increasing profitability and reinvestment.

1 INTRODUCTION

Zambia's economy is currently in a state of dynamic change. With the weight of 27 years of socialist policies now removed, the country's economy is beginning to move towards positive growth, although not all sectors within the economy are progressing at the same rate. The mining sector, historically the backbone of the nation's economy is in a state of decay and mismanagement. Agriculture in general is growing, but there are strong and weak industrial sectors within the overall agricultural economy.

The 1995-1996 maize crop appears to be good in yield terms and that there is a rapidly developing private trading sector positioning itself to begin buying the crop. The prospects for cotton also look promising. Privatization of the industry is nearly complete and competitive forces are starting to become visible in the national market. Further positive trends in the cotton sector include investment in expanding the country's cotton spinning industry and in newly independent ginning facilities. Another growth area in the agricultural sector, is the increasing numbers of small and medium size agri-trading companies serving the domestic, and occasionally the regional demand in grains and horticultural products (mainly vegetables). Additionally, out-grower contractors, that is, companies which contract to buy crop from small farmers at pre-agreed price, in exchange for farming inputs, are now common in the cotton industry and appear also to be growing in maize, oilseeds and beans.



The slow to start, but now rapid pace of privatization is helping to pull the agri-sector in a positive direction.

As of late March 1996, 70 State-owned firms had been privatized, thirteen more had completed negotiations and were working out the legal issues associated with their title transfers, and 30 had signed heads of agreements. A further 25 were involved in negotiations, with an additional 70 either in the preparatory phase or under liquidation. Within the group being

privatized, there are a number of agri-processing companies, including: flour mills, oil extraction plants, cold storage plants, a seed company, cashew and coffee plants and several food canning plants. Once these firms have moved to the private sector and the expansion plans of current firms, new traders and processors bear fruit, the growth rate of Zambia's agri-economy could improve significantly.

Nevertheless, there is still room for vast improvement in the agricultural economy, which is particularly true in the small farming sector. The small farmer population is dispersed over the entire country, often in remote locations and any large business or government activity linked to them is often difficult to manage and expensive to implement. The small farmer is a segment of the population which can best be serviced by encouraging investment from local and international firms whose businesses are particularly aligned to involving this sector in their overall development, as exemplified by the Lonrho approach to cotton production.

A major weakness in Zambian agriculture, hindering the development of agri-business, has been the years of poorly managed smallholder credit schemes which have bankrupted several financial institutions servicing the sector. For years, small farmers were given loans at very low interest rates or had debts alleviated by government supported credit organizations, which has led to an unwillingness of private institutions to enter this market. Loan recovery has been very low among the small farming sector. The best managed private banks claim to have a 70 per cent repayment rate, but the cost of administering these loans is high. Government credit programs, administered through banks and other appointed institutions, recover no more than 50 per cent of their loans. The worst performing institutions were the State-owned banks and lending societies, some reporting recovery rates as low as 10 per cent.

At this stage in the evolution of the Zambian economy, it is recommended that the donor community does not continue to support any of the government credit programs directly or indirectly, bar the provision of technical assistance targeted at the credit industry to improve track and loan recovery records, and improve the ability to trace credit history. Additional focused support should be provided to the agri-business borrowing community (in particular, firms which deal with small farmers) to train them in improved methods of cash flow and credit management, as well as accounting and related activities.

A second weak spot in the agri-sector is the continued government involvement in the small farmer fertilizer credit and distribution industry. The MAFF scheme is administered through the Lusaka based firms of Cavmont Bank Limited and SGS Limited. Commercial farmers report that the MAFF fertilizer is priced 25 per cent higher than private market prices, (US\$300 per MT for volume purchased private market, versus US\$400 per MT for small lot MAFF material). It is assumed that the extra cost that is charged under the government program, is to cover the handling costs associated with selling in small lots plus high overheads for the dealer, the financing costs and the very low credit recovery rates. It is hoped the government will withdraw from the fertilizer market over the next two to three years.

A third weakness in the agricultural sector is the overall level of management and technical know-how in current start-up and agri-businesses. It is this constraint that can benefit from targeted, company level technical assistance. It is recommended that resources be invested in upgrading the level of management and technical know-how, as well as providing technical assistance to support the sourcing of raw product for and from small farmers.

By providing technical assistance to improve the efficiency and capacity of the agri-sector in Zambia, client firms will be better able to manage their own in-house resources, and these companies will position themselves for growth. From the growth of these firms will come a greater demand for raw agricultural products, which will benefit the small farmer by increasing demand for the products they produce.

Crop yields, in the small farming sector, are very low in most cases, and often insufficient production is obtained to cover growing costs. This is obviously a contributing factor to the poor history of credit repayment. The linkage between improved agri-business performance and the small farmer, should eventually lead to higher yields, production and incomes for rural families.

1.1 THE SMALL FARMER - AGRIBUSINESS RELATIONSHIP

As stated earlier, agri-businesses find it difficult to work with small farmers because they:

- are spread over a wide geographic area;
- produce low output per hectare;
- have limited husbandry skills;
- are often unpredictable in terms of long term production;
- usually produce a commodity which has relatively low unit value, which has to be transported at high cost;
- have very limited capital for crop production and are less likely to have on-farm resources to ensure the production of a high yielding and high quality crop; and
- are administratively difficult and expensive to manage, due mainly to the large numbers that agri-business has to work with to insure adequate raw product supplies.

Even with all these constraints, many agri-businesses in Zambia have turned to the small farmer as a raw product supplier and have developed management systems which improve the economics of working with them as a group. The most common linkage to the small farmer is by way of outgrower contractors, a system used extensively in the cotton industry which, in the short-term, appears to be spreading to other crops. A second system which agri-businesses, including traders, use to reach the small farmer is through direct contracting. In both cases (out-grower contracting and direct processor contracting) the purchaser of the crop usually provides production inputs to the grower.

Many agri-businesses, particularly processors and traders, would prefer to withdraw from direct contracting, and it is probable that outgrower contractors will play a larger role in providing raw

product to processors and traders in future. As the contractors develop more skill in operating their businesses, banks or other lending institutions will be more willing to provide debt capital. Contractors range from individuals through small, medium and large companies, operating local or regional companies, to small new start-up businesses.

2 THE AGRI-PROCESSING SECTOR

The maize milling, cotton ginning and oil extraction industries are the most important sub-sectors within the agri-processing economy. Throughout the 1980s, the centrally planned economy focused resources on this sector to develop large mills based in predominant urban centers. The majority of the large-scale private sector milling industry was nationalized by 1987.

The change in government in 1991 has developed a more business friendly environment. One result has seen a rapid increase in small maize hammermill numbers. Within a very short time, the small rural and peri-urban miller began to draw raw input product and market share away from the state owned mills. This further increased the parastatal losses and added to the governments economic burden.

The Ministry's central planners also invested in several canning and bottling plants. Again, these operations ended up being far more profitable for the equipment manufacturers selling the plant than they were for the government to operate them. In fact, most of these plants were loss makers, suffering from design over capacity, limited raw product availability and gross mismanagement.

With economic liberalization, the government is ridding itself of these loss making operations, selling them off through their privatization program. New investment in the agri-processing industry is coming on-stream, and there is steady investment into the sector from domestic, regional (mainly South African) and international sources. This is a sign that the sector is profitable and establishing confidence. It is hoped that investment will continue to meet market demand, and lessen the effect of outside factors which can distort markets.

3 THE ROLE OF GOVERNMENT AND TRADE ASSOCIATIONS

A role for government is promoting the agri-sector and the linkage between small farmers and agri-business. It is the responsibility of the government to create an operating environment where businesses can grow, and where firms are allowed to move assets in and out of the sector as necessary. The current government and its policy adjustments have a good track record so far, although the reduction in investment incentives from the 1991 Investment Act to the 1993 Investment Act is probably premature. The government has acted in 1996 to cut taxes on imported equipment and reduce taxes in general.

One area within the agri-sector that the government will need to address in future, is the regulation of plant biotechnology. The relevant Ministry will need to set out regulatory guidelines for international companies to register and market these technologies, which could soon be available to

the growing and processing industry. A case in point is Monsanto's BT cotton. This genetically modified cotton has a natural occurring pesticide built into the plant. When the chemical (toxic to worms and not to humans) is eaten by a worm, it dies in a matter of hours. The chemical which the cotton plant makes was derived from genetic material taken from a bacteria and placed into the cotton's DNA. This is relevant to Zambia's small cotton growers because it could greatly reduce the amount of pesticides used and reduce the farmers exposure to the highly toxic pesticides currently used on the crop, with little or no protection to the person spraying.

At this point in the development of Zambia's economy, it is largely up to the agri-industry to monitor itself on issues like food safety, chemical use, and other issues that could affect its long-term development. The food and agriculture industry needs to be made aware of the possible negative effects that improper chemical use or food processing methods could have on the development of domestic, regional or international markets. This is an area where industrial associations can play a key role through education and training. Although the development and start-up of associations is not viewed as part of the role of the following donor assistance to the industry, it is assumed that, once an industry in the food and agricultural sector forms an association, technical assistance would be made available to support it.

4 THE EFFECT OF CLIMATE ON AGRI-BUSINESS DEVELOPMENT

Zambia's climate has a significant effect on the development of the nation's agri-businesses. Historically, the country has enjoyed adequate rainfall to support the population and develop industry. However, several recent years of drought or near drought, have temporarily impaired the agri-sector but it does not appear to have stopped investment.

There are a number of distinct agricultural climatic zones in Zambia and each one possesses opportunities and risks for the small farmer. The South, with lower rainfall is best suited for crops such as sorghum and sunflower. Central and Eastern Provinces prove best for short season maize, cotton, oilseed and sweet potato. The higher rainfall in the northern region makes it best suited for cassava and longer season maize varieties.

5 THE ROLE OF ZAMBIA IN THE AGRICULTURAL ECONOMY OF SOUTHERN AFRICA

Southern Africa is currently going through an economic metamorphosis, with two-way trade flows now possible with the region's largest member, South Africa. Zambia also is in a state of flux and until South Africa completes revision of its tariff and duty regulation with its neighbors, it will be difficult to clearly see the road ahead. Regardless of these policy and trade issues, there are some agricultural and geographic facts which will greatly influence Zambia's agri-trading future.

Zambia shares many of the same geographical and agricultural benefits and constraints as its close neighbors. With this being the case, Zambia often finds itself with crop surpluses at the same time as other regional producers. The high cost of trucking in Zambia adds to the constraints facing

traders looking to sell into the regional market. The private grain trading sector is keenly aware of market opportunities, and occasionally exploits niches in the region. However, a clear long-term comparative advantage trend is unlikely to emerge until regional trade policies balance themselves with the region's agri-production resources. There are profits to be made in the sector but, in the short-term, most of these will be extracted from the domestic market.

The cotton market is a very different story. Zambia produces good quality cotton at well below world market prices. Cotton production is dominated by small farmers, and with the recent privatization of the ginning industry, buying competition is starting to appear. Currently, the ginning industry has capacity for 100,000MT of seed cotton per annum, is geographically well distributed, and has a potential for a third ginner. It is believed that the domestic industry will double its production in the next three years, which will encourage the 10 per cent of all small farmers who cultivate cotton. Grower numbers are likely to double with the industry's predicted expansion.

6 THE PATH FORWARD: PROVIDING COST-EFFECTIVE SUPPORT TO AGRIBUSINESS AND SMALL FARMERS

After 27 years of socialist economic policies, Zambia's farming and agri-industrial sector evolved into a state of mismanagement, low productivity and negative profits. With the democratic election of President F.J. Chiluba in 1991, Zambia made a great change in the country's economic and policy course.

To expedite the transformation of Zambia's agricultural sector and ensure that the small farmer is not left out of the new economic opportunities, donors have targeted agri-business development as a way of reaching the small farmer.

It is considered that the establishment of an Agri-business Technical Assistance Center (ATAC), which is highly focused and practical can stimulate and strengthen the "pull through" effect, and by using established avenues between small farmers and agri-business, can produce cost effective delivery of benefits.

The objective in creating the Agri-business Technical Assistance Center (ATAC) is to increase economic velocity and mass between the agri-business and the small farming sectors. It will not be the role of the ATAC to act as the binding agent between these two groups, but rather as a catalyst to stimulate co-operation and momentum in their economic interaction. It is the intention of the ATAC to facilitate the development of a symbiotic relationship between the agri-business and small farming sector.

The ATAC will provide the catalyst through a series of highly focused technical assistance interventions at the firm level. These interventions will be available to companies and individuals across the various agricultural industries in Zambia, provided that the company or individual receiving the technical assistance either is a provider of inputs to small farmers or purchases their

goods. Priority will be given to those firms where small farmer and/or women owned small farms make up a greater proportion of the client (buying or selling) base.

It is recommended that the ATAC charge a fee for services, but the amount charged should take into account the client's ability to pay, the cost-benefit of the technical assistance to the company and the small farmer, as well as the cost of the intervention to ATAC.

Other broad factors the ATAC will consider before committing resources to a project will include, the level of impact the project will have in expediting the liberalized economic policies set out by the government, as well as the health, safety and environmental appropriateness relative to the concerns of government and donors.

6.1 ESTABLISHMENT OF AN AGRIBUSINESS TECHNICAL ASSISTANCE CENTER

There are a number of different factors to consider when selecting the location of the ATAC. First, there is the question of geographic location. That is, in which city or province should it be located? Secondly, to which institution (if any) should the ATAC be linked, both physically and/or administratively?

It is evident that a Lusaka base will allow the ATAC to be in close proximity to the highest density of agri-business in the country, with the best communication links to collaborating domestic and international organizations. Additionally, being based in Lusaka provides advantages in air, road and rail transportation links.

The disadvantage to the Lusaka location is that the project will be situated away from the immediate reach of most of the small farmers. However, there is no alternative site which can better reach the agri-business sector and the small farmer community, which is widely dispersed throughout the country.

Where and in what form the ATAC should be located, within Lusaka, is a more complex issue than deciding the geographic location. There are a number of institutions which would be willing to integrate a project, such as the ATAC, into their organization. Given that the ATAC has a private sector focus, it is recommended that it not be attached to any government body. The private sector orientation also makes it a poor fit with most of the non-governmental organizations (NGOs) which operate in Zambia and they would not necessarily provide the best background and environment for a commercial operation.

Possible Locations Agri-Technical Assistance Center (ATAC)	
<u>Location</u>	<u>Concerns</u>
Ministry of Agriculture	Policy
Investment Center	Different Focus
Independent	Isolated
Non-Governmental Organization	Non-Bus. Focus
Chamber of Commerce	Non-Agri. Focus
Zambia National Farmers Union	Limited History of Small Farmer Link

There are some exceptions. Organizations such as the National Co-operative Business Association do tend to have a good business focus and would make a strong candidate as a collaborative partner and for sharing Lusaka office space. NCBA has a Washington DC headquarters and a database of consultants capable of providing many types of technical assistance. NCBA have offices within the Zambian Privatization Agency (ZPA) which are centrally located within easy access and have ample parking.

Other local institutions, such as the Investment Center or Chamber of Commerce, are possible candidates, but lack a strong agri-business focus and are not structured to implement technical assistance programs.

The Zambia National Farmers Union (ZNFU) is a potential candidate. It has a 35 year history of representing the farming community. However, only recently has there been an effort to reach out to the small farmer.

The ATAC could be situated as an independent institution, however this is not the most cost effective option. The operating and administrative costs would be high, since they could not be spread over a larger organization. Finally, the independent ATAC would not necessarily have an immediate understanding of the local business community, company interrelations and conflicting interests. It is possible to hire staff with this knowledge, but this could be difficult, costly and time consuming. The clear advantage to the independent ATAC is that, if eventually staffed correctly, it will have no conflicts of interests and possibly be more trusted by the business community.

It is not felt that creating or strengthening existing institutions is a high priority for the ATAC. The first priority for ATAC is to increase the incomes of small farmers and agri-businesses. If institutional capacity can be strengthened, the ATAC should be willing and capable of contributing where it can, but institutional capacity building should not be the determining factor when deciding where to place ATAC. The staff of the ATAC need to keep focused on its primary task. Being associated with an inappropriate institution or operating independently could be a distraction. The ATAC is designed to stimulate the agri-business and small farm community's economic momentum, the primary reason for its existence, and all energy should be focused on achieving this goal. Once a decision in principle is taken to proceed with ATAC, the location options outlined above need to

be visited in order to assess available space and services together with the organizations enthusiasm to collaborate with ATAC.

The funding available for the establishment and running of ATAC is understood to be limited and it is not envisaged at this stage that a permanent institution should be created. However, the establishment and success of a revolving fund may allow the provision of services to be continued after the donor-funded project ends. The desirability and sustainability of making ATAC permanent should be resolved as one of the tasks allocated to the Agri-business Adviser/Chief of Party.

6.2 REACHING THE BENEFICIARIES

The ATAC will provide a de facto subsidy to agribusinesses, and therefore small farmers. However, the benefit they receive will be in risk reduction and increasing aggregate market demand. It is

Who Can Benefit From ATAC's Technical Assistance?

- *Input suppliers: chemicals, feeds, seeds*
 - *Raw product suppliers (small farmers)*
 - *Oilseed processors: edible and industrial oil producers, cake and stock feed manufacturers*
 - *Horticultural product producers: fresh and processed product, bulk and consumer ready*
 - *The fiber industry: shippers, ginners, spinners, de-linters and secondary product manufacturers*
 - *Financial institutions, agri-business start-ups and firms wishing to expand operations*
 - *Agri-sales and marketing firms involved in both the input and output side of the industry*
 - *Out-grower contractors, traders, warehouse firms which support all the above agri-business sectors*
-

assumed that by reducing risk, businesses will undertake certain activities sooner than they might otherwise consider as reasonable, given the current risk reward relationship in Zambia. By ATAC's intervention, the risk reward relationship can be improved and thereby induce additional investment in the agribusiness - small farmer economy. Although, this can be considered a form of market distortion in a theoretical and totally free market environment, it reflects the realities of the world economy, where government assistance, tax incentives and other inducements are provided to the private sector in order to generate economic growth. Government, the private sector and the general population all benefit from increased economic growth through increases in revenue flows, higher incomes and a higher standard of living.

The ATAC is not designed to be the initiator of new investments and economic activity, but to facilitate those activities which are indigenous to the sector. To insure this, the ATAC will carefully select the agri-business beneficiaries. Projects

which could not move forward under their own momentum will be given a low priority. Projects that will be supported by ATAC will have the ability to develop on their own but where the rate of

that development can be increased by focused intervention. Through this mechanism of selected partnerships, the ATAC can ensure that its assistance to agri-businesses and small farmers delivers the desired positive impact.

By providing support to agri-business, ATAC can benefit numerous levels of the Zambian economy. Direct support to business is common throughout the world to assist in developing jobs, increasing tax revenues, improving levels of technology and generally improving a region's economic state. Within the developed world, cities, states and federal governments provide numerous tax incentives, subsidized workforce training, and in some cases, land grants and other incentives. These types of incentives have been used historically with great success in the US, as well as many other developed countries. ATAC will provide such incentives for businesses to grow through workforce training, upgrading technology, and income generation at the agri-business and small farmer level.

ATAC will produce literature and mount a publicity campaign clearly explaining the services on offer, the target beneficiaries and the range of charges. It will then be for interested parties to approach ATAC with their proposals.

6.2.1 Agri-business and the Small Farmer

The ATAC project will benefit both agri-business and the small farmer. The key link in delivering technical assistance is to use agri-business as the conduit to reach the small farmer. The ATAC will target agri-business operators who service and source raw product from small farmers, and thus have a vested interest in the success of the small farmer.

The objective is to disseminate technical and managerial information to agri-business staff who in turn, will help the farmers to increase their productivity.

The ATAC will provide a wide range of technical and managerial support and training to individual firms, as well as at the industry wide level.

Examples of the avenues to deliver technical assistance include: linking with private in-house agricultural extension personnel, technical sales and buying representatives, field/plant operations, traders and entrepreneurs. The project will concentrate on developing a working relationship with agri-businesses that source a significant percentage of raw input from small farmers or target marketing and sales efforts at providing small farmers with production input.

Another important link in reaching the small farmer is working with out-grower contractors. This group of entrepreneurs is fast becoming a key element in the supply of crop production inputs as well as providing marketing channels for the small farmer throughout Zambia.

The project will work with agri-businesses and industrial organizations to identify and solve specific problems such as raw product sourcing and quality, transport, plant operations, formulation, storage, marketing and management to eliminate productivity bottle necks.

Women's Role in Poultry Farming and the Animal Feed Industry

According to Zambian animal feed industry sources, the manufacture and sales of poultry feeds for both broiler and layer formulations dominates the national stock feed market. Poultry feed sales account for an estimated 77 per cent of total market value, of which roughly 56 per cent is for broiler (dominated by women owned small farms), and 44 per cent for layer formulations.

Within the poultry farming sector, women owned small poultry operations account for about 40 per cent of all feed sales (a small poultry farm being defined as 1,000 birds or less). This then translates into over 30 per cent of the total feed sold in the country being purchased by women operated small farms.

The percentage market share that women run operations represents, is recognized by progressive firms in the feed industry. The industry's most aggressive firm now offers free extension service to its customers in flock management, inputs and output record keeping and analysis, as well as animal health and nutrition. Women owned small farms are the leading recipient of this service.

By providing TA to improve farm productivity, via private extension services, ATAC will benefit small farms through better management and increased profits, as well as benefiting the feed industry via increasing demand of poultry feeds.

There are several technical assistance areas that The project will focus on. These will include, but are not limited to: training of agronomic, operational and management staff to improve on farm and in plant productivity, assisting in business start-up and expansion planning, improving the ability of financial institutions to monitor and recover loans, assisting in the privatization of the fertilizer market and assisting client firms in identifying and sourcing capital. The project will also work closely with recently privatized agri-businesses working with small farmers and be available to supply them with technical, marketing and managerial support and training.

6.2.2 The Project's Impact on Women

Given USAID's interest in improving the economic and social role of women in the developing world, the ATAC will give priority to assisting women agri-business owners.

Additionally, priority will be given to those agri-businesses which source or sell a significant part of their throughput to women owned, operated or managed small farms and agri-businesses. Special effort will be placed on providing human resource training to women agri-business managers and private extension services which have a strong female client base.

Women have a vital role in meeting the labor demands on small farmers. The ATAC will work in concert with NGOs and others to target benefits directly to women on small farms.

6.2.3 Working with Trade Associations, NGOs, Small Farmer Groups and the Government

It is the intent of the project to give priority to technical assistance interventions that can be applied across an entire industry. In order to organize such industry wide efforts, the project will link with trade associations such as the Zambian Grain Growers Association, numerous smaller associations like the Mazabuka Hammer Millers Association, and small farmer groups and associations. Through linkages such as these, further groups will be stimulated to form, once benefits of technical assistance are seen. Although represented by the ZNFU, the views of small farmers are still not well presented in front of government or the public at large.

As economic liberalization continues, more trade associations will form. The cotton industry is considering the creation of a ginners association before next season. The project will not take an active role in the creation of groups or associations, but once they are formed the project will stand ready to promote and work with the groups, to identify and correct industry-wide problems which are restraining increases in productivity.

NGOs are an important link to small farmers and some agri-businesses. The project will seek out specific agri-business opportunities with NGOs and support their efforts where appropriate. For example, the project will be available to provide technical assistance to firms working with the USAID Loan Guarantee Fund Project, to be implemented by an NGO.

Given that ATAC is targeted at, and implemented within the private sector, not through government, it is unlikely that there will be any significant interactions between these two groups.

6.2.4 Expanding the Reach of the ATAC

In order to maximize the benefits delivered to Zambia's agri-businesses and small farmers through the ATAC, it will be necessary to provide direct project access in key regional centers across the country. Cities such as Ndola, Chipata, Livingstone, Mazabuka and others all have active agri-business communities. In order to reach these regional businesses, the ATAC will collaborate with existing associations and organizations already operating in these areas who are all potential contact points for people seeking introductory information about ATAC. For example, the SIDA-supported "Economic Expansion in Outlying Areas" project with offices in Lusaka, Chipata and Mpika; the USAID-supported "Rural Group Business Development" project with offices in Lusaka, Mumbwa and Mazabuka; the CARE activities in Livingstone, Kalomo and Shesheke; and Africare's office in Solwezi.

This collaboration will include professional ATAC staff traveling to those offices that register interest and giving introductory talks on project activities to local associations and community groups. Following this, the NGOs can act as points of contact by providing potential clients with prepared written information about ATAC's guidelines and operating procedures.

It would be beneficial for ATAC to participate in some of the steering committees set up for these projects but without losing sight that ATAC should be focused on agri-businesses with linkages to small farmers and not individual farmers.

It is not assumed that the NGOs will have the business background necessary to service the local clients in great detail, but they will have the capabilities of answering initial questions, complete a primary screening and provide introductions to the professional ATAC staff in Lusaka. Once clients are identified in these outlying areas, the Lusaka staff will need to travel to meet clients within their own offices and plants to ascertain the appropriate level of technical assistance needed.

Given that some costs will be incurred by the NGOs in providing introductions and pre-screening for the ATAC, the project will need to provide compensation. It is important that a clear understanding is established to define the level and cost of this support, prior to any such support being provided and that this is encapsulated in a simple contract.

To add incentive for NGO co-operation with the project, ATAC should explore the possibility of providing Internet links to rural offices via the Zambian University Internet site. ATAC could approach the Leland Initiative for the supply of hardware and systems set-up.

The Leland Initiative, named after Mickey Leland (a US Congressman who died in Africa) was designed to “accelerate and bolster sustainable development efforts in African nations by enhancing their ability to access, produce and use information as full and equal participants in the global community”. The key points are:

- to build and strengthen the Internet in Africa
- total funds available are US\$15 million over five years
- funds were approved by Congress on 29 September 1995, but have been held up during the budget negotiations
- funds finally released on 1 March 1996

6.2.5 Conflict of Interest and Confidential Information

There are some concerns over conflict of interest. For example, the ZNFU represents farmers and agri-business traders and processors, which the ATAC will target, may be buyers of the ZNFU farm products. If the ATAC became attached to the ZNFU, it would be advisable to insure a clearly defined level of operational independence between the two organization, which would minimize any conflict of interest and help develop trust between farmers, the agri-business community and ATAC.

The issue of trust is of major concern, as the ATAC will be working with individual businesses. It will have direct access to private business information, including profit and loss statements, cash flow and sales information, client lists, production and marketing cost, process systems information etc.

All of this information is highly sensitive and measures must be put in place to insure that the ATAC staff, donors and collaborating partners handle information in the strictest confidence. Any breach of trust by the project would destroy confidence, and jeopardize access to client information. It would have a negative impact on attracting clients looking for assistance and could possibly face legal implications.

A formal contract will need to be established between the service recipient and ATAC and include a confidentiality clause, responsibilities for each party and specify the information required for impact reporting. Once these parameters have been agreed the potential for any unforeseen conflict of interest should be substantially reduced.

6.3 ESTABLISHMENT OF AN AGRIBUSINESS TECHNICAL ASSISTANCE CENTER (ATAC)

***Technical Assistance Example
Target Interventions Areas***

- *Raw Product: contracts, transport, quality, delivery scheduling, volume purchasing, safe and effective use of inputs for small farmers*
 - *Management Systems: cash flow management, accounting, financing, inventory controls, information systems, strategic planning, & human resource development*
 - *Plant Operations: maximizing efficiency, formulations, quality control & improvements expansion planning, technical design and bidding hardware, & raw and finished product storage*
 - *Sales and Marketing for both farm inputs & outputs: market research & development, developing and managing purchase and distribution networks, marketing plan development*
-

Once the final decision is made on the location of the ATAC and the various legal and intergovernmental agreements are completed, the project implementation will begin.

After recruiting staff and establishing the office, the first activities to be undertaken by the ATAC will be to determine TA selection criteria, developing the fee policy, working out the application methods and requirements, setting out the services offered, followed by preparation of publicity material.

To generate initial public knowledge of the ATAC, the project will undertake targeted mailings to companies, including those interviewed as part of the initial study, together with releases to the press, trade publications, targeted television and radio coverage, to reach a wider customer base.

The ATAC staff will simultaneously set up its administrative procedures and collate information for a data base of available donor funds. Additionally, they will develop their client base by networking throughout the agri-business community.

The project will take a proactive role in seeking out the best client candidates in which to invest project resources. The methods to be employed in the client search will be private sector focused and will include following up leads generated by informational mailing, public speaking at relevant industrial association meetings within Southern Africa, public speaking at civic and business organizations within Zambia, developing contacts in banks and other financial institutions. Along with these activities, ATAC staff will undertake a strategy of office visits to all the primary candidates. This will allow a rapid culling of the potential client base and minimize the amount of time between opening the office and generating the first wave of customers/beneficiaries.

Each intervention request will be fully assessed, a charge calculated (in local currency), and a quotation raised. If the request is deemed to be serious and viable, the ATAC will identify the expertise required and will develop a scope of work and estimated level of effort around the written application from the agri-business. This flexible approach allows the exact requirements of each request to be discussed, debated and agreed by the technical experts before any commitment has to be made to fund the activity.

Technical assistance will typically be provided in-house at the client location. All advisory services will be focused on the client's specific operating, trading or processing needs rather than by classroom training, where generalized information is presented.

6.3.1 Specific Examples of Technical Assistance

Agri-business in Zambia today is at a threshold, business people see opportunities which were not present under the socialistic policies of earlier governments. In addition, the strong demand and high prices in the world market has made domestically-produced agricultural products very competitive. ATAC intervention is designed to cover a wide variety of business training, planning and development activities. The list below is intended to give a representative sample of the activities that could be undertaken, but is not necessarily a complete list of all activities which the ATAC may be involved in.

The following are example technical assistance intervention activities which Zambian agri-businesses have expressed interest in during the development of this report.

- **Contracting and credit management for out-grower contractors, agri-processors and small farmers (via private extension services):**

Design and training in:

- a) the use of basic book-keeping using the out-grower contractor's own data so that he can relate to the recommendations;
- b) the use of simple data base information - on computer for the larger out-grower contractors and on card index for the smaller ones - to allow contractors to

accumulate farmer/customer profiles and credit worthiness, back to back with farmer record cards; and

- c) the use of farmer record cards giving simple cash cost calculation showing profitability of each crop, ie, budget versus actual. They will be used to show farmers the major cost factors and return on their labor. Successive cards build up a profile of the farmer's capabilities, which can also be used by contractors to assess the ability of farmer to increase his production.

- **Business management and organization:**

- a) Improve client operating efficiency by advising on: the elimination of activities that detract from core business, optimization of staffing levels, identifying staff training needs, personnel management, basic training in business law and ethics for traders, food processors and out-grower contractors; and
- b) Accounting and cash flow management: provide training for accounting departments as well as managerial accounting for non-financial managers in firms involved in outgrowing, trading and food processing. Provide a wide variety of accounting technical assistance from simple book-keeping for small agri-businesses, to computer-based cost accounting systems for larger firms.

- **Warehouse management inventory control:**

- a) Introduce basic stock control - on computer for larger companies and card index for the smaller ones. Explain minimum stocking levels and reconcile to sales invoices so that book stock levels can be compared to a regular physical stock-take, and inventory status reports faxed back to the audit agent/input supplier for company files to be updated.

- **Sales and marketing:**

- a) Provide training in developing and managing dealer networks. Review range of products being sold - balance security of diversity with complication of stock control and cost of inventory. Assist clients in developing their sales forces, market analysis, and marketing plan development and implementation.

- **Commodity Marketing**

- a) Support education and training of agri-business and financial institutions in the use of brokers such as the Agricultural Commodity Exchange (ACE) and assist them to develop beyond the simple brokerage service it now provides, to a national network of representative brokers in key regional locations, thereby providing better linkages between buyers and sellers;
- b) Design and implement standardized contracts, sizes and quality grades, provide training in market arbitration to allow ACE to act as market mediator (when necessary); and
- c) Train regional brokers in exchange operation, business law and ethics, advise on linking exchange information systems to key regional offices, advise on central warehouse facility development and management, advise on broker underwriting and market development.

- **Computer training:**

- a) Training and assistance in system selection, upgrades and start-up for first time users; and
- b) Applications are expected from the feed compounding industry for use in formulation optimization, and from numerous industries for accounting, inventory control and tracking (bar coding), product quality control, grower management - performance tracking, data base development and for common packaged software training.

- **Raw product transportation and packing:**

- a) Develop improved bulk packing systems for cotton out-grower contracts - currently trucks operate at ± 60 per cent load efficiency, due to low density packing. Design and train traders in fresh horticulture products in packing methods to reduce transport losses and improve produce quality.

- **Sourcing credit, restructuring, risk management and credit data base development:**

- a) Work with existing agri-businesses in need of capital as well as start-up firms to secure debt financing. Train and advise financial institutions operating agri-lending and fertilizer credit schemes on strategies in debt recovery and risk management; and
- b) Work with both the credit providers and receivers to identify ways that debt can be remitted to the benefit of both parties - training in problem loan workouts. Advise firms and develop strategies on methods to minimize credit risk exposure.

- **Identification of debit and equity capital sources:**
 - a) Develop a database of all debt and equity capital sources available to agri-business and small farmers operating in Zambia. Provide this along with application procedures and requirements to clients.

- **Identification, Sourcing and Co-ordination of Donor Funding**
 - a) Liaise with the donor community in Lusaka and maintain a data base of sources of funding that may benefit the agri-business community including a list of selection criteria;
 - b) Assist eligible agri-businesses to prepare and submit their applications; and
 - c) Liaise with the donor community in Lusaka and maintain a data base of donor-funded projects impacting the agri-business sector in some way. This information will be available to donor agency officials and their teams of consultants so that duplication of effort is avoided when preparing new projects.

- **Inventory credit, loan guarantees:**
 - a) Work with clients, banks and third party security firms to develop inventory credit programs; and
 - b) Assist clients in accessing loan guarantees by providing in-house technical assistance to strengthen business and operating systems, increase profits and reduce lending risk.

- **Post privatization business planning:**
 - a) Contribute technical assistance to recently privatized agri-business firms (such as ZAMHORT); and
 - b) Design strategy to improve raw product sourcing via out-growers to increase input volumes and improve raw product quality. Assist other privatized firms in business and plant operations and capital investment in new equipment.

- **Business, marketing and strategic planning:**

- a) Provide selected clients with assistance and information necessary to develop business, marketing and strategic plans necessary to source debt and equity capital, and provide guidance to establish long-term, stable growth and management of agri-business clients.

- **Crop diversification, management and protection:**

- a) Produce basic recommendations for growing each crop and areas of production. This would be a combination of taking existing material and statistics from MAFF and other organizations (eg, donors) and updating/verifying by international expert; and
- b) Training technical sales and support staff in issues specific to their fields of work. For example, working with insecticide and herbicide suppliers and out-grower contractor staff to improve chemical handling and safety at the farm and warehouse level, updating input supplies on new technology and methods such as IPM and biotechnology crops (BT cotton). Assisting traders in identifying dry bean varieties which are suitable to the small farmer and market.

- **Post harvest handling for fresh market and processed products:**

- a) Assist with the design and building of sorting, grading and packing system for dry bean and fresh produce, train staff and management on construction, use and maintenance.

- **Improving processing plant productivity and quality:**

- a) Provide technical assistance in determining specifications of processing equipment, tendering evaluations, supervision of construction/installation, commissioning and operator training. Specific industries where this applies include, horticultural processing, oilseed processing and animal feed compounding.

- **Food process quality control and food safety:**

- a) Assist and advise food and feed manufacturing firms on raw product quality testing method, train private extension staff in proper use of pre- and post-harvest agri-chemical use on food and feed crops. This information will then be passed on to the small farmer; and
- b) Train firms in use of standard international product quality tests and record keeping. This is important for both product quality and safety as well as market development.

6.3.2 Level of Effort

The ATAC is designed to be a lean organization, providing a rapid response to requests for technical assistance. It is assumed that many of these will come from the fields of accounting, computer training and other basic business operations. Many of the clients' technical assistance requirements can be met by local consultants. International specialist advisers will be used for short-term specific technical inputs, such as product formulation, manufacturing processes and hardware, as well as food safety.

The ATAC staff should possess the following professional and personal skills:

Agri-business Advisor - Chief of Party

- small- or medium-scale, private sector, agri-business experience in developing countries (regional experience preferred)
- strong management, accounting, finance and computer skills
- experience in working with small farmers in developing countries, strongly preferred
- training skills and experience, strongly preferred
- ability to communicate (oral and written) at all levels in the private sector, the donor community, senior government officials, as well as be comfortable with public speaking

Market Development Advisor

- regional, private sector, agri-business trading or market development background
- strong finance or accounting skills
- strong computer skills (a wide variety)
- good contacts in the business community
- good understanding of agricultural production, value added manufacturing and trading in Zambia and the region
- form close ties with market traders, and assist them to obtain market information and in the execution of their profession
- ability to communicate (oral and written) at all levels in the private sector, donor community, senior government officials, as well as be comfortable with public speaking

Secretary

- computer literate (word processing, spread sheets and data base management)
- experience in office management
- self motivation and ability to work independently
- strong organizational skills
- ability to train others in secretarial skills
- experience in the private sector preferred

Driver

- a proven track record of service
- a valid driving licence
- understanding of sound vehicle maintenance

Specialist Consultants - local and international

The ATAC will draw on a pool of domestic, regional and international consultants. These consultants can be sourced through collaborating international consulting firms, as well as local companies. In some cases, the ATAC and/or the donor(s) may opt for direct hire to reduce costs. In other cases, a strong tie to an international agri-business company will be essential to obtain the types of market and technical information that is difficult for independent consultants to access.

6.3.3 Office and Communications

The choice of location will be crucial to the ability of the ATAC to become operational in the shortest possible time. In particular, immediate access to international telephone lines will be important. The ATAC will provide agri-businesses with access to the latest communications technology and will assist Zambian businesses to benefit from the information super highway.

As part of the Leland Initiative, the Africa Bureau, are currently developing a scope of work for supporting the formation and sustainability of a Southern Africa Agri-business Association (SAAA) through the development of a cornerstone service for the SAAA, an Internet-based network. The initial service will be an on-line registry of agri-business buyers, sellers and service providers in Southern Africa. Zambia already has one of the best Internet programs in Africa and is a model for the rest of the continent. ATAC will provide Zambia with the platform to contribute to, and access this new network.

It is anticipated that ATAC will require two individual offices with work stations: a work station for a secretary (including space for office equipment), and one work station for business persons and visiting consultants to use when carrying out desk research with access to a meeting/conference room.

The ATAC will require office equipment and two vehicles together with an operating budget.

6.3.4 Market Information

Part of the activities at the ATAC office in Lusaka will be to co-ordinate the flow of information via the Internet, trade journals and databases. It is recommended that the Lusaka office be linked via the Internet to market information services, such as those provided by Reuters and other market data-

gathering firms. A direct Reuters link will provide near real-time information on market prices and trading volumes in all of the major world commodity markets. Additionally, services such as Reuters, can provide historical price and volume information.

The ATAC in-house library will subscribe to various relevant journals giving international price, volume and trade opportunity trends worldwide. Examples of these journals include the Foreign Agricultural Service (FAS) publications:

- Cotton World Markets and Trade
- Tropical Products (Coffee, Tea, Cocoa, Spices and Essential Oils)
- Grain: World Markets and Trade
- World Horticultural Trade and US Export Opportunities
- Oilseeds: World Market and Trade
- Tobacco: World Markets and Trade
- World Agricultural Production
- Ag Exporter Magazine
- Food and Agriculture Export Directory

In addition to the above hard copy documents, "day of release data" for key market information will be made available through the ATAC's Internet link using TELNET@ebb.stat-usa.gov. Further online information will be made available through the National Trade Data Bank (NTDB). This data bank contains over 10,000 international and export reports from several US Government agencies.

Linkages to international trading companies will be developed for each product group to provide informal market pointers for regional and international markets.

7 EXPECTED BENEFITS AND COSTS

It is assumed that local consultants will focus on TA tasks such as improving accounting, management and marketing programs for ATAC's co-operating agri-businesses. Examples of improvements in business operations may include developing an accounting system or creating an information management system so that firms can track sales, inventory and related costs by product or geography. Additionally, it is envisaged that local consultants will be used in planning product marketing strategies and implementing marketing programs. These interventions will increase economic activity and stimulate demand for the raw products needed by agri-businesses and will directly benefit the small farmers who supply them. The increasing availability of product to the agri-businesses will in turn stimulate market interest and help reach the critical mass required for sustainable development.

A specific example of a mission for the local consultants is a company with an annual turnover of approximately US\$1,500,000. The owner estimates that a significant percent of his gross revenue (possibly 10%) was lost due to poor accounting and business management practices. Using locally available consultants with backgrounds in accounting, information technology and inventory

control/logistics, the ATAC could assist this client in streamlining management and achieve savings of up to US\$150,000. These savings, if reinvested in crop purchases, could result in creating additional demand for 500MT of raw product from 1,000 small farmers.

The international consultants will be contracted to address specific technical problems which may include but not be limited to: selection of food and fiber processing hardware; design food processing and packing systems; custom software design; development of improved cropping, pest management and agri-chemical safety programs. On average, it is assumed that these activities will focus on the medium and larger businesses and will have a significant impact on a large number small farmers.

In the case of international consultants, one example which can be cited is the interest of one of the larger agri-businesses to explore the development of oilseed milling. With the assistance of the ATAC, acting as a catalyst to the development of the project, an international consultant could examine the equipment specifications, capital cost and potential profitability of an oilseed mill purchasing the bulk of its raw product under contract from small growers. Assuming the mill has a capacity of 50,000MT per year (this is the actual size under consideration) and that 75% of its raw input is sourced from small farmers, this would mean the ATAC would be instrumental in creating additional demand for 37,500MT of oilseed (sunflower for example) at US\$160/MT. This demand would generate US\$6,000,000 of additional gross revenues to the small farming community of Zambia. Assuming that each contracted grower would farm one hectare, which yields 500kg, this intervention has the potential of affecting 75,000 small farmers.

However, not every local or international consulting mission will result in such a positive impact on the client agri-business and produce such a significant knock-on affect for the farming community. The average value to the agri-business of one month's consulting measured in additional annual marginal profit has been estimated to be US\$8,000 per month for a local consultant and US\$30,000 per month for an international consultant. This is the amount of additional profits it is anticipated will be generated as a direct result of one month's ATAC activities with each firm.

Table I examines these benefits and the cost of delivering them to the agri-business community. It does not take into account the multiplier effect that these benefits have on the small farmer or the community at large.

It is assumed that all technical interventions will last one month. This may be taken as a block of time, or split up into several working periods over the course of the project. It is estimated that 32 missions will be undertaken per year by local consultants and 15 by international consultants. The cost of a local consultant is assumed to be US\$6,000 per month, and an international consultant US\$25,000 per month. This includes air fares, per diems and consulting fees. The cost of 32 consulting months annually for local consultants is US\$192,000 and the cost of 15 consulting months (annually) of international consultants is estimated to be US\$375,000.

Given the level of effort, it is estimated that the start-up costs for the ATAC will be US\$150,100. This will include two vehicles, office equipment, phone line installation, printing promotional materials, moving allowance for international staff, etc. The annual cost of staffing and overheads for the project is estimated to be US\$400,000 per year. The expenditure over the first three years are, therefore, as follows: first year US\$1,117,100, second year US\$967,000, third year US\$967,000. Total project costs for the life of the project are expected to be US\$3,051,000.

The model assumes that the ATAC will generate increased profits of US\$256,000 annually from interventions by local consultants and US\$450,000 from the international consultants. Therefore, a total of US\$706,000 in marginal profits will be created as a result of ATAC's intervention annually. Although the project is only scheduled to have a three year life, it is assumed that the profits resulting from the TA interventions will continue on after the project is closed.

In the first three years of the project, the costs are greater than the returns on an annual basis. The projects payback period (total cost divided by the annual increase in marginal profits) is 4.3 years. The internal rate of return over a ten year period is 44% and the net present value (@40%) over the same period is + US\$60,280.

Table II provides an example of benefits delivered at the small farm level. The simplified model assumes that 50% of the profits realized by the agri-businesses (marginal profits) as a result of the ATAC's technical assistance, are reinvested into purchasing additional raw product, in this example, sunflower. The table examines the amount of sunflower purchased, and the effect this additional demand has on tonnes produced, hectares planted and gross returns to small farmers.

Using sunflower as an example, US\$353,000 of additional annual demand in Zambia's small farmer production sector would generate 2,206MT production (at US\$160/MT) and require 4,413 hectares of land (at 500 Kg/ha yield).

Over a 10 year horizon, the cumulative demand for sunflower at this level of profit reinvestment, would generate over US\$3,500,000 of gross revenues for small farmers; 22,000MT of additional sunflower (at US\$160/MT) and require approximately 44,000 hectares in production area.

7.1 TRACKING THE ATAC PERFORMANCE

To track the performance of the project over time, several indicators can be used. These should include, at the agri-business level, gross revenue and net profits for businesses receiving technical assistance from the ATAC. Additionally, indicators for the project's performance can include the number of small farmers contracted by client agri-businesses and the gross receipts paid by the agri-businesses to these farmers. These indicators will provide solid financial and economic measurements by which the project can be evaluated over the course of its life.

Obtaining tracking information (for project evaluation) should be agreed upon in a formal written contract between the ATAC and the client prior to providing any technical assistance. As the

indicators will be measurements of business performance, they will need to be handled in a proprietary manner, complete confidentiality will be required and the ATAC must be willing to sign secrecy agreements with the client to ensure that private business information will not be passed on for non-project/evaluation uses within the donor community or the public at large. Additionally, the client/ATAC contract must clearly spell out the agreed-on responsibilities of each party and the timing in which these responsibilities will be fulfilled. The contract language should include the standard “Act of God” clauses in case political, economic or natural disasters force either party to forego its contractual responsibilities.

8 CONCLUSIONS

The establishment of the ATAC will improve the rural incomes through the provision of assistance to agri-businesses with linkages to small farmers. Fundamental to this process is a “pull-through” effect of helping the agri-business community increase its capacity and productivity so that it will demand more raw product from the small farmers. This in turn will keep raw product prices buoyant and increase the market available to small farmers in both volume and numbers of firms purchasing products. The aggregate “pull-through” effect by the agri-business sector will lead to increased competition for small farmers' production, resulting in raising their incomes.

Essential background material is presented in Annexes A-I of this report. A list of the people met during the field work is presented in Annex J and the scope of work in Annex K. Five individual case studies have also been prepared and submitted under separate cover. The confidential nature of the information presented precludes these case studies from being included in the main report.

Table II ATAC's Multiplier Effect On Small Farmers	
I Assumptions:	
Aggregate Marginal Profit of Agri-business Assisted by ATAC (Annual)	\$706,000
Percent of Marginal Profits Reinvested to Purchase Additional Sunflower	50%
Sunflower Farmgate Cost Per Tonne	\$160
Sunflower Yield MT/ha	0.5
II Annual Effects of ATAC on Small Farmer:	
Additional Tonnes of Sunflower Demanded from Small Farmers	2,206
Additional Gross Revenue to Small Farmers	\$353,000
Additional ha's of Sunflower Planted to Meet Demand	4,413
III Long Term (10 Year) Effects of ATAC on Small Farmer:	
Additional Tonnes of Sunflower Demanded from Small Farmers	22,063
Additional Gross Revenue to Small Farmers	\$3,530,000
Additional ha's of Sunflower Planted to Meet Demand	44,125

Annexes

Business Development Assistance to Agri-Businesses With Linkages to Small Farmers Zambia

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ANNEX A

Investment And Capital In The

Agri-business And Small

Farming Sector

A INVESTMENT AND CAPITAL IN THE AGRI-BUSINESS AND SMALL FARMING SECTOR

The development of Zambia's agri-business and small farm sector has historically suffered from the lack of capital and investment. Although this is a major constraint weighing on the sector's future development it is by no means the only one nor necessarily the largest. The development of the sector will require both an increase in capital investment, as well as an increase in its effective use. That is, how to best employ the capital in a trained work force utilizing efficient and appropriate technology.

A.1 THE INVESTMENT CLIMATE IN ZAMBIA'S AGRI-SECTOR

It would be unrealistic to say that Zambia's investment climate is good when compared to that of many other developing economies around the world, in particular those in Asia and Latin America. However, given the general positive direction that economic and public policy changes have taken since 1991, it can be said that the investment climate is improving, and is better than many other Southern African countries.

*Zambia's 1996 Forecasted
Economic Outlook*

<i>Years</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>
<i>GDP % Growth</i>	-3.1	-3.9	+6.0
<i>Inflation % (annual)</i>	61	34	27
<i>Prime Rate % (yr end)</i>	32	48	35
<i>Exchange Rate K/US\$</i>	670	865	1100

Source: Barclay's Bank

The investment incentive package offered by the 1991 and 1993 Investment Acts provide a limited number of inducements for firms that are willing to bring their capital and skills to Zambia and start-up, expand or rehabilitate a business. The original 1991 Act provided reasonable savings on corporate income tax, employment taxes and dividends.

When the 1993 Investment Act was passed, a number of firms that had qualified for the 1991 Act would not qualify under the new Act and could lose some of their tax incentives. In fact, most firms already licensed under the 1991 Act were allowed to continue operating under the terms set forth in 1991.

At no time has the investment incentive package been a windfall for Zambian agri-business. In general, it does not contain many of the incentives offered by other developing countries to encourage foreign investment. However, the opening up of South African business to the outside

world is playing an equal or more important role in attracting foreign investment to the Zambian agri-business sector than the current tax investment incentives.

**Changes in the 1996
Zambian Tax Code**

Trading

- *Duty on productive machinery for agriculture and mining reduced from 20 per cent to zero*
- *Duty on all intermediate goods cut from 30 per cent to 15 per cent*
- *Duty on all final products lowered from 40 per cent to 25 per cent*
- *Imports from Zambia's Comesa partners to be set at 40 per cent of general tariff rates*
- *Imports by government and other currently exempt organizations now subject to import duty*
- *Excise duty on imported items will be levied on price, inclusive of import tariffs*
- *Fuel levy raised from K30 to K40 per liter*

Value Added Tax

- *Basic agricultural products will be zero-rated for VAT from 1-7-96, thereby saving farmers VAT on inputs*
- *From 1-4-96, small business will be able to register for VAT and reclaim on inputs*

Income Tax

- *Basic tax rate cut from 15 per cent, 25 per cent and 35 per cent to 10 per cent, 20 per cent and 30 per cent*
 - *Withholding tax on interest, dividends, rent, management and consulting fees, cut from 25 per cent to 15 per cent annually.*
 - *Corporate tax rate reduced from 35 per cent (45 per cent for banks) to 30 per cent, for firms listed on the Lusaka Stock Exchange*
-

It is estimated that 60 per cent of all investment capital flowing into Zambia is derived from South African sources.

Since the passage of the 1993 Investment Act, the government has continued to fine tune its tax regulations to encourage both domestic and foreign investment in Zambia. The government has tended to structure the new regulations to benefit the business community as a whole, and not just those groups which can qualify specifically for benefits under the under the 1991 and 1993 Acts.

**A.2 F I N A N C I A L
CHARACTERISTICS OF THE
AGRI-BUSINESS - SMALL
FARMER RELATIONSHIP**

There are two general types of agri-business related to small farmers in Zambia - those supplying inputs and those purchasing outputs. The distinction between the two is not always clear, as often the out-grower contractors who supply inputs on credit, take payment for the advances in the form of farm outputs plus buying the balance of the available crop. In looking at these different relationships on a case by case basis, advantages and disadvantages can be noted.

Input suppliers; who supply/sell to small farmers in the traditional sense have had difficulty in developing their markets in Zambia. The low consumer

purchasing power and GRZ subsidized farm inputs have effectively kept many input suppliers out of the small farmer market.

A case in point is Omnia Fertilizer (Z). Since opening their first office in Zambia, after the 1991 economic liberalization, Omnia has sold compound fertilizers and urea mainly to commercial farmers. The company estimates that the large commercial farm sector represents only 30 per cent of national fertilizer demand, however it finds difficulty in competing against the government subsidized fertilizer program. Omnia must pay a five per cent import duty on its material, plus positive interest rates for its debt capital, as well as suffer the real world effects of dealers defaulting on debt. The government, on the other hand, has not paid import duty on fertilizer in the past, has subsidized interest rates to small farmers and not concerned itself with low loan recovery rates. Much of the loss has been offset by donor contributions.

The effect of government intervention in the fertilizer market has been to lock out much of the private input supply sector, such as Omnia. In order to attain growth and remain viable in Zambia, Omnia and others must have access to this market segment (70 per cent of the total market is small farmers), but this is unlikely to happen until the government withdraws from the fertilizer market, or at least makes major changes in its participation.

In the long run, the country will benefit because fertilizer provided under the government program does not often arrive in time for planting. This is unlikely to happen in the competitive private market, where if one provider is inefficient, a second will take the first company's market share.

Agricultural buyers; in Zambia can be defined in several ways. Prior to liberalizing the agricultural marketing sector in the 1993-1994 crop year, it was illegal for private individuals or companies (not appointed by the government) to trade in most agricultural commodities. After deregulation, market traders began to take over marketing activities, which were once the domain of the state.

It is assumed that many of these early traders evolved out of the black-market commodity trade which existed before liberalization, and in the early days of the "free market", farmers often complained that they were being taken advantage of by the unscrupulous minority. As time passed, farmers began to understand the free market and occurrences of "bad deals" reported by farmers are said to have dropped.

Traders play a critical role in the agricultural market. It is estimated 800,000 to 850,000MT of maize will be traded in the 1996 market year. The role of traders in Zambia will expand as time passes, particularly as government has virtually withdrawn from active marketing. At times, traders can be disruptive to the industry by undertaking activities such as side-buying (that is pirate buying of products for cash from farmers already committed to the supplier of inputs on credit). Nevertheless, traders often act to maintain fair market prices by immediately reflecting the dynamic relationship between price, supply and demand.

Zambia's Largest Traders

<u>Firm</u>	<u>Comments</u>
Amanita:	Swiss parent, offices in S.A. & Zambia, milling and grain trading
Bimzi:	Lusaka based multi-sectoral agri--business trading firm
B&P Group:	Owned by Finance Bank (Z); Copperbelt based family firm, linked to Copperharvest Foods, Zambian Express Air, 1995 grain trading 160,000 MT
GDC:	Transport & trading grains and other commodities in Zimbabwe and Zambia
Glencor:	Rotterdam NL based, offices in Jo'berg S.A., trades grain and other commodities in Southern Africa
Kabwe Transport:	Transport operation, grain trading & out-grower contractor for cotton
Kingsmen & Scott:	Grain and metals trading, with trade links to Glencor
Nyimba Wholesalers:	Major player in Eastern Province, transport and grain trading
Sable Transport:	Major player in Eastern Province, 20 per cent grain trading market share, transport, small farmer out-grower contractor
Southern Commodities:	South Africa based grain & commodity trading firm

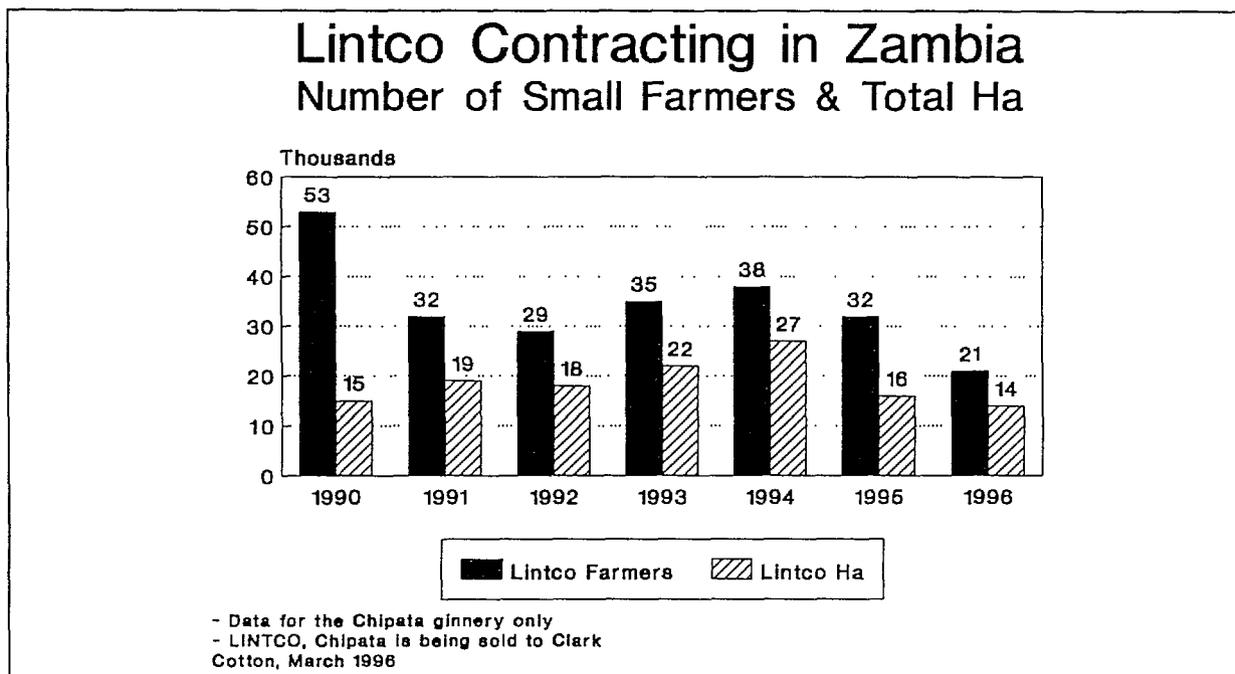
Direct industrial contract buyers; represent an important segment of the market. Examples of firms with direct contract buying from small growers include: High Protein Foods Limited, Lonrho Cotton, Clark Cotton and ZAMHORT (recently privatized as Food Corp.). Under the privatization program, Lonrho now owns three LINTCO gins in Lusaka and Gwembe, and Clark Cotton, the second largest grower in South Africa, the Chipata gin in Eastern Province. Both Lonrho and Clark have taken over the LINTCO operations in supplying cotton inputs and buying seed cotton.

It has been difficult for many firms involved in direct contracting to manage the large numbers of small growers involved. Clark Cotton in Chipata estimates that it will contract over 21,000 small farmers in the 1995-96 crop year. The estimate may be 20 per cent above actual, however, with inputs valued at \$50 per farmer, the management burden is high for the nucleus company.

Even if industrial buyers and large traders succeed in reducing their direct contact with small growers in the future, the crop buyers will still have to maintain links with the small farmer, in order to insure product quality. They will also need to play a continuing role in introducing new technologies to both the out-grower contractors and the small farmers.

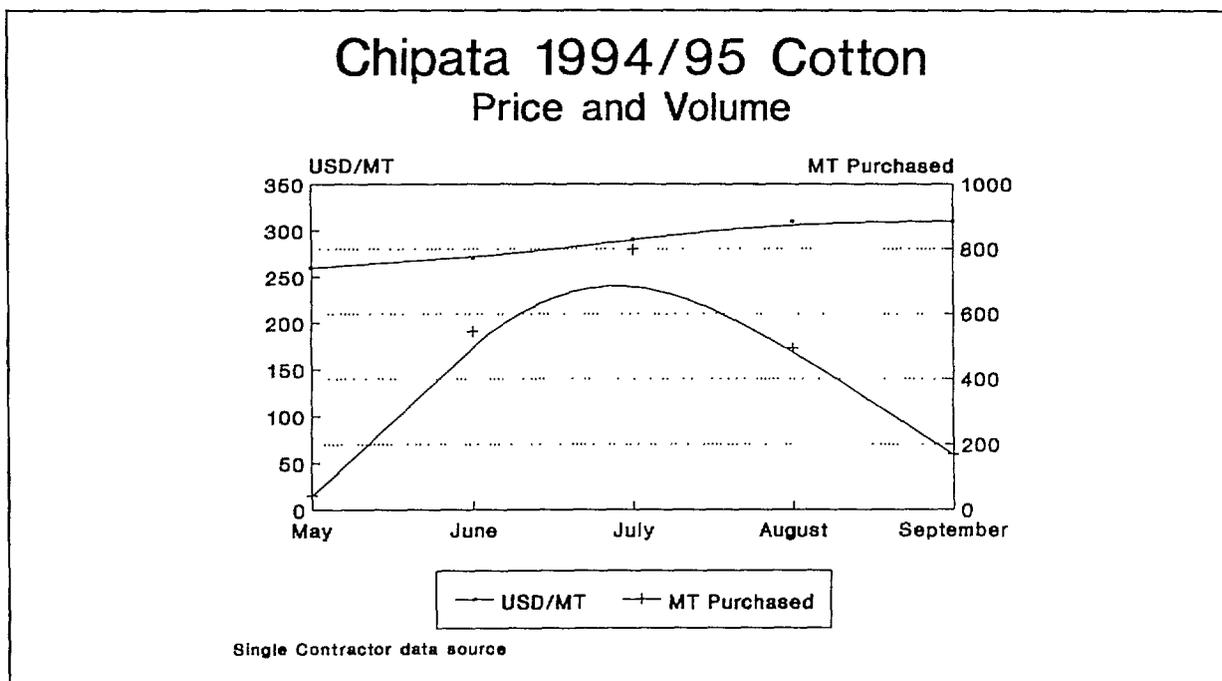
In the mature industrial food and fiber markets of the developed world, processors and manufacturers usually

seek to increase their own manufacturing cost efficiency by at least one per cent per year. The larger players support external and internal research and development work, in order to maintain their manufacturing cost advantage, as well as look for new technologies and processes which will significantly lower their costs, relative to their competitors.



Currently Zambia's only competitive advantage lies in the low cost of raw materials (for cotton, tobacco and possibly oilseeds). The agricultural industrial commodity users in Zambia should focus their efforts on maximizing the amount and quality of low cost raw product which is available to them, and also on their operating efficiency. Agri-business and small farmers need to identify the common elements which link their success and work together, under a collaborative strategy.

Out-grower Contractors (on-lending); in Zambia will continue to play a key role in the ability of the small farmer to reach the market and expedite the efforts of agri-business to source raw material. Examples of out-grower contractors can be found at all levels of Zambian agri-business, and some of the largest firms are associated with the cotton industry. Firms such as Dickens Company, Sable Trucking, and Gary Towers (FODYA) all operate in the Eastern Province cotton industry, each of which have several thousand small farmer out-growers producing cotton. The firms operate by providing crop inputs on credit to the small farmers in the form of seed, chemicals, sprayers and harvest bags. A contract is signed by both parties, with the crop to be sold FOB farm gate. The contractor collects the bagged cotton from remote rural locations by small truck, then transfers the material to larger trucks at central receiving depots. Payment is calculated and made on a delivered to ginnery price.



With the break up of LINTCO, new competitive forces have entered the Zambian cotton market. The graph above examines the effect of competitive pressure on the price of cotton over the course of the 1995 harvest season in the Eastern Province, as experienced by the one of the local out-grower contractors. Normally, as a crop is harvested and significant volumes reach the market, prices fall. However, during the 1995 Eastern Province cotton harvest, prices continued to rise over the season as buyers competed for the crop. As out-growers ran short of cash to pay for the crop at farm gate, they offered the small farmer payment in 21 days but on average paid US\$.03 per kg more under this short-term credit program.

The cotton industry is expected to double its production in Zambia over the next three years. Historically, the country's small farmers have played an important role in producing this crop, and their future role will continue to grow as the industry expands. Currently it is estimated that 10 per cent of all small farmers grow cotton. If the industry expands at its expected rate, it is likely that 18 per cent to 20 per cent of all small farmers will be involved in cotton production. The strategy of the ginners is to continue to expand supply, based on an extensive rather than intensive path, and Lonrho have a stated policy to improve yields from 500 to 1,000kg per ha by the year 2000. The positive side of this strategy is that it allows many more small farmers access to cash crop production. The negative side is that it does little or nothing to increase the skill levels, productive capacity or profits per hectare for the small farmer. This is an area which can be addressed by the industry working in concert with donors to increase small farmer skills, productive capacity, profits per hectare, as well as chemical safety.

The food processing industry in Zambia also uses contract out-growers and forward contract pricing to source some of its raw material. Lyon's Foods Ltd. of Ndola, as an example, purchases pineapples for the manufacture of jams, fruit drinks, and canned pineapple products from an out-grower contractor in the North Western Province. Although the total number of small farmers is small (less than 200 in 1995-96 crop year), it is a sub-sector that is expected to realize significant growth in the near future, with the privatization of the state owned plants plus planned investment into the canning industry from offshore sources.

Out-growers contractors have also made inroads into other areas of the agricultural economy including maize, oilseed, tobacco and vegetable production, near to major urban markets such as Lusaka.

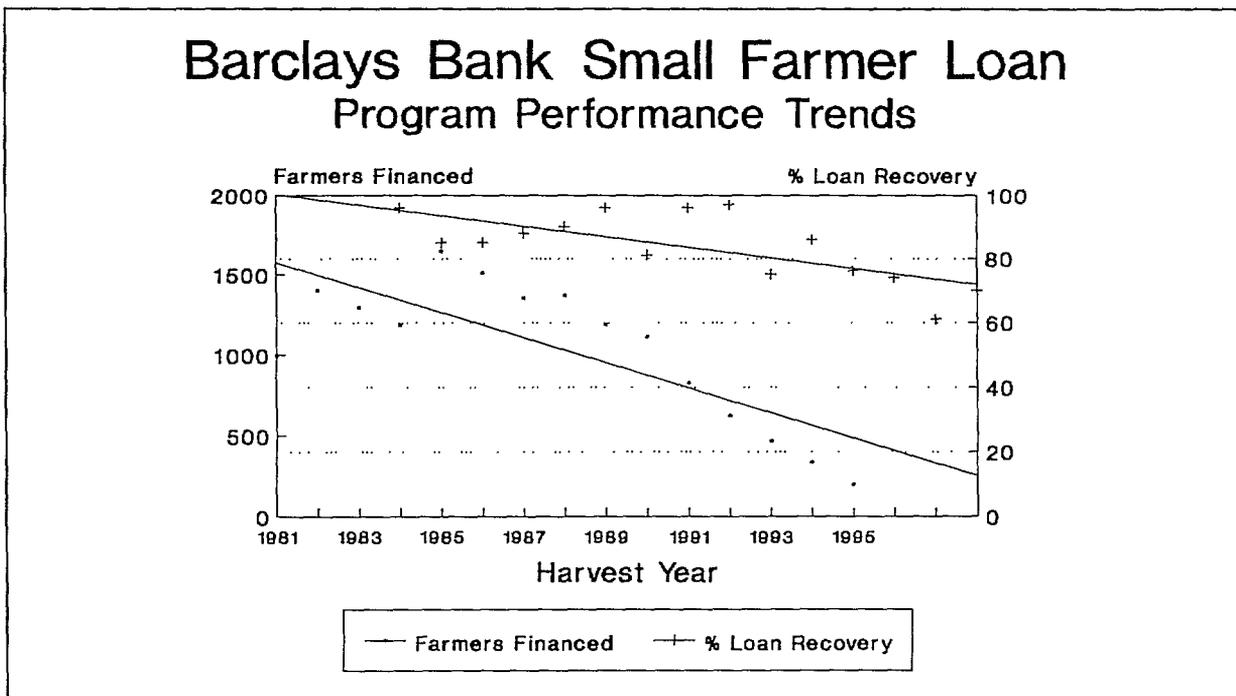
A.3 IDENTIFICATION AND AVAILABILITY OF FINANCIAL CAPITAL

The established commercial banking sector in Zambia is conservative in its lending to agri-business and farming (large or small). This is typical of the industry world wide, and is due in part to the high risk and low margin levels associated with the industry. It is further compounded in Zambia by the past history of government intervention into small and medium-scale agri-credit markets, plus the lack of clear land title for most small and medium scale farmers.

The actual size of commercial bank's agri-loan portfolios varies depending on who one talks to. According to the Zambia National Farmers Union, commercial banks set aside approximately one per cent of their available loan portfolios for agriculture, although numbers differ from firm to firm. Standard Chartered Bank in Lusaka reports that 25 per cent of its loan portfolio is in agriculture, mostly commercial farming. It also states that the bank would be willing to risk more money in the sector, but it is difficult to identify investors who can present the necessary project planning documents required by the bank. Often, it was stated that potential agri-business investors would approach the bank with a reasonable idea but could not organize business operations, marketing or cash flow management plans.

In March 1996, Barclays Bank of Zambia Ltd. claimed to have 40 per cent of its total loan portfolio in agriculture. The majority of its agri-credit is out to commercial farmers, but the bank also maintains operating lines of credit to National Milling (currently being privatized), secured by inventory and fixed assets.

With strong encouragement from the Zambian Government, Barclays started a small farmer credit program in the 1980-81 crop year. The scheme known as the Lima Credit Program (not associated with the Lima Bank) began with approximately 1,000 small farmers, rising to over 1,600 in 1985, equivalent in terms of production to one commercial farm.

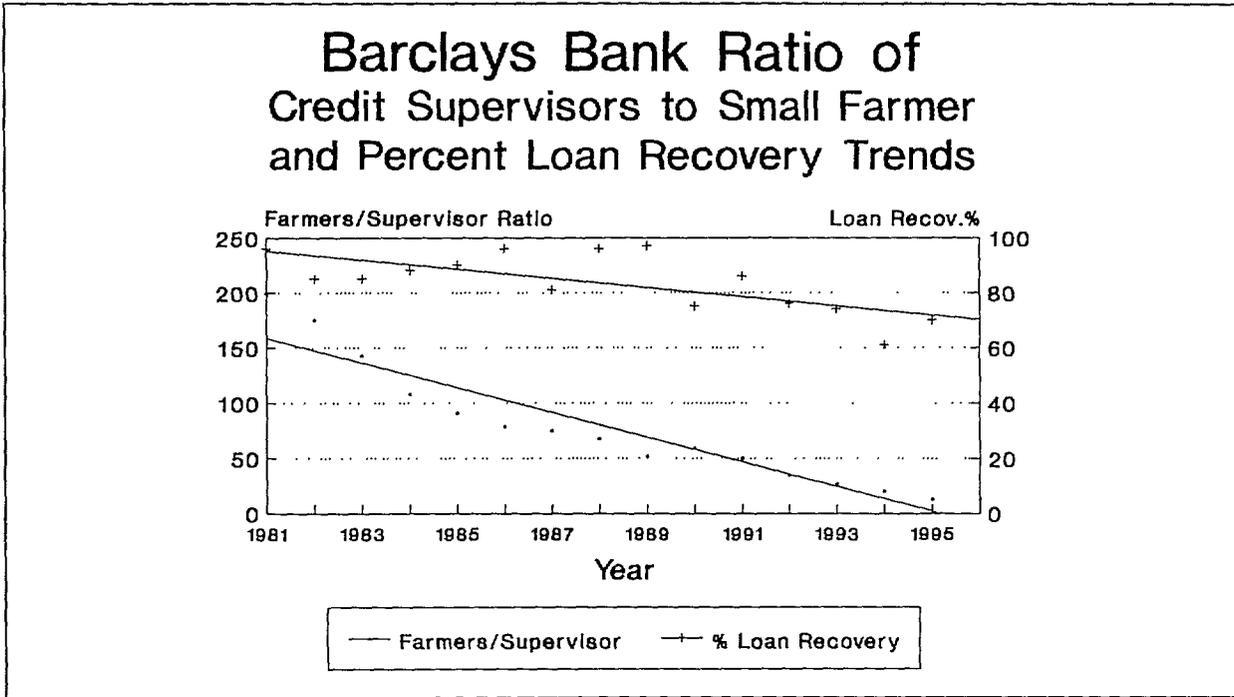


In the early years, loan recovery rates were often over 90 per cent. As time passed, recovery became more difficult and Barclays reacted by reducing the number of loans in the annual portfolio and the number of farmers that each of the banks credit supervisors would manage. (See paragraph above).

The graph on the following page shows that the ratio of farmers per supervisor dropped from 199:1 in the first year of the program to 13:1 in the last two seasons. Even with one bank employee looking after just 13 small farmers, Barclays was only able to recover 61 per cent of their loans after the 1994 harvest, improving to 70 per cent in the 1995 harvest.

In the 1995-1996 season, it is estimated that the bank is giving credit to 170 small farmer. Barclays wishes to terminate the Lima Credit Program as soon as possible as it has lost money and has been difficult to manage.

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The near collapse of the domestic banking industry has affected agri-business at several levels. Cotmark Ltd is a Kabwe based credit coordinator and out-grower contractor, with over 3,700 small farmers in Eastern and Central Provinces. The main crops it contracts for are seed cotton, maize, soybean and mixed dry beans. In order to finance the 1994-95 crop the firm took a ZK 26 million loan from the Kabwe Smallholder Development Project (KSDP). These funds were loaned-on to small farmers in the form of crop inputs. During the 1995 harvest, Cotmark recovered its credits and deposited the crop sale revenue (ZK 48 million) in the Cooperative Bank. Shortly after harvest the bank collapsed and all accounts were frozen. To date, Cotmark is still waiting for the Bank to remit the deposit to pay off the ZK 26 million KSDP loan.

There are numerous problems in the agricultural credit sector. The history of non-repayment of loans plus a generally weak banking sector has created a very tight commercial credit supply. SGS has reported that the local Barclays and Standard Chartered Banks are so wary that they will not provide inventory credit even when SGS acts as a third party inventory supervisor. SGS reports that third party supervised inventory credit is common in other countries in the region.

***Out-grower Contractors:
Credit Providers With Ties
To The Cotton Industry***

<u><i>Firm</i></u>	<u><i>Region of Operation</i></u>
<i>Amaka Trading</i>	<i>Kabwe</i>
<i>Bangana Ltd</i>	<i>Kabwe & Mumbwa</i>
<i>Dickens Co.</i>	<i>Eastern Province</i>
<i>Cotmark Limited</i>	<i>Kabwe & Katete</i>
<i>Fodya</i>	<i>Eastern Province</i>
<i>McFussons Farm</i>	<i>Kabwe</i>
<i>Pinkney Farm</i>	<i>Southern Province</i>
<i>Sable Transpo.</i>	<i>Eastern Province</i>
<i>Swarp Agri.</i>	<i>Central Province</i>
<i>Z.N.S.</i>	<i>Mumbwa</i>

To fill the gap in short-term credit availability, on-lending has evolved via out-grower contractors. Contractors source credit from government, ginners, processors, lending institution or traders, then on-lend to small farmers. The two largest sources of short-term credit are the government fertilizer program (with SGS Ltd. and Cavmont Bank) and credit on-lending via the cotton ginning industry.

Recovery rates differ significantly among industries. In the case of the government fertilizer program, end of season recovery of loans given by managing firms was estimated to be 50 per cent at best. Direct industrial contractor and cotton industry out-grower contractor industry recovery rates are estimated at over 80 per cent.

Given the high remittance by small cotton farmers, credit to this sector will continue to be available. Cotton out-growers are likely to expand their contracting activities as they gain more experience and develop trust within the lending community. Already, several out-growers are contracting maize, soybean, groundnuts and mixed dry beans.

The number of risks small farmers take, when involved in on-lending schemes, are as varied as the number of schemes developing in the country. Although the recently passed Agricultural Credit Act addresses issues such as side-selling, it does not (and should not) lay down specific regulations governing the small farmer-contract credit relationships.

The ATAC will stand ready to work with small farmers and contractors to fine tune the credit relationship, particularly debt recovery and restructuring. Over time, the use of out-grower contracting will increase in Zambia's liberalized economy, and it is anticipated that the ATAC will play a positive role in developing the grower-contract relationship through the various interventions available to the agri-business community.

Other forms of capital available to agri-business in Zambia include the joint EIB, DEG and CDC Venture Capital Fund. This seven million dollar fund, available to all sectors of the economy, will not take a majority position in any business, but will allow partners to include a variety of assets into meeting the required contribution levels. The assets which the local partner contributes may include specific business know-how in operations and marketing, fixed capital, inventory stock, cash or other hard assets. The permissible pre-Project investment level in the Fund for a project is a minimum of US\$50,000 and a maximum of US\$750,000.

The credit situation in Zambia is tight, commercial banks only lend to customers who can provide high levels of security (collateral) on any farm or commercial business loan. The development banks compete with the commercial banks for financing the best projects in the country. An example of this is the \$15 million expansion of the Swarp Spinning Mill in Ndola. Rather than finance the expansion through commercial sources Swarp Spinning opted for a lower interest rate, softer terms, joint African Development Bank and EIB loan. In defense of the Development Bank's activities in this project, Swarp stated that the expansion would most likely not have progressed at this time, if they had to rely on local commercial lending institutions.

In summary, it can be said that the lack of available credit is a constraint to the development of the agricultural sector in Zambia. However, the answer to increasing the agricultural sectoral performance is not simply to provide credit. The economy is currently in a transition period following over 25 years of central planning and control. The individual firms, which make up the sector, lack many of the basic skills necessary to employ debt capital effectively. Before credit is made available, there must be a mechanism in place which will allow the efficient use of credit. Zambia has experienced many years of providing low cost (and often no cost) credit to the small farm and agri-business sector. This has distorted the perception consumers have of the lending industry, and as a result of low loan recovery rates, has forced the commercial lending sector to tighten credit availability. The low recovery rates have also bankrupted the government's efforts to provide credit to the small farmers.

A.4 THE ROLE OF DONORS IN CAPITAL AVAILABILITY

Donors, with their own poor experiences in providing credit to the agricultural sector, have turned away from funding credit based projects and it is not recommended that donors re-enter this avenue. The agri-credit sector has gone through a period of turmoil and the industry needs time to reorganize and re-establish a sense of discipline. Most of the financial institutions which supplied credit to small farmers have collapsed, and the few remaining in the business want to get out. The industry is in a settling out period.

Effort needs to be put into training small and medium size firms in the sector, as well as small farmers on the responsible and effective use of credit. The medium-term role of donors should be to assist the commercial lending groups and their customers establish trusted working relationships. Programs using loan guarantee funds are useful, as they allow agri-business and small farmer associations the opportunity to develop trusting business relationships over time, but maintains their interaction strictly on a commercial basis.

There is also a place for donor assistance in strengthening the commercial credit community, which is particularly true for domestic owned and operated institutions. Training in debt restructuring, and cash flow planning and management would be beneficial to both agri-businesses and banks. With the low loan recovery rate, it is critical that banks work closely with their customers over long periods, to restore strength to both sectors. Additionally, some members of the credit industry have expressed the need for better credit history tracking of the potential customers via a National Credit

database. This is an area where, if encouraged by the private sector, donors should assist with highly targeted programs.

Banks in Zambia state that they often receive loan requests from the agri-business sector that is unable to provide the necessary business, marketing and strategic long-term plans. Donor funding can be well used to assist and train individuals and firms in the preparation of these documents. This would not only be of benefit to servicing the needs of the commercial banking sector, but would also assist in sourcing capital and credit from institutions like the Zambia Venture Capital Fund, the Loan Guarantee Fund (USAID), inventory credit schemes (commercial banks) and private sector joint venture development.

Government subsidized fertilizer credit programs should be phased out within a short time to allow the private sector to take over the market. It is politically difficult for the government to privatize the market when it is receiving donations of fertilizer. It also makes it impossible for the private sector to compete in these markets when subsidized material is being dumped in them. Donors should refrain from contributing to these programs, with the exception of highly targeted technical assistance aimed at facilitating the smooth transition from government controlled markets to competitive private markets.

Evolution of The Zambian Investment Act

The 1991 Investment Act, qualified investors to the following:

(a) Exemption from customs duties and sales tax on all machinery, equipments, parts, etc. used for establishment, expansion, or rehabilitation of an enterprise

(b) Exemption from tax on dividends for seven years

(c) Three year income tax holiday, followed by two years at a rate seventy five per cent of the norm

(d) Seven year exemption of employment tax

(e) Retention of 70 per cent of gross foreign currency earnings for the first three years, 60 per cent for the following two years, and 50 per cent for the remaining period of validity of the firm's investment license

The 1993 Investment Act qualified investors to the following:

(a) Replaces the 1991 Act: Investment license holders under the 1991 Act must apply to the Director-General of the Investment Center (by 6-3-94) to continue receiving incentives covered in the 1991 Act.

(b) Exemption from customs duties and sales tax (mostly unchanged from 1991 act) on all machinery, equipment, parts etc. used for establishment, expansion, or rehabilitation of an enterprise

(c) In rural areas, investors pay one-seventh of the 35% corporate income tax rate in its first five years of operation

(d) Dividends payable to farmers are tax exempt for the first five years

(e) Other incentives include special tax consideration for: export of non-traditional goods and agricultural products, import substitution activities, etc.

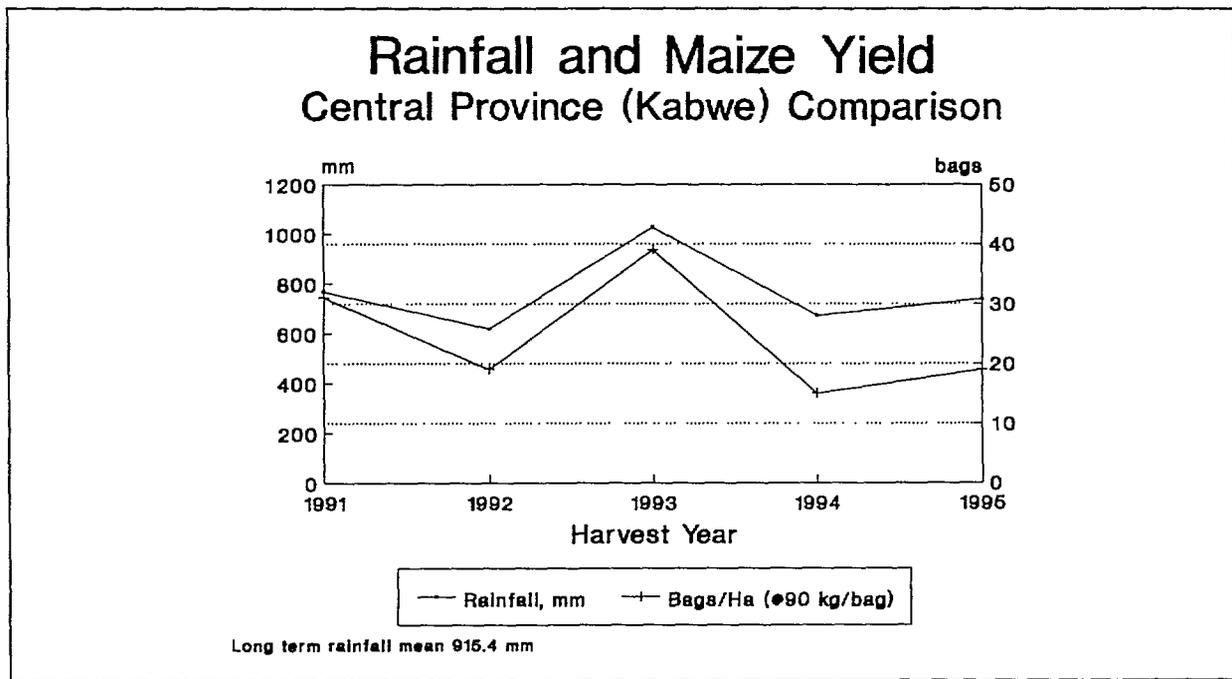
ANNEX B

Determinants In Commodity

Market Volume

B DETERMINANTS IN COMMODITY MARKET VOLUME

Good climate, soil and water resources are fundamental to the efficient production of agricultural commodities and the development of a robust agricultural economy. The cost effective production of agri-commodities is the fuel that powers the agri-business sector. Zambia possesses the fundamental resources to produce crops efficiently but lacks much of the technical skills as well as public and private infrastructure needed to transport, process and market them.



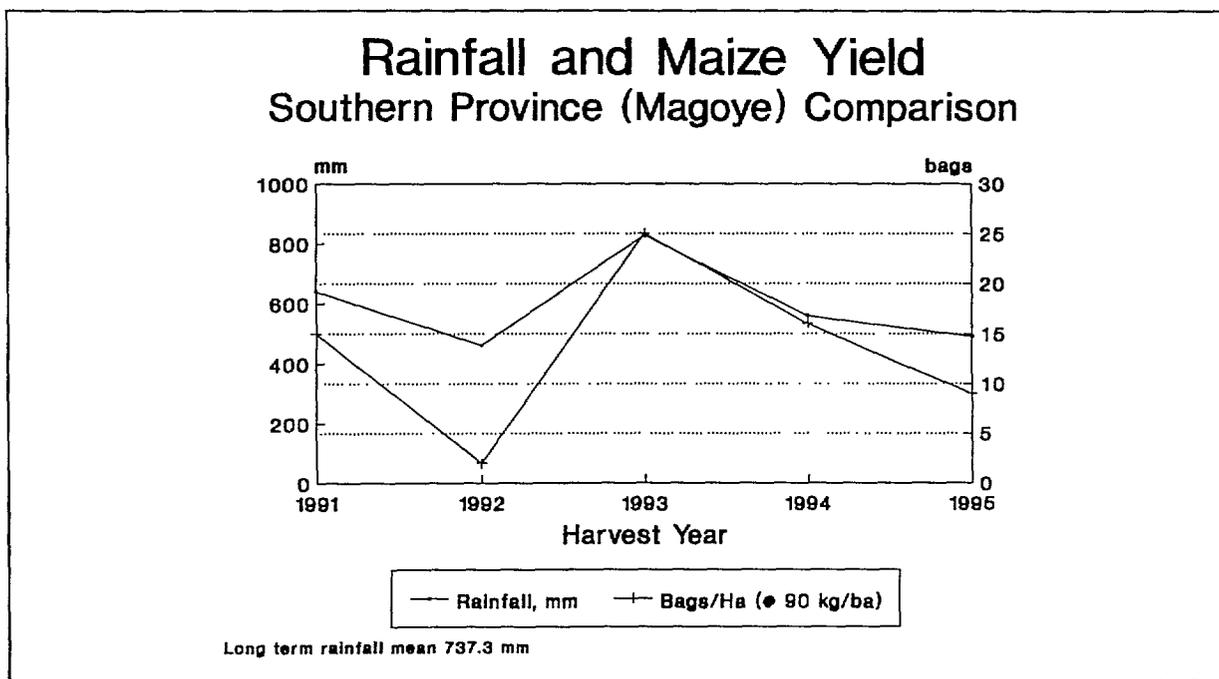
The above graph examines the relationship between rainfall and maize yields for the 1991 to 1995 Zambian harvest. As can be noted on this graph, as well as the following one, there is a strong correlation between annual rainfall and maize yield.

B.1 EFFECTS OF GROWING CONDITIONS ON AGRI-BUSINESS

Zambia has suffered the effects of low rainfall years. In both 1992 and 1995, low rainfall significantly reduced crop yields and consequently reduced the amount of maize available on the domestic market. This reduction in production output levels coupled with high inflation and high debt level created a very difficult environment for farms and agri-business to operate in.

Even though Zambia has a recent history of weather related production problems, it still has a lower climate risk that many parts of the Southern African maize belt. The feeling among much of the industry is that the Southern African region's grain production sector in general will move north, out of South Africa and into Zambia and nearby production zones.

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It is difficult to confirm at this time but one indicator is clear; South African agri-businesses are moving north, although this is most likely in response to both climate as well as market opportunity.

B.2 THE EFFECTS OF LOW MARKET VOLUMES ON RURAL AGRI-BUSINESS

It is estimated that in the average year, five million bags of maize out of 12 million produced, are retained in the villages and never enter the commercial market. This is mainly due to the fact that the rural population's staple food is maize and the crop is retained for family use. Since the majority of the crop (in a typical year) is not available to traders, market channels have been slow to develop.

A second, and probably just as important factor, is the historical role the government has played in the rural maize market. Prior to 1989, all maize was sold to the state owned NAMBOARD. The crop was brought to central depots in the provinces and then shipped to state owned mills. This effectively dried up the availability of the commodities in the rural community and stopped the development of rural traders and millers. A second effect that exporting the maize out of the rural communities had, was to deprive them of the downstream economic multiplier effect that the commodity would give the rural community as it was passed from farmer to trader to miller to consumer. As the economy was liberalized in the early 1990s, the private sector began to re-establish in the villages and volumes of commodities passing through the rural market channels has increased. With continued free market policies, this trend can be expected to move in a positive direction.

B.3 ADDRESSING NATURAL RESOURCE CONSTRAINTS

Within Zambia, there are a number of agri-climate zones. The general trend is that rainfall precipitation increases from south to north. This climate pattern has created a preferred cropping model whereby sorghum is planted in the south, mixed with short season maize. In the Central and Eastern Provinces, maize and cotton are the preferred crops, merging into maize and soybean as rainfall rises above 1,000mm. Groundnuts are grown in Eastern Province, and also in the wetter Northern Province.

In the Northern and North Western Provinces, where rainfall averages can equal or exceed 1,400mm, crops such as cassava, millet and rice grow best.

There is ample evidence that early planting of maize, cotton and sunflower will raise yields significantly. It is the small farmer who suffers most, partly because of the custom of waiting until the first good rains before preparing land, partly because he does not have the resources to tackle hard soil and partly because in the past he has waited for government to determine inputs. Maize is always given preference of inputs, and earlier weeding, so that other crop yields do not reflect the good natural conditions. Minimum tillage methods offer the small farmer the prospect of improving timing and yield.

The soils in the higher rainfall areas of Zambia tend to be acidic and leached of primary plant nutrients. This low pH can be overcome by liming and commercial farmers routinely do so. The cost of a 500kg per hectare application is about the same as 50kg of fertilizer, but the small farmer does not appreciate the value of lime since he has not had the physical resources to transport and apply such large quantities. The economics of liming will require close scrutiny, as often large quantities of lime are needed per hectare to realize a beneficial improvement in pH and corresponding nutrient availability. Without lime, the response to chemical fertilizers may be poor, and technical and physical assistance to small farmers could significantly aid farmers in increasing incomes.

ANNEX C

Capacity And Utilization In Agri-processing

C CAPACITY AND UTILIZATION IN AGRICULTURE

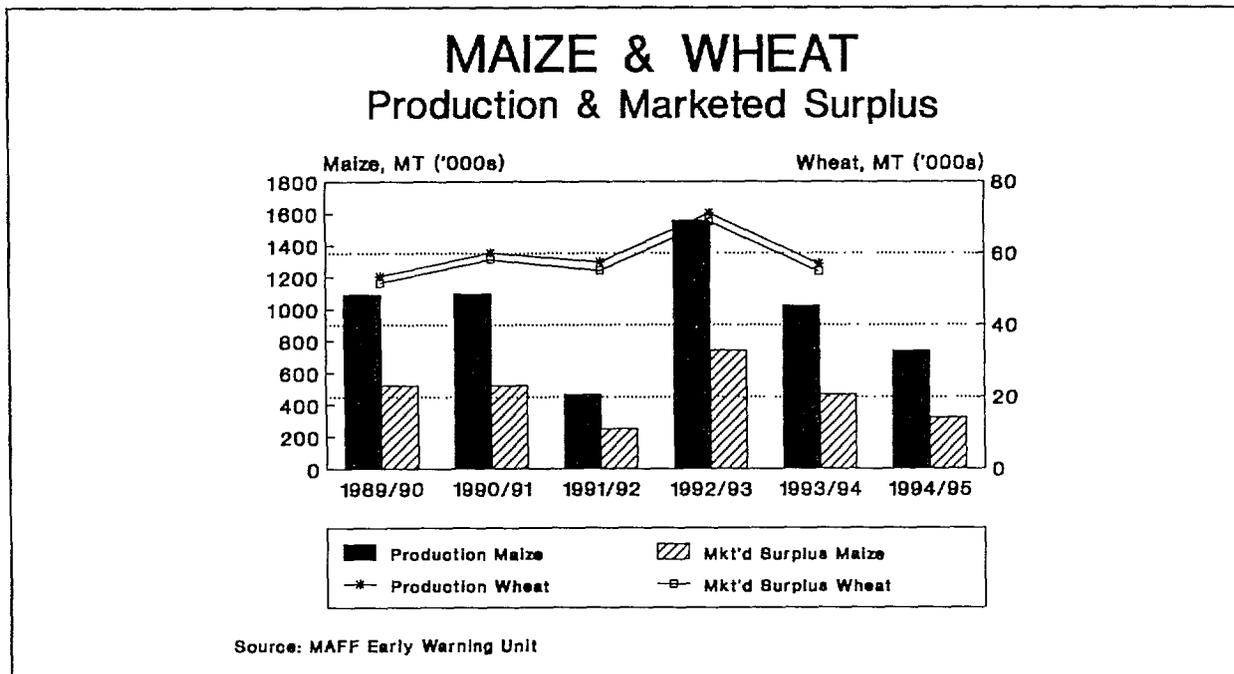
C.1 THE GEOGRAPHY OF THE AGRICULTURE INDUSTRY

The primary agricultural production areas, and consequently, agri-processing businesses, are distributed along the few major road and rail lines in Zambia. Radiating from Lusaka, the capital, the major roads, servicing the large centers of population, link to Livingstone in the South West, the densely populated Copperbelt, Mpika, Kasama and Mbala in the North, and Chipata in the East. Lesser and poorer quality roads connect to Mumbwa, Kaoma and Mongu to the West, Solwezi and Mwinilunga in the North West, and Mansa in Luapula Province, with a network of poor condition or impassable bush roads crossing rural areas.

The Zambia Railways track links Livingstone to the Copperbelt, via Lusaka, while the northern region of the country is served by the TAZARA rail line, which runs from Kapiri M'poshi through Tanzania to Dar-es-Salaam.

As a consequence, most of the large-scale commercial farms, and a major portion of small-scale farms, have been established in the Southern and Central Provinces, in order to gain easier access to road and rail transport. Eastern Province is also a major maize, cotton, soybean, groundnut and animal producer, but is hampered by long distances from primary markets, and only one major road link to the rest of the country via Lusaka.

The following graph shows the national maize and wheat production and marketed tonnages between 1990 and 1995.



The primary, and staple, food crop in Zambia is maize, of which approximately 35 per cent is produced by emergent and commercial farmers, and 65 per cent by small-scale sector. The former number approximately 50,750 and the latter 550,000. Milled maize flour (mealie meal) is cooked and consumed as a porridge (nshima), and eaten with a meat and/or vegetable relish fried in cooking oil.

In terms of staple requirements, cooking oil ranks second. Most commercially available edible oil on the Zambian market is derived from crude or refined imports. Sunflower seed is the main local source of edible oil, although it is only in recent times that production and extraction has been promoted at village and smallholder level. Groundnuts are grown mainly in the Eastern Province as a confectionery product, which provides an alternative source of protein and fat.

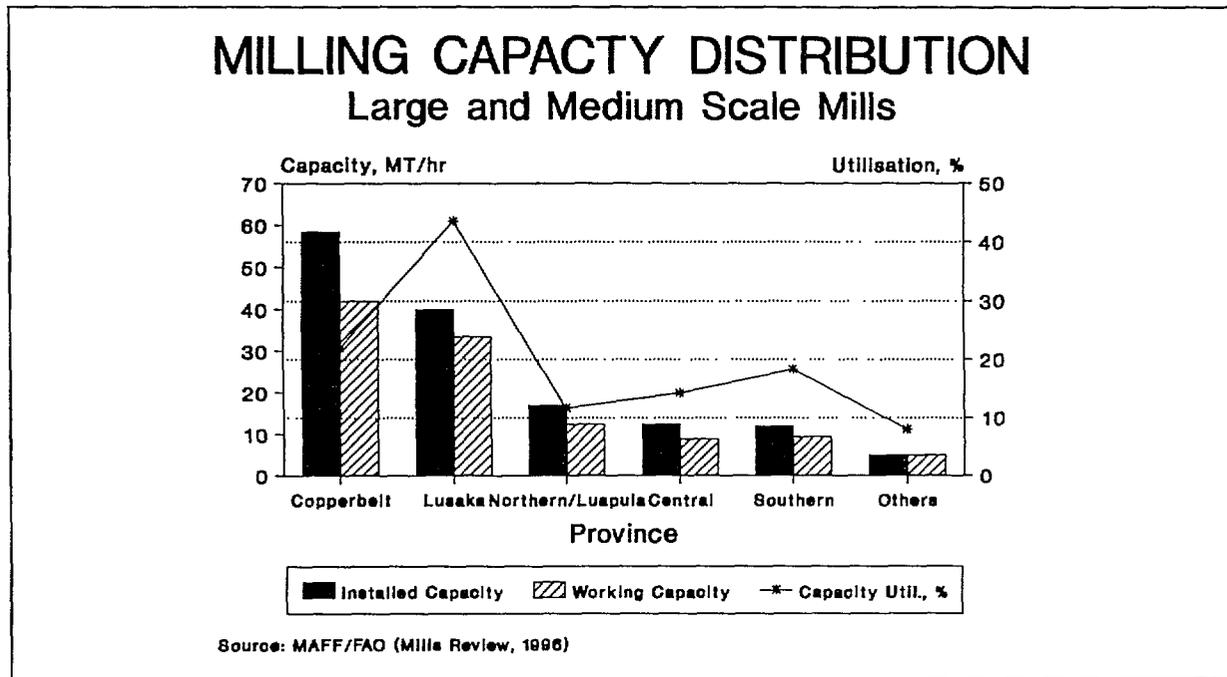
Also significant to the agri-processing industry are irrigated wheat, cotton, tobacco, soybeans, legumes and, to a lesser extent, horticultural crops. With the exception of wheat and soybeans, most of these are grown by smallholders, under contract to the down-line processors. Soy and legumes, notably cowpeas and sugar beans, are being adopted by smallholders. Commercially produced irrigated sugar, a significant export crop, is focussed around Mazabuka, Southern Province, where processing facilities are centered.

C.1.1 Maize Processing

In view of government policy concentrating on maize production for the past 30 years, it is only natural that maize milling should dominate the agri-processing industry. Such was the nutritional and political importance of maize, during the Second Republic (1974 - 1991), government took over the input supply and marketing sectors, and fully nationalized the whole milling sector, completed by 1987.

Based on policies to provide cheap food to the largely urbanized population, reported to be 55 per cent, the whole maize chain from seed to mouth was state controlled and subsidized. Farmers, as out-growers to the government, were required to sell all their production to the appointed marketing agents. Along with the rest of the population, rural and urban, they were expected to purchase the subsidized mealie meal flour from the large-scale mills, via state owned retail outlets. In actual fact, most farmers would retain sufficient maize from the market, to feed their families throughout the year. Only in times of drought would this not always be possible.

The following graph shows the distribution of large- and medium-scale milling capacity in 1995-96:



The distribution of the national maize milling capacity is, by default, concentrated in Lusaka and the towns of the Copperbelt, with some smaller satellite mills in most of the provincial capitals.

Traditionally, Lusaka had the highest milling capacity, which has been overtaken in recent years by the Copperbelt towns. Extra demand was speculated in response to increased migration into the region. However, Lusaka still makes greater use of its installed capacity, with higher annual production.

A huge disadvantage with the centralized milling arrangement was the need to transport raw materials and end-products over long distances, at high cost, to ensure fair distribution of mealie meal to all sectors.

Liberalization of the economy, and hence commodity marketing, coupled with crop shortages, has led to sharp rises in maize and mealie meal prices, and early confusion among farmers and crop traders new to the business, led to erratic supplies into mill.

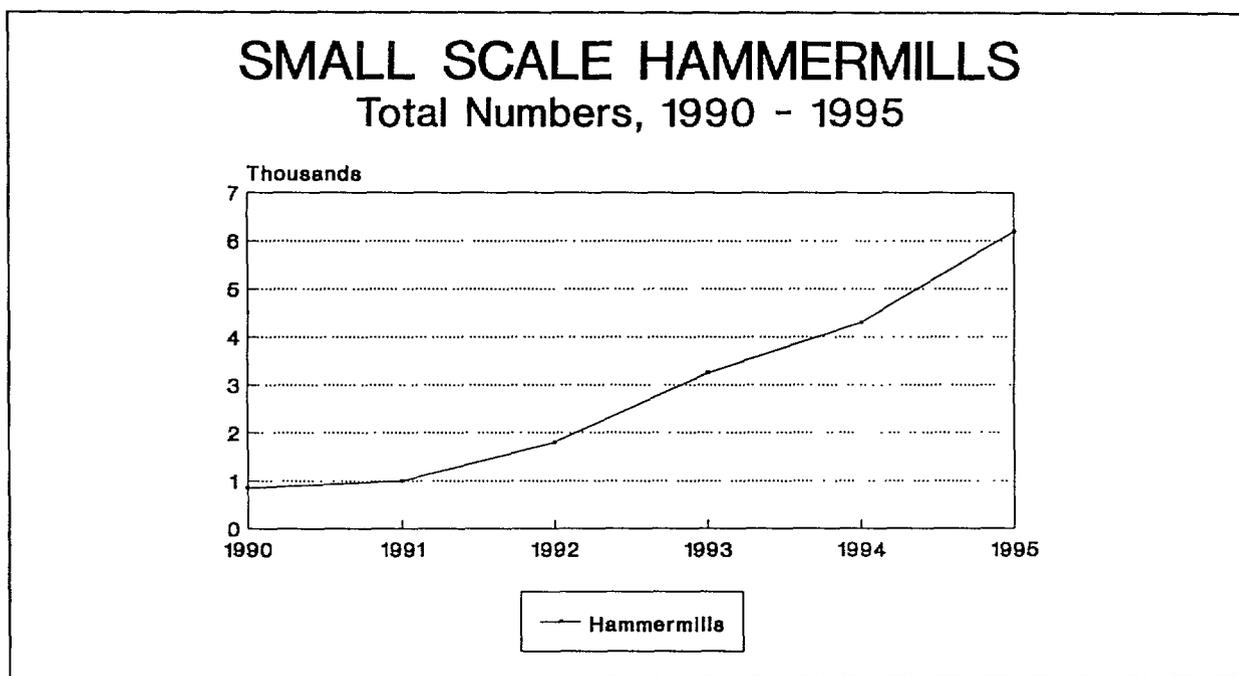
Also, as the effects of liberalization took hold, the heavily bureaucratic state owned mills began to face strong competition from the private sector, which was able to undercut prices, based on lower overhead and operating costs.

The following graph depicts the declining throughput of maize and mealie meal production from the large-scale mills during the past five seasons.

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Capacity utilization of the large mills has fallen steadily from 55 per cent in 1991 to 26 per cent in 1995, resulting in a drop from 34,000 tonnes to about 20,000 tonnes per month of flour output.

Shortage in supplies of mealie meal carrying high price tags, particularly during the 1993, 1994 & 1995 seasons, spurred a proliferation of small-scale hammermills throughout the peri-urban and rural areas.



The rapid growth in the number of small-scale hammermills is shown in the above graph.

As can be seen, the growth in hammermill numbers has been dramatic, most of which has occurred in the Southern and Central Provinces. Lesser yet still significant growth has occurred in the Copperbelt and Eastern Provinces.

The basis of this growth can be attributed to a change in consumer habit. Mealie meal supplied from the commercial mills comes in two forms, breakfast and roller. The former is derived from grain after removal of the husk, producing a very fine flour; the latter, a coarser flour, from the whole grain.

Traditional preference is for the more expensive breakfast meal which now sells for ZK16,500 (US\$15) per 25kg, in Lusaka, and roller for ZK14,250 (US\$13).

As choice is now based on price rather than meal quality, hammermills provide an economic alternative for the consumer to obtain mealie meal, albeit much coarser ground, at cheaper cost.

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For example, 25kg of grain can be bought at a public market for ZK10,000 and ground at a hammermill for approximately ZK1,100.

Small-scale hammermills have brought further benefits in providing grinding facilities in rural areas, close to the areas of production, reducing the costs of having to transport maize out from and mealie meal into remoter areas. Additionally, entrepreneurial entry into the small business scenario is stimulated, and the burden and time constraint placed on rural women, who, no longer able to afford purchased mealie meal, had to return to hand pounding maize into flour, is reduced.

By the end of 1995, the small-scale milling sector had increased its market share to around 70 per cent. However, the sectorial share is in fact more equally divided throughout the year, with small hammermills accounting for about 80 per cent of meal production between May and October, and the commercial mills taking 80 per cent from November to May.

However, many of these small-scale activities are not profitable and it is uncertain how many of the 6,000 hammermills now in place are actually working. The major constraints to the sustainability and growth of many of these small enterprises are bad siting in relation to market and diesel supplies, poor level of mechanical and maintenance skills leading to breakdowns, and most importantly, the lack of business management experience which can induce misappropriation of cash income. In these cases, no funds are available to finance spare parts and repairs, the mills remain out of service, and businesses collapse.

The ATAC can help address some of these issues, in targeting small-scale agri-business groups or associations with assistance in business management, accounting and book-keeping, and encouraging better use of the banking system to reduce cash handling risks.

Large mills are likely to react to increased competition by putting more emphasis on quality products and service. The potential economies of scale in a more efficient privatized large-scale milling sector are expected to reverse the inroads made by the small-scale mills, in the long-term.

C.1.2 Wheat Milling

Wheat production, grown through the winter months, requires irrigation and, ideally, mechanical harvesting. Therefore, it is exclusively produced by large commercial farmers in Southern and Central Provinces, and to a small extent in Eastern Province.

The concentration of demand for wheat flour centers on Lusaka and the Copperbelt and the major wheat millers are in Lusaka and Kabwe (both National Milling), the latter being the nearest to the Copperbelt. Medium-scale wheat millers are found in Mazabuka (Southern Province), Mkushi (Central Province) and Chipata (Eastern Province).

However, there is a rising trend in demand as bread consumption increases in urban areas, and new large capacity mills are planned for Kitwe (CDC) and Mazabuka (Mazabuka Farmers Association).

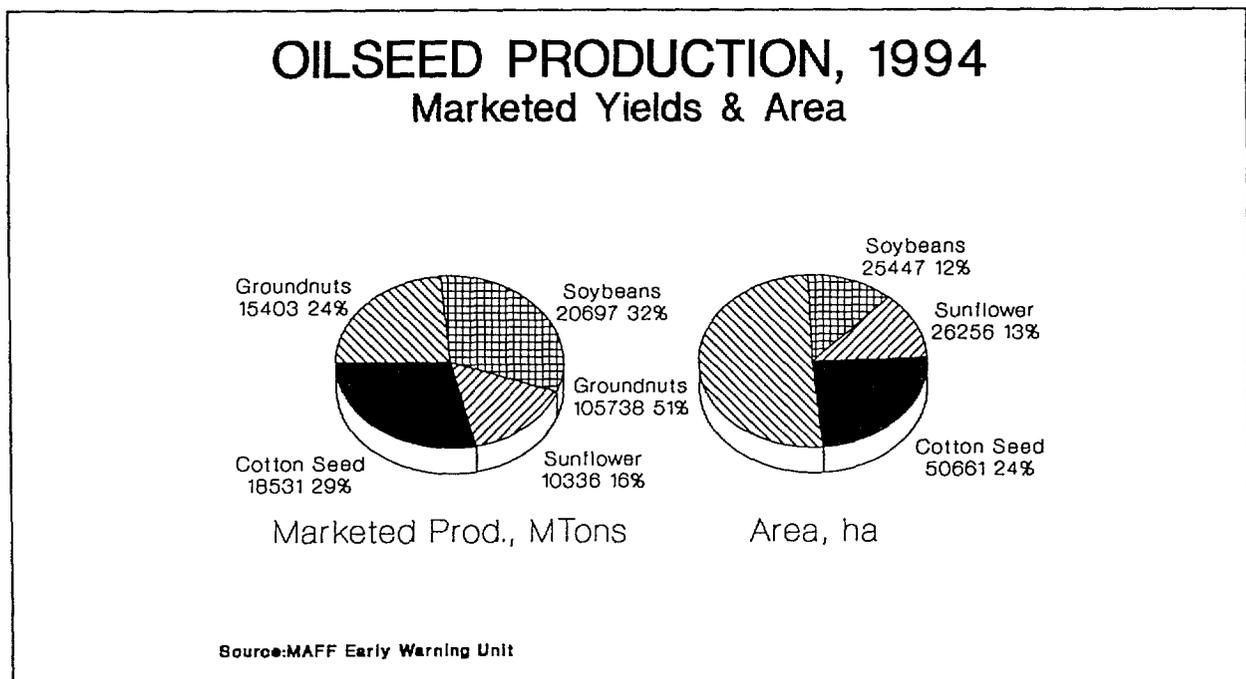
C.1.3 Oilseed Processing

The oilseeds sector faces stiff competition from the import of refined cooking oils from various sources, the export of soy and cotton seed to South Africa, and the duty free importation of refined and unrefined palm oil.

Two large state owned commercial oilseed extraction plants, Rural Oil Producers (ROP) and Premium Oil Limited (POIL) sited in Ndola and Lusaka, have dominated vegetable oil processing for a number of years. In the past, both have absorbed a high proportion of locally produced sunflower seed for cooking oil production, and soybeans for oil and oilseed cake production. They have both been instrumental in setting into-mill and mill-gate prices. However, both commodities are produced by smallholders, and since 1993 area plantings have declined. Supplies are erratic to the large mills, which need to rely on imported crude oil to satisfy production demand and utilize spare capacity.

Additionally, there are five privately owned medium-scale oil mills in the country, situated in Lusaka (Southern Oils Limited & Meadow Feeds Limited), Kabwe (Super Oil) and Mazabuka (Hi-Protein Foods Limited).

The following graph reflects the areas and marketed production of the major oilseed crops in Zambia. Groundnuts are grown mainly for confectionery markets, and approximately 90 per cent of all cotton seed is exported to South Africa for oil extraction, the remainder being used as seed for the following crop. Ironically, stock feed compounders re-import cotton seed cake when market forces determine a price advantage.



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Sunflower is the single largest oilseed crop grown by smallholders for oil extraction, although the adoption of soybeans by the small grower, is being strongly supported by government and the private sector. The 1995-96 cultivated area under sunflower is reported to be more than double that of 1994-95 (31,000ha to over 65,000ha).

Alternative oilseed crops are being considered as smallholder crops, such as vernonia and castor oils for industrial use. Some embryonic out-grower schemes have been started with castor seed production in Lusaka and Central Provinces, but all seed is exported to Zimbabwe for processing. In view of the hazards involved with the by-products of castor, a potential for intervention would be assistance in establishing single purpose extraction facilities, with the emplacement of suitable controls to ensure no stock-feed contamination occurs.

C.1.4 Cotton Processing

Cotton is produced predominantly in Central and Eastern Provinces, with smaller production in Southern Province. Seed cotton production is dominated by smallholders, mainly working within out-grower schemes.

Lonrho Cotton Limited now dominates the former terrain of LINTCO, acquired through privatization of the parastatal. Lonrho Cotton owns the largest gin, near Mumbwa, Central Province, with an annual capacity of 18,000MT output, and others in Lusaka and Gwembe, Southern Province. The Chipata gin, Eastern Province, is under management control of Clark Cotton, as privatization procedures are finalized for hand over. Ginning capacity is 12,000-15,000MT per annum.

Swarp Spinning from Ndola, have entered the cotton production sector via out-growers, in Central Province, but as yet rely on Lonrho to gin seed cotton for supplies to their spinners. SWARP intend to purchase one of the Lusaka gins for establishment in Kabwe.

The technology for ginning seed cotton is well known and in the domain of the two large market players. Little opportunity exists for intervention in this sector, and indigenous ginning capacity is up-to-date and more than sufficient for present production. More necessary is support to smallholder production, to increase yields and quality, to utilize the ginning capacity.

C.2 THE PROFITABILITY OF SOURCING RAW PRODUCT FROM SMALL FARMERS

Sourcing raw materials for the agri-processing industry is a major constraint to the business expansion and profitability, and capacity utilization of plant and facilities. Smallholder farmers form the backbone of production of the major crops, such as maize, cotton, groundnuts and tobacco, and are adopting other crops for processing like soybeans, sorghum, legumes (beans, cowpeas, etc.), sunflower, cassava and pineapples.

High Protein Foods of Mazabuka, an edible oil extractor and refiner, have recently purchased a second-hand pineapple processing plant, requiring various processes in which they have little skill

or experience. The company would benefit from assistance in identifying plant components, constructing the facility, and identifying and applying the technical procedures necessary for marketable products. But above all, it will need to establish reliable raw material supply links with pineapple growers in North Western Province, and nearer if possible, to keep transport costs to a minimum. This is a typical example for an intervention by ATAC which could co-ordinate suitable technical assistance, to get the plant up and running, and to address the problem of sourcing raw materials economically.

The main trunk, rural feeder and subsidiary bush roads have a history of being poorly maintained, and in the past have added to the misery of transport companies hauling fertilizer to distribution points, and maize and other agricultural crops out of rural areas. Access to the multitude of remote small farms is neither easy nor cheap.

Substantial donor support has stimulated the rebuilding of a number of trunk roads, but the dirt surfaced bush road infrastructure is severely under funded, with many of the deteriorating routes receiving no maintenance from one season to the next.

Cost/Margins of Trader Delivering to Mill	
<i>per Bag (90 kg)</i>	<i>US\$</i>
<i>Purchase</i>	12.9
<i>Transport (US\$ 0.08*30 t*300 km)</i>	2.2
<i>Overhead (10%)</i>	1.3
	—
	16.4
<i>Capital cost (1% per week)</i>	0.3
	—
	16.7
<i>Revenue</i>	21.4
<i>Loss (1%)</i>	0.2
<i>Into-Mill Price</i>	21.6
	—
<i>Gross Profit</i>	4.7

Transport companies have to work in a competitive market on a profit basis, and are always seeking the lowest cost operations. As a result, they are becoming more reluctant to send large trucks (30 tonne) into the remote areas to collect smallholder marketable crops, imposing double handling from local to district transport facilities.

As already discussed, most agri-processing facilities are centered in or near to the large conurbations, often long distances from the dispersed and sparse centers of production. Danger exists of remotely produced crops being stranded uncollected, unless some form of cheap simple transport system exists to move crop to points accessible by the large trucks

C.2.1 Sourcing Cereals

Maize sourcing has entered a new era with the advent of liberalization. A plethora of traders has emerged competing for business selling into large-scale mills or to public markets.

Additionally, with rising prices, rural and peri-urban people are relying on small-scale hammermills to process homegrown or locally purchased maize to flour. Consequently, a greater proportion of the national crop is inclined to be retained, placing pressure on the large-scale processors to secure supplies for mealie meal production. Farmers are also beginning to learn the skills of "playing the market" by storing maize for later release, thereby hoping for higher prices.

The large-scale mills are therefore having to compete in a more discerning market, where price and profits command efficient operation and sustainability.

Apart from purchase price, transport contributes a major cost in the acquisition and delivery of maize. A typical 30 tonne truck will be charged at approx US\$0.08 per loaded tonnes per km. Therefore, a fully loaded truck traveling from Chipata to Lusaka (600km) would cost US\$1,440 or US\$4.3 per 90kg bag.

Other factors influencing trader profits are unloading charges, storage and delayed payment. Large-scale millers, faced with the need to reduce overhead charges, also meet stiffer competition when buying maize, which will increase as more farmers store grain after harvest.

This will raise further problems of grain security, and constraints in this area are suitable storage structures and pest control. Advice and assistance is also required in promoting group storage facilities, on terms attractive to small farmers.

Small-scale hammermills essentially offer service milling to local growers and purchasers of maize from public markets. Invariably, these small businesses fail to cater for the period of dwindling supplies toward November/December of each year, and surrender their market share to the large-scale mills.

White sorghum, a traditional Zambian cereal widely grown before the concentration on maize production, is again being promoted in some of the more drought prone areas in Southern and Western Provinces. Smallholders gain greater security of food supply, and can utilize the small-scale hammermills for flour production. Brewers of opaque beers could be encouraged to promote red sorghum as a malt source, through out-grower or contract growing schemes.

Constraints include the lack of ability of small grain processing businesses to accumulate funds for maize purchase during the cheap supply period, to mill later in the marketing year, and for storage facilities to hold grain stocks. Assistance is also needed to train small business managers and staff in management, book and accounts keeping, and responsible cash handling is required.

These are specific areas which the ATAC can deliver specialist technical inputs to boost the performance of established and fledgling businesses.

C.2.2 Sourcing Oilseeds

Sunflower and soya procurement by the commercial oil extractors face similar problems to maize, ie, remote areas of production, and poor accessibility for transport. In general, delivery to mills is on a piecemeal basis, organized by growers.

A Lusaka based stock feed company encourages small-scale farmers to sell their soybeans by the bag for cash on delivery, at the rate of US\$250 per tonne. This support to smallholders inspires confidence in the farmers to grow more of the crop, knowing a reliable market exists. Soybeans bought in the Copperbelt, are currently delivered at US\$350 per tonne. However, export competition to South Africa is strong, and with an import/export ratio of goods from South Africa to Zambia of 14:1, cheap return transport is said to be US\$30 per tonne.

Some of the larger edible oil processors are now starting out-grower schemes to ensure more regular supplies, by providing inputs on credit. High Protein Foods of Mazabuka, supply sunflower seed, but no fertilizer to 1,000 small growers. The crop is bought standing, and some guarantee of delivery is established by the company supplying bags for the seed.

Typical Income Chain For A Ram Press User

Crop: Sunflower (Record Seed)

Throughput: 50 kg (bag) per day

Work Time: 5.5 days per week over 6 months

Net Income per month: US\$ 325

Net Income for 6 months: US\$ 1,776

Assumptions:

<i>Cost of seed:</i>	<i>US\$ 8.60/50 kg</i>
<i>Oil content:</i>	<i>33%</i>
<i>Oil extraction rate:</i>	<i>80%</i>
<i>Cake/50 kg seed:</i>	<i>36 kg</i>
<i>Oil selling price:</i>	<i>US\$ 1.0/liter</i>

Well managed crops can yield around 1.75 tonne per ha, and leave the grower a profit of approximately US\$29 per ha. However, the normal yield from small farms, without fertilizer is 0.4 mt per ha. Typical major processor costs of around US\$240 per tonne, comprise seed purchase at US\$160, transport at US\$15, processing at US\$17, packaging at US\$34, and sales and bags at US\$13.

Processor profits are dependent on oil content and extraction efficiency but are estimated around US\$105 per tonne of purchased seed, at current high selling prices.

However, transport costs are directly related to distance, and possible side-selling by the growers can lead to raw material shortage and loss of input, raising costs and reducing profits. When compared to potential grower profits of around US\$73 per tonne, the processor of sunflower needs to increase volume, seed oil content, and improved extraction efficiency.

Increased use of improved softer shelled varieties of higher oil content, such as the open pollinated "Record" variety, yielding on average 60 to 100 per cent more oil than traditional varieties, will lead to higher profit margins for both small- and large-scale processors.

Hopefully, the price paid to small farmers will improve, which would be the best extension message.

Small-scale village level oil extraction from sunflower is developing rapidly, under the promotion of the NGO, Africare, using hand operated ram presses. The NGO is also the primary promoter of "Record" seed in the country, positively assisting in seed multiplication and distribution activities. It now accounts for approximately 30 per cent of all sunflower seed distributed.

Targeted regions are Southern, Central and Eastern Provinces, where the need for crop diversification, income generation, and local cheap oil production is high.

A constraint to increased edible oil output from the large and medium-scale extractors is the *ad hoc* arrangements with smallholders for seed supply, and intervention in linking the two parties under contract may guarantee more regular raw material supply.

The proliferation of small-scale ram presses will likely stimulate a long-term increase in area and production of surplus sunflower seed, but in the short-term, supplies are diverted from the large-scale producers, exacerbating the commercial extraction of locally produced edible oils. Hence the continued reliance on cheap duty free imports of crude oil.

C.2.3 Out-grower and Contract Sourcing

Post liberalized Zambia has experienced a rapid growth in the number of out-grower linked raw material sourcing schemes. Notably, the cotton sector, dominated by Lonrho Cotton, and the tobacco sector, has tied its supply of raw materials to the out-grower principle. By using intermediary credit controllers to identify and contract smallholder growers, inputs and husbandry extension messages can be passed down to farmers.

Cotton and tobacco are probably the two highest value exportable smallholder crops grown extensively in Zambia. Prices are determined in US dollars against world parities, enabling high operating margins to the out-grower, firm prices for growers, and reasonable cover against risk.

Out-grower schemes tend to work more efficiently for non-edible crops, where competition between traders is lighter, and where the commodity is less likely than food crops, to be used as a trading medium among consumers. For these reasons cotton and tobacco lend themselves to the system, however, risks of side selling among rival out-growers exist. To reduce these risks, the processors must provide sufficient margins to their out-growers to retain the loyalty of the primary grower.

The ability to trade in US dollars has resulted in substantial reductions in input costs for cotton gins to pass on to the grower.

Constraints for the processors are high transport costs, and the cost and ability to transfer extension to the grass root grower to improve yield and supply.

C.2.4 Horticultural Products

The processing of horticulture and floriculture crops are specialized businesses which have grown in significance since liberalization. Processing and handling plants are centered in the large urban centers of Lusaka and the Copperbelt, relying on nearby suppliers of raw materials. Lusaka based Zambian Export Growers Association (ZEGA) support and coordinate the export of a rapidly expanding fresh-cut flower industry, and speciality vegetable products (mange tout, baby corn, etc). Zambian Horticultural Products (ZAMHORT) in Lusaka (currently being privatized) have a huge under-used vegetable and fruit product processing capacity, and Lyons, Ndola process tomatoes and pineapples into a variety of ketchup, paste and jam products.

Horticulture and floriculture crops are expanding rapidly in Zambia. In both cases, reliable and constant supply of these perishable crops is of prime importance to the packer and processor. The export of fresh cut flowers and specialist vegetable crops to European and Far Eastern markets have developed successfully through contracts imposing strict quality controls, but offering high operating margins.

ZEGA was formed in 1985 to coordinate and facilitate the export of high value non traditional crops. In 1991 a European Union loan enabled them to build a 100 tonne capacity cold store at Lusaka airport, to hold high quality perishable flowers and vegetables, prior to export.

A prime objective of ZEGA is to organize and coordinate suitable and reliable airfreight delivery to foreign markets. As a result, several leading UK and European supermarkets are contracting the supply of roses, mange tout peas and baby corn from Zambian growers, and additional market outlets are being developed in The Netherlands, South Africa, Australia and the Far East.

The opportunities in floriculture for the small farmers are few, as reliability and regularity of supply, and maintenance of quality are of paramount importance. However, the production by smallholders of crops such as limonium, a flower decoration filler, would be possible as a high value cash crop.

There are a few vegetable and fruit processors in Zambia, situated in Lusaka and the Copperbelt. Lyons Foods of Ndola contract tomato supplies from the Mkushi Farm Block for paste and ketchup production, and pineapples from the North Western Province for canning and processing into jams. In both cases, long distances add to costs, and unreliability of maintaining regular supplies. Zambia Horticultural Products Ltd in Lusaka have recently been sold to a South African company. The high capacity plant for tomato, fruit and vegetable processing has hardly operated since commissioning in 1992. The main constraint was the lack of ability to secure reliable supplies of raw materials. The new owners are expecting to establish networks of contracted growers and suppliers around Lusaka to ensure year round operation.

Hi-Protein Foods in Mazabuka have recently bought a second hand pineapple processing plant. This is a case where a source of agri-business advice could have assisted in making more rational decisions. Few pineapples are grown in the region and the company will have to source raw materials from over 1,000km away, at prohibitive cost. Engineering and management skills are limited mainly to edible oil production, and nobody in the company understands the workings of such a plant, or can even recognize all the working components.

Other high value crops with out-grower possibilities are fine beans, limonium, and paprika, marigolds and roses for essential oil production.

C.3 THE LEVEL OF TECHNOLOGY USED IN AGRICULTURE AND UPGRADING TARGET AREAS

Much of the plant and equipment in the parastatal maize and wheat mills has suffered from poor management and lack of maintenance and investment. However, as most are in the process of privatization, new owner investment is anticipated to improve capacity utilization and profitability. In some cases, where local consortiums or companies have taken over, technical assistance in redesigning or refining the plant may be desirable.

A local small-scale hammermill manufacturing industry has evolved in Zambia, spearheaded by a number of Indian and foreign based companies. Product quality is affected by crude, but cheap production methods, but some very competent cost effective mills are produced. Engines are imported from India and the United Kingdom.

The industry has built to traditional designs based on former imports or licensed products from abroad. Often local companies lack financial and skill resources to develop new more efficient designs, appropriate to local operating conditions. Such simple activities as suitable material selection, rotor balancing and determining the optimum power plant/mill size combinations could be greatly improved with the input of short-term advice and assistance.

Some of the medium- and small-scale edible oil producers suffer lack of new plant investment, and may be unaware of the latest technologies to achieve more efficient and profitable businesses. Screw press design has improved, over time, as has quality of materials, reducing wear rates and running costs. Raw material handling is often crude, and does not address the problem of stone and dirt contaminated seed.

Suitably labeled packaging of products in sterilized containers can rarely be undertaken by small- and medium-scale oil producers. In order to compete with imported and large-scale commercially produced oil products, training and advice in management and available plant design is deemed necessary.

New crops for processing are emerging in the country. Paprika, marigold and rose production is being adopted by a few medium-scale growers, for the production of essential oils who require specialist extraction facilities.

Little expertise in the required technologies is available in country, and only those with financial means to access information abroad can develop new high value products with export potential.

Horticultural production is also growing, with the opening of new retail outlets in some of the major towns. Producers and processors require access to advanced technologies in cold store management, intermediate and final packaging techniques, and refrigerated produce transport in order to ensure perishable crops arrive at point of sale in prime condition.

C.4 APPROPRIATE TECHNOLOGY INFORMATION AND SOURCES

The agri-processing industry in Zambia existed primarily under parastatal control during the Second Republic. In essence this included the large- and medium-scale maize and wheat milling and oil extracting plants, some stock feed manufacturing installations, cotton gins and dairy and meat processing units.

Many of these were established under international donor development programs, and information on capacity and design were supplied by the contractors. Installations were often provided on a turnkey basis, with over-capacity built in to maximize the profits of the plant supply company. In some cases inappropriate equipment was specified, such as in sponsored mechanization and small-scale milling projects, with no indigenous service and back-up facilities, which led to early failure after donor support was withdrawn.

The few privately run processing businesses relied on piecemeal information, and did not have access to the wide array of choice available on a worldwide basis.

As the industry transforms to the private sector, with new investors seeking opportunities, the need for information and advice on appropriate technologies is increasing. No organized system was established in the past, nor was there seen to be a need to address this problem.

For the agri-processing industry to advance and develop in the new economic environment, it is essential that information and advice be made readily available to business people. Representatives interviewed during this mission have shown strong support to the principle of establishing a center to which they can refer for a wide array of services. Such a center (proposed as ATAC in this document) would provide facilities for computer access to the Internet, allowing the user/customer to study and utilize readily available information, as would the access to databanks and business modeling facilities.

For example, a miller wishing to expand grinding and storage facilities to complement existing plant, could search through lists of suppliers to identify suitable hammermills, cleaning equipment,

conveyors and storage bins or silos. Design alternatives, bills of quantity could be calculated, and prices would be available for preliminary costing.

Requirements will range from general concept information, to planning and design of processing technologies, or inputs more specific to the detailed needs of an existing operation. It must be accessible to anyone but have clear and defined parameters within which to work. Clients would contribute payment for specific assistance, but have free access to more general information.

C.5 THE ROLE OF TECHNOLOGY IN IMPROVING COMPARATIVE ADVANTAGE

It can be argued that the comparative advantage of Zambia's traditional agricultural production of staple crops is limited to irregular periodic differentials in regional production. The vagaries of climate tend to affect the region as a whole and create synchronized surpluses and deficits in the neighboring countries. Therefore, few advantageous export opportunities arise within the region, unless drought or pest infestation hits a limited area within the region. However, the landlocked nature of Zambia means that road, rail and air transport costs of imported bulky commodities, such as cereals, oilseeds and legumes, are high enough to stem dumping from regional or international sources.

Processing the low value crops does not add sufficient value to gain a comparative advantage over countries in the region. However, within the non-traditional industrial crops of higher value, sufficient advantage can be gained by careful use of modern processing technology to penetrate international markets.

There is a world demand for cotton and tobacco, both of which Zambia has strong potential to deliver. Zambia's cotton industry lags behind other African countries in terms of production, cost competitiveness and lint quality. Despite an ideal climate, yields are depressingly low, because of late planting, poor husbandry, insufficient quality extension and often late delivery and use of inputs. The introduction of draught power and other forms of mechanization could contribute to improved yields, and to a viable expansion of the cotton growing area.

Horticultural production is expanding rapidly. Rose production is predicted to double between 1995 and 1997 and by a further 50 per cent by the year 2000. Vegetable production is on the increase, and small growers can participate in the production chain for local market supply.

In order to remain in the international markets and to meet stringent quality parameters, increased levels of technology in husbandry procedures, product preparation and packaging are deemed necessary.

There are limited opportunities for small growers in flower and vegetable production for export; there is scope for small agri-business development in the manufacture and supply of packaging, labeling and transport.

Floriculture Development in Zambia

The first floriculture investment in Zambia dates back to 1984, however the real start to an export oriented agribusiness was due to the establishment of two rose farms near Lusaka in 1987. The farmer owners had experience in exporting fresh vegetables, and entered into floriculture, in part, to obtain foreign currency earnings for importing machinery and equipment needed for their commercial farming operations. Both investments were self financed.

Since 1987, Zambian floriculture has expanded rapidly, by 1994-95, 11 commercial growers were cultivating 30 ha of roses in greenhouses and around 100 ha of unprotected summer flowers. Important catalysts and facilitating factors have been imported technology and inputs from Zimbabwe and South Africa, low cost off-shore loans from donors, inexpensive north-bound air cargo space, and the high profitability of floriculture relative to other commercial ventures in Zambia.

Marketing coordinators, ZEGA, with cold store facilities at Lusaka airport, have played a vital role in ensuring regular deliveries to international outlets of high quality produce.

Considerable scope exists to expand the production of other industrial crops through the use of improved production and processing technologies. These include spices, food colors, essential oils and other industrial oil-bearing crops. The growing of paprika, marigolds (food colorants), and castor beans (industrial lubricants) have high potential and will require the input of expert technical and marketing advice.

On the basis that the development of agri-business is widely considered as the engine to drive agricultural development and growth, particularly in the small and emergent sector, the Pole Growth Strategy approach to promoting market driven agri-processing businesses in and around district towns would encourage the adoption of improved technologies.

Smallholder farmers have very limited access to improved production and post-harvest technologies. No mechanism currently exists where they can source

information, advice and access to investment capital. The formation of smallholder groups and associations would strengthen and facilitate a corporate approach to sourcing agri-processing technologies, and would allow them to take advantage of advisory services normally confined to the large-scale processors. Improved agri-processing technology is necessary to increase the range of products with a comparative advantage for Zambia in regional and international markets.

C.6 THE IMPACT OF PARASTATAL AND PRIVATIZED PROCESSORS

The transition from a state to private sector driven economy is having a major impact on the agri-processing industry. Parastatal companies are renown for bureaucratic top heavy management, maladministration, inefficient operation and poor investment track records. Supported under the previous command economy by government subsidies and monopoly trading conditions, they were established with the intent of ensuring the supply of primary consumer products.

Maize milling and edible oil production were the two main commodities addressed by the state sector. In order to control consumer prices of mealie meal and cooking oil at affordable and non-controversial levels, government centralized the delivery of the support services of credit input supply, extension and marketing, and created public sector dominance of agri-business industries. Private companies were nationalized, allocations of raw materials to factories were fixed, and imports, new enterprises, and operating practices were restricted.

Consequently, the processing of foods and other agricultural commodities, along with the production and distribution of key agricultural inputs became dominated by a limited number of large-scale parastatal companies, based in one of a few urban areas. This resulted in suffocating private initiative and opportunities for rural-based industries, and created huge transport burdens.

Significant among the parastatals were the National Milling, Indeco Milling, Mulungushi Investments Ltd and Amalgamated Milling which controlled the production of mealie meal, and Rural Oil Products (ROP) and Premium Oil Ltd (POIL), supplying cooking and industrial vegetable oils. Others include Zambia Sugar PLC, the Dairy Produce Board, Zambia Coffee Company Limited, Zambia Horticultural Products Limited and Zambia Cold Storage Corporation Limited.

All parastatals are subject to privatization and by February 1996, 113 companies had been sold to the private sector, 25 were under negotiation and a further 70 were had reached the preliminary stages.

Most of the flour mills have been privatized or are in the final stages and have started operating in private hands. However, they require substantial management restructuring and in some cases, investment in plant and equipment. Reduction of overheads is also of primary importance to increase competitiveness.

The effect of exorbitant overheads, bureaucracy and mismanagement in parastatal food processors, came to the fore during the early days of liberalization, after the new government commenced its withdrawal from the controlled marketing of maize and its by-products.

Mealie meal prices soared, as the former market guarantees disappeared, and farmers and newly emerging traders sought out other outlets for maize. As a result, the consumer sought cheaper methods of securing staple requirements, and when supplies were plentiful, started buying maize in public markets for grinding at the small-scale privately owned hammermills.

Consumers could obtain mealie meal through this chain some 30 per cent cheaper than buying the pre-packed version. Such was the demand that the numbers of these mills grew rapidly from less than 1,000 in 1990 to over 6,000 in 1995, situated both in rural and peri-urban areas. Initially, the large-scale mills could not compete and some even closed down for several months, while taking stock of the situation.

The impact of the hammermills has refined the planning strategies of the large mills toward concentrating on producing higher quality products, and trimming their businesses to gain greater efficiency. A pattern of market share is evolving between the two sectors whereby the hammermills take approximately 80 per cent from May to October, the large mills reversing the picture from November to May.

The overall effect of moving agri-business into the private sector, has been the rise in competition, increase in efficiency and the inducement to foreign investment in the sector. Unilever has bought ROP in Ndola to manufacture industrial products from vegetable oils, Premium Oils are on the market to international bidders. About 65 per cent of foreign investment is coming from South Africa, from where many companies and individuals are seeking stake-holding in Zambia. The stock feed industry has seen South African investment lead one compounder from a seven per cent to a 25 per cent share in the market within three months of take-over.

Consequently, the agri-processing industry is broadening its horizons, entering new market driven ventures in specialized high value products, like essential oils, vegetable and flower production, castor and other oil seed crops and horticultural processed products.

As the industry ventures down these new avenues of business, the requirement for technical assistance grows, emphasizing the need for an organization or center to which business men can turn for information and advice.

ANNEX D

**The Role Of Government In Promoting
Small- and Medium-Size Agri-business**

D THE ROLE OF GOVERNMENT IN PROMOTING SMALL- AND MEDIUM-SIZE AGRI-BUSINESS

During the second Republic, the Zambian government was deeply involved in agri-business through its monopoly of parastatal controlled credit input institutions, marketing and processing organizations established under socialist policies, designed to ensure supply of cheap staples to the community.

Bureaucracy, inefficiency, business and financial mismanagement, and poor levels of responsibility within the parastatals, led to wastage of resources and state bankruptcy, in its attempts to keep food prices at affordable levels.

Government, in its efforts to ensure pan territorial supply and price equality to both the urban and widely dispersed rural population, initiated low interest credit schemes to support input supplies to small farmers, and subsidy schemes to keep consumer prices down.

Small farmers were not pressured to repay short-term credit loans, which became considered as grants, setting the mood along with other sectors of agriculture that government credit did not need repaying.

The net result of these command based policies necessitated strict currency controls setting the Zambian Kwacha at artificially high values against international hard currencies, and unrealistic interest rates. The high emphasis placed on copper exports contributed to this situation.

Imported seeds, fertilizer, and general goods were very expensive, requiring large subsidies, and no incentive or mechanism was in place to develop private sector initiatives.

The new government, elected in 1991, has taken major steps toward democracy and liberalization, placing emphasis on promotion of the private sector to drive the economy. Its major policy aim is to withdraw from involvement in the control activities of its predecessor, allowing market forces to determine prices, and create demand and supply in the hands of the private sector.

After initial melee and confusion among a populace with little private sector business experience, a pattern of agri-business and investment is developing. Input distribution and marketing activities are being taken over by traders, out-grower contractors, agri-processing businesses, as well as other organizations. This evolution is transforming the Zambian business environment.

D.1 IMPROVING TECHNOLOGY, RESEARCH AND DEVELOPMENT

Government, while withdrawing from the trading sectors of agriculture, still has a role to play in fostering an enabling, regulated environment which encourages development and progress in the sector. In the new environment, it is anticipated the improvement in technology and its transfer to

users will come mainly through the private sector, however, this does not mean that no role exists for public sector research and extension.

Technology is an area where competition and joint multiple initiatives are likely to follow end user requirements more closely than central planning. However, there is need for government intervention and regulation to set and maintain standards appropriate to Zambian needs within which research and development programs are conducted, and to ensure indigenous and imported technology meets minimum standards of quality and performance to best serve agri-business interests.

The ATAC can provide short-term technical inputs to support the Zambian Bureau of Standards in tightening up regulations pertaining to food product quality standards. With increasing agri-business activity in processed food products, quality and safety regulations need to be more stringent, especially to meet export market standards around the world. Stricter controls of home produced and imported food, product shelf life and sell-by dates, are necessary, to prevent old expired foods arriving in the market place. Health and hygiene standards in production, wholesaling and retailing of perishable products must be improved, especially in the meat and vegetable sectors. With an explosion in the numbers of local traders and public markets, more stringent attention and policing is required to establish operating standards of cleanliness and hygiene.

The Ministry of Agriculture, Fisheries and Foods (MAFF) also can play a role in drafting and legislating regulatory reforms, within the context of the Agricultural Sector Investment Program (ASIP), and is currently addressing the regulatory issues for the supply of farm inputs. The ASIP has, among its many functions, identified areas where government regulatory intervention can establish guidelines within which research is conducted and its results protected for the benefit of national interest.

The Seed Control and Certification Institute (SCCI), under MAFF, is instrumental in revising and establishing procedures for the licensing of companies and individuals to test and certify seed. They are also drafting laws to establish plant variety protection. Zambia requires "Compulsory Variety Registration and Seed Certification" for maize, sorghum, wheat, soybean and sunflower. Lists of varieties, registered outside Zambia, which are allowed into the country, are prepared by MAFF/SCCI, however registering a new variety in Zambia requires two years of tests at four sites, at a cost of US\$5,000 approximately.

This approach tends to present a barrier for the small seed producers from entering the market, an issue that requires government attention. Parallel to issues of variety protection, is the privatization of ZAMSEED, a government parastatal which for years had a monopoly of the domestic seed market. With Sweden, the Zambian Cooperative Federation (ZCF) - a government dominated organization - and the Zambian Seed Producers Association (ZSPA) as key shareholders, privatization is difficult and controversial. It may be better for ZAMSEED to remain in the private sector, for the short-term, whilst private seed companies are encouraged to enter the market by means of regulatory initiatives. Its capacity should be contracted, and its activities concentrated on

multiplying and distributing new open pollinated varieties of minor crops, and penetrating foreign markets.

The Golden Valley Trust (GVT) is a crop seed and variety research station, which is a public sector institution, under management and operating procedures which allow it to make independent research decisions. Government can encourage competition within the seed production industry, by offering donors the option of supporting research activities for small farmers, as well as providing channels for input companies, large farmers and others from the private sector to fund research programs in which they have an interest.

Government has a responsibility to keep abreast of technological developments in the agri-business sector which are potentially controversial, and which may require special regulatory and monitoring legislation to protect national interests.

Biotechnology is developing rapidly around the world, which for example, is addressing such subjects as gene manipulation to improve fruit yield, quality, and processing and storage attributes, genetic manipulation in livestock breeding programs to increase production performance, and the biological control of pests and diseases. Although the more radical research may be a long way from reaching the developing world, government needs to develop regulations ahead of time, to ensure ethical issues are addressed and the adoption and acceptance of advanced technologies are fully controlled.

Other areas where government can play a major role in improving technological innovation in agribusinesses is the manipulation of tax laws and import tariff regulations to stimulate the uptake of new ideas and approaches. A start has been made in the 1996 Zambian Tax Code, within the 1993 Investment Act, in cutting duty on imported productive machinery to zero, and reducing duties on other imported intermediate goods. Small businesses will be able to register under the VAT laws and reclaim on inputs.

D.2 THE ROLE OF TRADE ASSOCIATIONS IN DEVELOPING AGRIBUSINESS

The promotion of trade associations in agriculture and agri-business is recommended to give corporate strength in developing lines of communication, exchange of ideas, and increased efficiency through scale of operation. The smallholder and small business operators have always found it difficult to access information, and to lure funds and credit to boost their turnover and income.

The Zambian National Farmers Union (ZNFU), keen to lessen its image as a body solely representing the large commercial farmer, have instigated programs to encourage linkages to small farmers. It is promoting the formation of farmers associations around the country, composed of large and small farmers, with considerable success, and encouraging smallholders to join existing associations.

Small farmers and businessmen were loath to join the ZNFU in the past because of the large farmer image and the cost of the membership fees. Through its "Outreach Scheme," the ZNFU is beginning to change its image, and it has addressed the fee problem by allowing group membership.

In the small-scale sector, a number of hammermillers' associations have been formed around the country, such as Mazabuka and Kabwe, and more are expected. Although they are not yet strong in numbers, nor influential in the sector, they are the foundation for discussion and exchange of information, with ability to address common problems.

The Agri-business Technical Assistance Center (ATAC), proposed as a service coordinator of information and advice, and a source of technical input, would strongly support the formation of more agri-business trade associations. They would focus the requirements of each individual sector, coordinating requests for assistance, information and funding, and formalize development proposals. Additionally, the associations are seen as trade defined nucleus organizations through which to target technical extension and advisory information for onward and wider dissemination to their members.

D.3 SMALL FARMER AND AGRIBUSINESS INFLUENCE ON POLICY

Small farmer and small agri-business influence on government policy has been very limited in the past, although the previous government laid its development policies around their very existence.

The only infrastructure that reached grass roots farmers and rural agriculturists was the cooperative movement, supported by huge donor and government funding throughout the 1980's. Layered from national, through provincial and district to primary level, the heavily bureaucratic pseudo-parastatal institution was charged with the development of group activities for the benefit of its members.

The government, in instigating the formation of the District Cooperative Unions in 1989, transferred the responsibility of distributing maize seed and fertilizer inputs, and collecting and marketing maize from the defunct National Agricultural Marketing Board (NAMBOARD) to the movement. A false sense of security ensued on the strength of this strategic role, imbuing the staff and officials in secure government funded operations. However, no attempts were made to diversify the activities of the membership away from subsidized marketing of maize in the primary societies, robbing them of opportunity to acquire business skills and initiatives from small income generating activities.

Apart from the umbrella organization, ZCF, the movement was not legally and constitutionally owned by the government. Steeped in the ways and attitudes associated with parastatal companies, it only managed to survive on huge government subsidies, which continually bailed them out of financial catastrophe.

The current government, in liberalizing maize marketing, has removed the cooperatives' guaranteed livelihood, and its return to private sector existence is proving painful. Having few developed skills in business management many of the district and primary societies are floundering or being liquidated, and are no longer a viable organization through which to channel development.

At the same time, the only real channel, albeit layered, for small farmer and agri-business representation to government has been removed. ZNFU is working to fill the vacuum by boosting the membership of small farmers, many of whom represent small agribusinesses. Amongst its varied role options, the ZNFU has powers to lobby government on behalf of its members, and it is anticipated that, with careful and judicious selection of topics it can establish a credible representation of small and large farmer interests with responsible powers to influence government in policy matters concerning the industry.

ANNEX E

**Competitive Position Of Zambia's Small
Farmer In Regional Markets**

E COMPETITIVE POSITION OF ZAMBIA'S SMALL FARMER IN REGIONAL MARKETS

E.1 THE ZAMBIAN OVERVIEW: LIBERALIZATION POLICY AND EFFECTS ON SMALL FARMERS AND THE AGRI-BUSINESS SECTOR

Liberalization has heralded a period of adjustment for Zambian agriculture. Since the change of political power in 1992, the Zambian economy has experienced a rapid adjustment process from a high to a low degree of state control. Of particular relevance to the agricultural sector are the removal of foreign exchange controls, the improved channels of trade, the privatization process and the encouragement of inward investment. Coupled with a more liberalized South Africa, these changes provide a basis for the expansion of agricultural activity in Zambia, probably of a modest nature in the short-term but excellent over the medium to long-term.

Prior to 1992, resources in Zambia were directed into maize subsidies and not into activities with a strong comparative advantage. For example, maize displaced the more drought resistant cereals, millet and sorghum, and such cash crops such as cotton and sunflower. A commitment to liberalization was made in 1992, but policy changes were partially derailed by droughts, interest rate and exchange rate fluctuations. The 1994-95 season was the first where the government refrained from much market interference and the private sector adopted a major role in input and commodity marketing.

As with many radical policy changes, the uncertainty of the new environment has resulted in some negative affects on agriculture. Cultivated land is still 15 per cent below 1985-90 averages. Finance, input delivery, extension and marketing are poorly developed in the absence of state provision. Drought has also hampered progress in three of the last four years. However, the potential of Zambian agriculture is such that the World Bank recently predicted a five per cent growth in agricultural production for the next decade. This will be aided by the US\$350 million Agriculture Sector Investment Program (of which donors are providing US\$230 million) which will attempt to harmonize agricultural production and alleviate constraints to production.

The effects on Zambia's 550,000 smallholder households of these changes have been mixed, not to mention difficult to quantify as drought and world price fluctuations have affected yields and prices at the farm gate. Primarily, liberalization has brought about wider fluctuations in the price of marketed crops, especially maize. The change to regional and seasonal price fluctuations and competitive marketing has not been smooth. Furthermore, the accessing of credit, inputs and marketing services are now not so regulated, so much so that processors (and others with trade links to processors) have organized out-grower schemes in order to secure supplies.

Recent drought years have not tested Zambia's ability to handle a large marketed crop, but given the experience of the 1994-95 season, side-marketing is widespread, inputs are often delayed and extension services still are at a stage of infancy in adapting to the commercial environment. Many

smallholders do not receive the commercial price for their crop, as they sell to traders offering instant cash (as opposed to contractors who would also deduct the cost of inputs provided).

Nevertheless, for those smallholders producing export crops such as cotton or tobacco, liberalization has provided a higher price for the product and the marketer of the produce is also improving the availability of credit and extension for these crops. Maize producers are not so lucky with the remoter smallholders now in a position that they may be unable to market any production given the elimination of pan-territorial pricing. Those nearer to markets will not suffer so much, though the pressure is also on them to diversify into higher value crops.

As these changes work their way through the agricultural sector, incentives are provided for a range of beneficial effects. Smallholders have an interest in promoting competition or participating in input supplies, storage (on farm or even larger), marketing (including the improvement of feeder roads), and diversification. Again, finance, extension and business skills are major constraints to such developments but are not insurmountable.

The effects on agri-business, especially larger companies (with the exception of protected parastatals), have been more positive. Foreign investors now have more confidence in the Zambian economy. The lifting of exchange controls has been particularly important in the stimulation of export crops. Trade is now possible in many commodities (witness the recently opened Agricultural Stock Exchange) and multinational trading houses now have interests in Zambia. The privatization program has also allowed agri-business interests to enter the market without having to surmount land-leasing difficulties. However, it should be noted that the relaxation of market controls has still not stimulated the emergence of sorely needed medium-sized traders, who could fill some of the deficiencies in credit (easier for firms with access to offshore finance), input supply, extension and marketing.

In particular, South African agri-businesses have been pulled to Zambia by liberalization, while pushed from domestic operations by the changes occurring in their own country. The loss of guaranteed prices and markets has encouraged their own need to diversify and secure inputs from elsewhere. More favorable wage rates and labor relations are important factors in investing in Zambia. Should South Africa's current outward investment restrictions be lifted, it is likely that Zambia will experience even more interest from its southern neighbor. Multinational companies with new offices in South Africa are still "testing the water" in the region. The "let's see what happens after Mandela" factor is especially true of North American business interests, and works against large-scale investments for the time being. Nevertheless, the region as a whole has become "somewhere we think we can do business" to a host of agri-business firms for the first time. The current low inputs, productivity and surpluses from small farmers reduce the scope for agri-businesses to serve them and consequently, much of the new investment in agriculture is going toward commercial farming. The table overleaf details the most important agricultural market reform and privatization measures:

REFORM MEASURE	YEAR/PERIOD INITIATED	YEAR IMPLEMENTED	COMMENTS
<i>Permit private maize and fertilizer trade</i>	<i>Mid/late 1980s</i>	<i>1990</i>	<i>No significant activity until 1992</i>
<i>Eliminate fertilizer subsidies</i>	<i>1990</i>	<i>1992</i>	<i>Indirect fertilizer subsidies still in place</i>
<i>Eliminate mealie meal subsidies</i>	<i>1990</i>	<i>1992</i>	<i>Hammermill growth</i>
<i>Decontrol maize producer price</i>	<i>Mid/late 1980s</i>	<i>1993</i>	
<i>Eliminate maize transport subsidies</i>	<i>Mid/late 1980s</i>	<i>1993</i>	
<i>Lift sugar price controls</i>	<i>1991</i>	<i>1993</i>	<i>Reduced local consumption</i>
<i>Privatize commercial milling industry</i>	<i>1991</i>	<i>1994-95</i>	<i>Several mills will not survive</i>
<i>Privatize cotton ginning</i>	<i>1991</i>	<i>1995</i>	<i>Under negotiation</i>
<i>Privatize dairy processing</i>	<i>1991</i>	<i>1995</i>	<i>Under negotiation</i>
<i>Privatize oilseed expressing</i>	<i>1991</i>	<i>1995</i>	<i>Under negotiation</i>
<i>Privatize Zamseed</i>	<i>1992</i>	<i>1996?</i>	<i>New entrants competing</i>
<i>Privatize fertilizer industry (NCZ)</i>	<i>1992</i>	<i>1996?</i>	<i>New entrants now dominant</i>

While the liberalization process has been long, it is worth noting that once privatization seriously began in Zambia, it has been one of the more successful privatization programs in Africa, thereby stimulating the present interest in Zambian agriculture.

E.2 GATT'S EFFECT ON ZAMBIAN SMALL FARMERS EXPORT POTENTIAL

GATT, now known as the World Trade Organization, has not traditionally targeted trade barriers for agricultural produce. Thus far, this would have run counter to the interests of the world's largest traders. The recently completed Uruguay round of negotiations, however, has aimed to address the problems of subsidies and trade. Changes will be brought in gradually, giving time for economies to adjust, so the proposed increased market access and reduction in subsidies, will not present Zambian farmers with any greater export opportunities in the short run. Indeed, a recent World Bank study believes that liberalization will be relatively limited with agricultural prices unlikely to rise more than four per cent, but could just as easily decrease by one per cent! This being mainly as a result of countries submitting higher than actual tariffs for reductions. Nevertheless, signs are emerging that developing countries could benefit from changes arising in the WTO in the medium-term.

Indirectly, GATT has impacted positively on Zambian export potential, due to the pressure it has applied recently in liberalizing the highly protected South African economy. Unfortunately, the already liberalized Zambian economy has imported much more from South Africa than exported, though it cannot be denied that Zambian farmers are now in a much better position to export to South Africa, and indeed it is in this area that Zambia is likely to benefit in the medium-term as agriculture moves north away from the more drought prone South Africa. This shift will be facilitated by South African investment, as increased competition has encouraged the product and geographical diversity of existing agri-businesses. Zambia has become a target country for this diversification of activities and supplies.

In a recent World Bank survey of 15 European agri-business firms, those with an indicated interest in potential trade and investment in Southern Africa are presented in the table below:

<i>Firm location</i>	<i>Malawi</i>	<i>Mozambique</i>	<i>Zambia</i>	<i>Zimbabwe</i>	<i>South Africa</i>
<i>UK</i>	7	5	8	8	9
<i>Netherlands</i>	0	3	2	3	3
<i>France</i>	0	2	0	1	1
<i>Belgium</i>	0	0	1	0	1
<i>Sub-Total</i>	7	10	11	12	14
<i>% of total respondents</i>	47%	67%	73%	80%	93%

Interviewees saw South Africa and Zimbabwe as holding greatest potential because of existing infrastructure and skilled work forces. Zambia and Mozambique are improving, with Mozambique showing great promise for the future. Malawi's size renders it unimportant to many companies.

South Africa, despite great progress in liberalizing trade, remains relatively closed behind a moderately protective tariff barrier. Future trade policy in the region requires attention but disagreements abound as to its final nature with both SADCC and COMESA claiming to represent a regional trading block. South Africa, of course is crucial to this process, and while it is a member of SADCC, has not moved forward on frequently tabled trade protocols (of over 15 issues to be agreed, one has been ratified on water sharing). National interests frequently take precedence over regional benefits, and it seems that South Africa is now moving towards bilateral agreements with its neighbors. However the regional issue will have to be addressed at some stage, though implementation is bound to be very difficult. Meanwhile, Zambia's deteriorating balance of trade with South Africa may well provoke increased protectionism in the near future should agreements not be reached.

E.3 PRODUCTION, POST HARVEST AND TRANSPORT CONSTRAINTS

In a 1995 survey of agri-businesses commissioned by the World Bank, the constraints to increased production in Zambia were as follows (in order of importance):

- a) Access to finance terms and conditions
- b) Level of technology
- c) Worker skills and productivity
- d) Transport facilities and services
- e) Intermediate goods and supplies

Wage rates and the quality and availability of raw materials were regarded positively. While the fruits of liberalization were also regarded positively, policy consistency, land buying/leasing, customs supervision and especially extension and research services were still regarded as detrimental to increased production.

While it would be difficult to draw hard and fast conclusions from a small sample of a particular sector of those involved in agriculture, the activities of agri-businesses in Zambia support the picture presented above. They can rarely afford to concentrate fully on processing, but also need to secure supplies by advancing credit, delivering inputs, providing extension and collecting at harvest, to both commercial and small farmers. Hence the increase of out-grower schemes. Furthermore, no exporter has been found to rely primarily on domestically-sourced finance, which favors the foreign company rather than the domestic one in agri-business investment in Zambia.

Of particular concern is the dearth of medium-sized traders who could fill some of the roles outlined above. This is partly a function of the difficulty of accessing finance but also the lack of business/marketing skills as the country emerges from State control. Production also suffers in some

areas as farmers adjust to making their own decisions on investment, however minimal, rather than relying on central directives.

The lack of a commercial credit market has resulted in a low-input/low-output approach especially in the smallholder sector. Agri-businesses are already advancing unsecured loans and are unlikely to increase their risk in the short-term. This is especially so as traders proliferate offering cash or second-hand clothes to smallholders for their already contracted crop. Consequently, modern uses of technology are rare, thereby further inhibiting yields.

Extension and research services were previously characterized by State inefficiency and biased towards the production of maize. Contractors now have taken over many of these services but not all can afford the investment required. A vast amount of extension will be required if Zambia is to diversify and increase agricultural production.

The old regime's marketing arrangements did not encourage post harvest storage and so traditional methods have disappeared in many areas. Under the market system, storage for maize is especially important, giving the grower the option of selling at a time other than immediately after harvest when prices are most depressed. Food security would also benefit, as many growers do not even have the capacity to store their own annual needs. Traders could also provide this service but they are sadly lacking. Even in the milling sector, only one mill can store enough at harvest time for its annual needs. Nationally, this would require a mill storage capacity of 200,000MT, of which a quarter is presently available.

Zambia's transport infrastructure has improved since 1992, but is still in a state of disrepair. Poor feeder roads inhibit marketing in many areas. Freight rates are the highest in the region. In particular, rail costs inhibit both domestic and international grain marketing. As an example, the cost of rail freight from Lusaka to Livingstone is equal to the cost from Livingstone to Maputo. The Tazara railway provides a cheaper route to Dar-es-Salaam for export crops, but if regional trade is to improve the focus is likely to be south.

Zambia's customs operations are also among the most inefficient in the region, and are cited by many companies as a significant barrier to free trade. Informal trade arrangements are commonplace, though decreasing.

EXAMPLE CASH COSTS 1

Maize Market Chain

Cost and Profit Per MT

November 1995: Kabwe, Central Province

<u>Smallholder Farmer</u> (High Management Level)	<u>US\$/MT</u>	<u>ZK/BG</u> (90kg)
Cash costs	84	6,426
<u>Bag costs</u>	<u>12</u>	<u>935</u>
Total costs	96	7,361
Sales Revenue	120	9,180
PROFIT/MT	24	1,819
PROFIT/ha	60	4,591

Local Trader: Haul distance, 300 km

Purchase price	120	9,180
Transport costs	27	2,027
O/Heads + Capital	20	1,530
<u>Selling costs</u>	<u>25</u>	<u>1,913</u>
Total costs	192	14,650
Sales revenue	220	16,830
PROFIT	28	2,180

Commercial Miller: TH/put 13 MT/hr

Cost of maize	220	16,830
Milling costs	55	4,284
Packing costs	11	803
<u>Other costs</u>	<u>12</u>	<u>917</u>
Total costs	<u>13</u>	<u>956</u>
Gross Revenue	311	23,790
PROFIT	380	29,070
	69	5,280

Retailer: M/meal packed in 25 kg bags

Cost of M/meal	380	29,070
<u>Transport</u>	<u>3</u>	<u>230</u>
Total costs	383	29,300
Gross revenue	405	30,983
PROFIT	22	1,683

Sale price of 25 kg Mealie meal 8,852

Assumptions

- Ex. rate US/US\$ 1 = ZK 850
- Maize yield, 90 kg bags/ha 28
- Maize yield, MT/ha 2.5
- Mealie meal price average of Breakfast/Roller

E.4 SMALLHOLDER
MARKETING CHAIN:
MAIZE, SUNFLOWER
AND COTTON

E.4.1 Maize Market Chain

Maize is the most important staple crop in Zambia, and is produced mainly on small farms of five hectares or less. The market chain shown opposite, is based on a high level of smallholder management, which includes fertilizer inputs and assumes sufficient rainfall to achieve high yields.

This example assumes cash payment to the farmer, less input costs, and a provision for a delay of two weeks in payment by the miller.

Transport costs are based on a haul of 300km, typical from Central Province to the Copperbelt. However, haul distance can vary enormously, and hauling from Eastern Province to Lusaka would cost approx US\$51 per tonne. Milling costs are based on a maize throughput of 13MT per hour, running at 75 per cent efficiency, selling mealie meal at the mill gate. The retailer covers transport to his outlet. Retailer profit is based on an average price between breakfast and roller meal.

E.4.2 Sunflower Market Chain

EXAMPLE CASH COSTS 2
Sunflower Market Chain
Cost and Profit per MT
March 1996: Central Zambia

<u>Input Level</u>	<u>Low</u>	<u>High</u>
<u>Farmer Cost/MT Output</u>	<u>US\$/MT</u>	<u>US\$/MT</u>
Land preparation	75	40
Seed	12	16
Fertilizer	0	107
Total Costs	87	163
Sales revenue	160	200
PROFIT/MT	73	37
PROFIT/ha	29	29

Processor/Out-grower: Haul = 300 km

Purchase price/MT	160	160
Grain bag 20/MT	8	8
Transport @ US\$0.5/km/M	15	15
Processing @ 5% sales	17	23
Packing costs/MT	34	34
Sales costs/MT	5	5
Total costs/MT	239	285
Oil revenue/MT	264	396
Cake revenue/MT	80	60
Total revenue/MT	344	456
PROFIT/MT seed input	105	171

Assumptions:

- Sunflower seed yield, MT/ha	0.4	0.75
- Oil extraction yield	22%	33%
- Cake extraction yield	40%	30%

- Low input column, No fertilizer used
- High input column, 200 kg D-comp. fertilizer
- Ex. rate: US\$ 1 = ZK 1,150

This example examines the costs and profits from the growing and processing of sunflower. The low input level assumes the use of local open pollinated (OP) seed of known low oil content. Conversely, the high input column assume the use of seed with potential oil extraction rates of 33%, as opposed to 22% for the local seed. No fertilizer is used in the low input regime, while 200kg per ha of compound fertilizer is used in the high level.

Yields are 0.4MT per ha for the low input and 0.75MT per has at the high input level. The on-farm prices are assumed as US\$160 per MT for the local variety and US\$200 per MT for improved. At these assumed prices, the farmers' profits per MT are US\$73 and US\$37 respectively, while profit per ha are similar. In both cases, ox-ploughing at US\$30 per ha is assumed, as land preparation clashes with the essential hand weeding of maize, as a priority for the small farmer.

The processors' profits per MT of seed is much greater for the high quality varieties, either OP "Record" grown and prepared specifically as seed, or an introduced hybrid, and this would allow for an even higher

price differential based on oil content. Sunflower seed can be processed very profitably using a ram press, as shown in Section C.2.2, an extraction method which also helps to satisfy the urgent need for cooking oil at village level. An added benefit is the production of oilseed cake, the value of which is dependant upon the number of local livestock available to use it.

Currently, sunflower is a minor crop in Zambia with annual production of some 10,000MT. There is tremendous scope for increasing this output, especially if major processors offered seed and fertilizer to out-growers on credit, together with prices reflecting higher oil content.

The explanation of the higher returns from lower input mostly lies in the fact that the small farmer theoretical maximum yield is reduced by late planting, inconsistent rainfall, poor weed control, low yielding seed, etc. To make a greater profit using inputs such as fertilizers, growers need to closely balance input cost with returns. Given the number of production constraints, it is difficult to assume that the grower could see the positive economic returns by the use of fertilizer alone.

The US\$160 per MT price paid for the local variety sunflower seed is low by today's world market price. However, the oil content is also half of world market standards, thus not an efficient raw product for the processing industry to use. For growers in the developed world, sunflower production is a low margin, high volume crop. In many good growing regions, 2.5 MT per ha is considered a very good yield using high input commercial farming methods.

In the processor part of the market chain, it is assumed that the crop is purchased and hauled in the processing company trucks. The total costs for the low input growing regime of bagging, hauling, processing (includes caustic soda refining), consumer-ready packing, and selling is US\$239 per raw product tonne of plant input and US\$285 for the high input system. From one input tonne, oil sale gross revenues equal US\$264 and US\$396, and cake gross revenues equal US\$80 and US\$60 respectively.

Thus, the total gross revenue generated per tonne input is US\$344 and US\$456, and profit per MT input is US\$105 and US\$171 for the low and high input regimes respectively. The selling price is based on market conditions as of mid-March 1996 in Central Province.

E.4.3 Cotton Market Chain

Zambian cotton is produced mainly on small (0.4 - 2.0 ha) farms in Southern, Central and Eastern Provinces. MAFF statistics show a peak in 1989 of over 100,000ha yielding 58,500MT of seed cotton, dropping to 60,000ha and 26,000MT in the 1992 drought. The final MAFF forecast for 1994-95 was 35,000ha and 15,500MT seed cotton, although the gin figures for the 1995 crop were 60,000ha and 36,000MT.

On average, small farmers grow about one hectare of cotton, which would give a return for labor inputs of US\$77. A larger farmer at Chipata, using employed labor could grow two or more hectares at a higher profit of US\$99 per hectare.

The very low yield of 500kg per ha for the Mumbwa area can be explained by low rainfall and poor farming, the maize crop always taking precedence. Competitive 1995 prices at the Mumbwa gin have encouraged farmers to continue growing cotton. Some small farmers see cotton as supplanting maize as their main cash crop. Commercial farms in the same rainfed conditions achieve yields of

SMALLHOLDER EXAMPLE CASH COST

Cotton Market Chain
Cost and Profit Per MT

	<u>Mumbwa</u> <u>Yld 0.5 MT/ha</u>	<u>Chipata</u> <u>Yld 0.9 MT/ha</u>
Seed	15.0	8.3
Land preparation	60.0	55.6
Solubor	12.0	6.7
Dimethoate	15.0	8.3
Cypermethrin	24.0	20.0
Fertilizer	---	44.4
Sprayer	40.0	22.2
Labor - family	(100 m.d.)	(50 m.d.)
- employed	---	44.5
Total Cash Costs	166.0	210.0
Value at Farm Gate	320.0	320.0
@ USUS\$ 0.32/kg		
PROFIT/MT	154.0	110.0
PROFIT/ha	77.0	100.0

Transport and Marketing Per MT Seed Cotton Operation

	<u>Ginnery</u>	<u>Contractor</u>
Bales and handling	10.0	10.0
Local transport	30.0	12.0
Long distance transport	---	60.0
Operating expenses	30.0	30.0
Administration charges (direct)	10.0	20.0
Finance charges	---	30.0
Total Operating Costs	80.0	162.0
Cost of seed cotton/MT	320.0	320.0
TOTAL COST @ GIN/MT	400.00	482.0
PURCHASE PRICE @ GIN/MT	550.0	550.0
PROFIT/MT	150.0	68.0

Ginning USUS\$ 200/MT, of which variable are USUS\$ 50.0 and fixed USUS\$ 150.0.
Ginning out-turn is 40% lint and 56% fuzzy.
Exchange rate: USUS\$ 1 = ZK 1,000

2 MT per ha, and 4 MT per ha from irrigated cotton. Thus, the costs based on yields of 900kg per ha probably represent better farmers' profit margins, which is really the return for family labor. Lonrho, which owns four of the six gins, and has a sound input supply program, estimate for 1996 that 62,000ha of smallholder and 24,000ha of commercial cotton, (a total of 86,000ha) will yield 62,000MT of seed cotton.

With good rainfall, an average yield of 600-700kg per ha is possible for small farmers, which would put Lonrho on target to average one MT per ha by the year 2000.

Clark Cotton is currently buying and upgrading the LINTCO Chipata gin in Eastern Province, a high potential production area. Swarp Agricultural, a subsidiary of Swarp Spinning Company, who has 4,000 out-growers in Central Province, near Kapiri M'poshi, plans for a gin based in Kabwe, producing lint for its expanded spinning mill in Ndola.

Such competition among buyers can only be good for the industry. Subject to no late and severe pest outbreaks, the 1996 crop should surpass the 1989 record. There are local, regional and overseas markets easily able to absorb the quality of lint produced, and Lonrho have guaranteed a minimum price of

US\$0.31 per kg to their out-growers. In practice, the ginnery pays higher prices for better quality seed cotton, based either on lint quality and/or general cleanliness etc and for bulk supplies from one grower.

ANNEX F

Regional Markets for Zambian Agri-exports

F REGIONAL MARKETS FOR ZAMBIAN AGRI-EXPORTS

Despite Zambia's great potential for agricultural production, exports of agricultural produce to the region have been negligible over the past decade or so, as can be seen from the table (following page).

Most expansion has been as a result of foreign investment (or Zambian firms with access to offshore funds) and rapidly developing linkages with foreign companies and markets.

Of these export developments, smallholder involvement has not been great, informal maize exports to Zaire and Angola amounting to 50,000MT - 100,000MT being the exception. Indeed the regional flows have typically been in the other direction, as Zambia has failed to satisfy its internal demand. Even in maize (the focus of Zambia's agricultural production for decades) the country has imported from Kenya, Uganda and South Africa in the past couple of years. Recent exports of soya and sorghum in response to sudden shortages (to South Africa and Botswana respectively), while encouraging, do not at present indicate a secure market as domestic demand for these products is not satisfied (assuming the Premium soy crushing facility is successfully privatized) and recent tariff reform on soy to South Africa is likely to favor the South American soy producers who benefit from enormous economies of scale.

As an indication of trade with South Africa, the 1994 trade balance was a US\$293 million deficit, with total exports representing only US\$29 million. Zambia's liberalization and South Africa's slow pace of reform in trade has probably exacerbated this scenario since 1994. Indeed, some business interests in Lusaka are calling for greater protectionism in response to South Africa's slow pace of reform.

Furthermore, the trade with Zimbabwe has shown similar trends as Zimbabwean exports have tripled since Zambian liberalization without much change in Zambian exports to Zimbabwe.

<i>Export Value (US\$ mil)</i>	<i>1987/89 Av.</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>
<i>Sugar</i>	<i>3.1</i>	<i>6.1</i>	<i>4.9</i>	<i>13.6</i>	<i>14.6</i>	<i>21.2</i>
<i>Cut Flowers</i>	<i>0.3</i>	<i>1.2</i>	<i>1.9</i>	<i>2.9</i>	<i>5.5</i>	<i>9.1</i>
<i>Tobacco</i>	<i>3.5</i>	<i>4.2</i>	<i>9.6</i>	<i>8.1</i>	<i>8.1</i>	<i>3.9</i>
<i>Cotton Lint</i>	<i>4.6</i>	<i>4.6</i>	<i>10.7</i>	<i>5.5</i>	<i>7.2</i>	<i>3.5</i>
<i>Coffee</i>	<i>1.3</i>	<i>2.0</i>	<i>2.2</i>	<i>3.5</i>	<i>2.8</i>	<i>3.0</i>
<i>Fresh Vegetables.</i>	<i>2.5</i>	<i>4.3</i>	<i>6.6</i>	<i>2.9</i>	<i>2.4</i>	<i>2.4</i>
<i>Hides/Skins</i>	<i>0.5</i>	<i>1.0</i>	<i>0.7</i>	<i>0.4</i>	<i>1.3</i>	<i>1.2</i>
<i>Wood Products</i>	<i>0.3</i>	<i>0.8</i>	<i>0.5</i>	<i>0.6</i>	<i>0.6</i>	<i>0.9</i>
<i>Animal/Fish Products</i>	<i>3.2</i>	<i>2.3</i>	<i>1.2</i>	<i>0.5</i>	<i>0.7</i>	<i>0.4</i>
<i>Other Primary Products</i>	<i>2.9</i>	<i>3.7</i>	<i>0.2</i>	<i>2.8</i>	<i>6.9</i>	<i>14.2</i>
<i>Other Processed Products</i>	<i>0.2</i>	<i>0.1</i>	<i>0.0</i>	<i>0.6</i>	<i>0.5</i>	<i>1.0</i>
<i>Total</i>	<i>22.3</i>	<i>30.2</i>	<i>38.5</i>	<i>41.4</i>	<i>50.6</i>	<i>60.8</i>

In the medium- to long-term, the liberalization of agricultural production in the whole region and significantly in South Africa, will mean that production will shift from the drier lands of the south to the more appropriate soils and climates of the north - especially Zambia, Angola and Northern Mozambique. This is likely to be especially true for low value coarse grains. South African agri-processors are likely to stimulate this process in order to secure their existing industries' requisite supplies as well as penetrate new markets. Despite foreign exchange restrictions, South African milling companies have already invested in Botswana, Mozambique, Malawi and Zambia (though not in Zimbabwe because of continued regulation). On a purely comparative advantage basis with a truly liberalized regional trade regime, Zambia would supply Zimbabwe, which would in turn supply South Africa with maize. At present, World Bank estimates of Zambia's comparative advantage in the region suggest that exporting should not be a priority, although there is plenty of scope for maintaining production which satisfies local demand.

Specifically, South Africa will move from being a maize exporter to an importer - though the pace of this change depends on the ability of farmers there to react to new market conditions and the clarification of regional trade regimes. For example, the 1994-95 season saw Zambia liberalizing its maize trade but because this was not matched by South Africa and Zimbabwe, Zambia had to reimpose export restrictions in this period of deficient regional supply. Some of this expected South African deficit will be met by imports from outside the region, especially USA and South America, but the highly populated areas in the north of the country present a potential market for suppliers from neighboring countries including Zambia.

As regards industrial crops such as cotton and tobacco, strong world prices at present have stimulated limited investment in Zambia, Malawi and Mozambique with returns to smallholders being significantly above other crops. South Africa again represents a market for these products, more so as their own production decreases. However, these crops do not depend on a regional market, but are also easily sold outside of the region (as already happens).

Weak sources of finance and ambiguous land lease rights have encouraged the growth of outgrower schemes for the development of these crops. If these constraints relax, growers and local businesses should progress to a situation of financing the whole production and even marketing process, leaving ginning and exporting to the larger companies.

In the past, Zambia had a reasonable presence in both the cotton and tobacco industries. In the early 1960's, Zambia was the region's largest producer and now can hardly justify an auction floor. Both show signs of recovery, as the country relaxes its emphasis on maize production. At present, these crops show the greatest potential for expansion and an increase in income for smallholders.

Cotton production stood at 30,000MT in 1993. Liberalization has encouraged expansion and this year's estimated crop is 80,000MT. This satisfies some domestic demand and the residual is usually transported to Durban for export or retained for the South African textile market. Zambia's production has suffered from years of neglect under the parastatal, LINTCO. Its privatization has attracted investment in the industry from the existing Lonrho operation, as well as domestic textile companies and South African ginners. There are many factors which explain this expansion. Zambia's soils and climate render production competitive in the region, even at the low yields presently experienced (this was 820kg per ha in 1987-88 and is now 575kg per ha). Cotton's high value alleviates somewhat the high cost of transport. Zambia's current trend for outgrower schemes favors non-edible crops because of the problem of side-marketing. Finally, research and other expertise is available from neighboring countries, some of which are also home to Zambia's foreign owned-operators.

Tobacco production now represents the greatest return to smallholders in Zambia, and production is increasing. Last year's exports of US\$6 million are expected to be increased to US\$8 million this season, though access to finance is inhibiting the full realization of potential. Smallholders are important in burley production while commercial farmers concentrate on Virginia.

The Tobacco Association of Zambia's monopoly on marketing has recently been undermined by the breakaway of the important Eastern burley growers. This competition should ensure greater returns to growers in the long-term, with positive implications for production. Nevertheless, the lack of finance and extension is still a great constraint on production despite EU funding of US\$1 million into this area, albeit mostly for Virginia growers.

With regards to oilseeds, there is a regional production deficit in all oils, with Zambia usually importing about 67 per cent of its requirements. South African buyers offered good prices last year for soy in the region which has stimulated plantings this year. However as the tariff on oilseed cake

is relaxed from US\$65 per MT to US\$15 per MT in South Africa it is questionable to what extent regional growers could compete with South American imports. In addition high overland freight rates certainly put regional growers at a further disadvantage in supplying refiners in South Africa. There may, however, be an opportunity to supply the industry in northern South Africa, as long as South African freight rates remain high. However, Zambian producers have never satisfied domestic demand, and smallholders realize a relatively low rate of return on soy production. Demand is low at the present (about 40,000 MT), as livestock was severely depleted during the drought years. Soy is not traditionally crushed for oil in Zambia.

Certainly there is great scope for the expansion of production of sunflower seeds to satisfy domestic demand in Zambia, though the status and capacity of the domestic refining sector is still unclear as the privatization process has not run its full course. This will depend on the successful privatization of Premium Oils, and whether the new owners will use it for the processing of oilseeds (which will probably involve the organizing of outgrower schemes in sunflower to secure supplies) or simply as a depot for imported oils. The other major Zambian facility, ROP, is now owned by Lever Brothers and is used for the production of laundry/toiletry products rather than food oils. Present returns on sunflower are good for smallholders, and its drought resistant quality gives it another advantage. The recent spread of small-scale oil presses has also provided a local market for many growers.

The competitiveness of agricultural producers in Zambia, indeed in the whole region, is in a state of flux. Rapidly changing policy environments, droughts, political unrest, management and infrastructure have traditionally distorted the basic truth that climate and soils in the northerly areas in the region (including most of Zambia) are most appropriate for agricultural production. The recent reforms to policy across the region indicate a shift to these areas, especially North Mozambique and Zambia. However, this shift is at present tentative with little significant investment. However, the trend is positive and presents significant hope for the development of agri-business in Zambia.

F.1 SOUTH AFRICA BEFORE AND AFTER AGRICULTURAL SECTOR RESTRUCTURING

South Africa is the key to the region's development. Its stability will determine the level of investment both there and in the region as a whole. The transfer of power has initiated a move away from a highly regulated economy to one which is adjusting to competition from the rest of the world.

Despite South Africa's reputation as an agricultural giant, it has only 10 per cent arable land, low and irregular rainfall, poor soils and long, expensive distances to market. Labor costs and strife also place it at a disadvantage regionally. Its heavily subsidized and protected agricultural sector is now in the process of liberalization.

South Africa has traditionally been regarded as a closed economy for Zambia's agricultural exports, though opportunities are now opening up. Import restrictions have been relaxed in the past couple of years. Imposing tariffs has replaced many quotas and bans, though the system still lacks

consistency. The recently determined minimum market access rules display a degree of complexity as the Ministry of Agriculture attempts to alleviate the effects of change on existing operators and manufacturers. It is predicted that significant imports of oilcake, beans, malt extract, baby mixes, livestock and dairy products will enter South Africa in the next year. Larger firms have already sold livestock and basic grain production holdings as a result of the new environment. The National Maize Producers Union is advising its members to diversify. The co-operative sector's near monopoly on grain storage is also adjusting to competition as they privatize and seek regional grain sources. Processors also have overcapacity and are closing milling facilities. Perhaps most significantly, the United States is expanding its domestic production of maize, wheat and oilseeds and South Africa is included in the enhancement program for grain and oilseed export.

Already, South African millers have invested in facilities in Zambia, Botswana, Mozambique and Malawi. Bonnita is poised to take a significant share of the Zambian dairy business. Shopright Checkers has opened three supermarkets in Zambia with four more to follow this year. They hope to move from sourcing vegetables in South Africa to Zambia in the near future.

South Africa's 1995 White Paper on Agriculture declares an intent to develop the region's agriculture. Certainly its managerial expertise and greater ability to finance investments would be theoretically beneficial to regional development. At present, plans to "export" farmers to the more unpopulated areas of Mozambique and Zambia are in a developed phase though the economic justification may be ultimately hampered by political considerations.

South Africa's transformation is likely to see a move in the medium to long term from maize production into game ranching, sorghum and oilseeds such as soy and sunflower. However, this process is progressing slowly so as not to disrupt production too dramatically. For example, the Maize Board is still the sole legitimate exporter although this is unlikely to remain so for long. It ought to be noted that there has been a long term reduction in per capita maize consumption in South Africa. The 1970's saw this at a level of 140kg per year. Since 1986 this has been below 100kg per year. Nevertheless most estimates of this year's maize harvest will see a surplus of approximately 2 million MT (mostly white), though how much of this will find its way into reserves remains to be seen. Farmers are now paid a premium for white maize and some are consequently moving out of yellow maize production.

South Africa is a deficit cotton producer. In the past, this has been made up with imports from West Africa. Regional liberalization is now providing opportunities to source regionally with South African companies investing in schemes in Malawi and Zambia. Liberalization will see a movement out of domestic cotton production and also, significantly, tobacco.

As regards oil seeds, the high tariffs on imported meal are now being relaxed from US\$66 per MT to US\$15 per MT so the incentive for domestic crushing is not so apparent. It is likely that crude oil will be imported and refined in South Africa (probably from South America). Last year's demand for soy in the neighboring countries was mostly from one crusher north of Johannesburg. Crude palm oil cheaply imported into Dar es Salaam and Beira also works against any large increase in

regional soy production. However, the market for sunflower is still likely to remain buoyant (imports into south Africa have increased from 50,000MT to 200,000MT in the last few years).

Finally, South Africa supplies fruit and vegetables to Zambia not only through the retail chains established there (where quality and guaranteed delivery are important) but also by small traders accessing the Johannesburg wholesale markets and shipping to Lusaka.

F.2 MOZAMBIQUE

Mozambique's potential for agricultural production is high. The recent civil war, however, has left much of this productive potential in ruins. Emergency aid (including food) is only just coming to an end and development aid only just beginning. Even during the civil war, Zambia did not export any significant amount of agricultural produce to Mozambique, though Zambian maize did reach displaced Mozambiquans in Malawi. Prospects for future Zambian exports do not look favorable. The north of the country has similar climatic and soil conditions to Zambia and an even cheaper labor force. It is likely to be a significant exporter of agricultural produce. The food deficient south of the country is remote from Zambia and is likely to be supplied from the north, South Africa or the world markets which can easily deliver to the populous port cities.

At present, only eight per cent of the country's 36 million ha of agricultural land is exploited. In addition, 3.3 million ha have potential for irrigation (only 300,000 ha are irrigated at present).

The north is generally in surplus but poor infrastructure has hampered deliveries to the south. However, the past season has seen the emergence of informal traders taking advantage of trucks, returning to the south after delivering processed goods (back haul). Preliminary estimates by USAID indicate that 100,000 to 150,000MT of produce (predominantly maize and beans) was shifted south last season. However, it is still likely that Mozambique will look to Malawi, Tanzania and even Zambia to off-load some of its expected surplus in the coming year. Much of this may well cross borders informally. In the past, especially in 1992 and 1993, the high levels of donor food aid severely distorted the Mozambique market, though this is decreasing as the country emerges from the effects of war. This year's surplus should see the suspension of all food aid.

Cotton in Mozambique is re-establishing itself after the war. Favorable concessions to joint ventures (mostly sourcing through contract farming) and subsidized donor fertilizers have kick-started this industry to some extent, though the removal of subsidies, land issues, controversially determined national prices, poor infrastructure and the emergence of informal side marketing is hampering progress. Low productivity therefore still characterizes the sector, as foreign partners in joint ventures keep investments to a minimum in the fragile political environment. However, potential is high should inputs and extension be coordinated properly. Access to world markets through nearby ports also gives an added advantage.

South Africa is also looking to sell into the nearby south of Mozambique, with significant investments already being developed to improve infrastructure along the "Maputo Corridor". Many

agri-business products are already being exported by South Africa. These include seed, fertilizers, feed, machinery, chemicals and processed food. As with Zambia, South African farmers are expressing interest in moving to Mozambique.

F.3 ZIMBABWE

Zimbabwe's developed commercial farm sector (together with good infrastructure and some protective trade measures) has ensured a generally self-sufficient agricultural produce sector, including relatively sophisticated agri-processing facilities. As a result, there are few agricultural trade opportunities for Zambia into Zimbabwe. At present, Zambia's resources are starting to be exploited by Zimbabweans with their superior managerial skills and trade connections, though hampered by outward investment controls. State subsidies have also resulted in Zimbabwe aggressively marketing their produce in the region, with the exception of South Africa which still maintains prohibitive tariffs on Zimbabwean agricultural produce.

Opportunities for Zambian farmers are likely to arise as Zimbabwe's maize farmers (currently satisfying domestic demand with a small surplus in a normal year) adapt to a more liberalized domestic commercial environment (mills will be able to import freely from January 4, 1996) and diversify into other products. Water shortages and therefore the need for irrigation investments will tend to cause the production of higher value crops such as soy and wheat, though caution is exercised at present as water levels are low even for irrigation and horticultural products (with an eye on the Zambian market among others). Recent financial irregularities in the Grain Board and bad purchasing policies in a deficit year will no doubt add to the process of liberalization.

The reform of the external trade regime is a constant theme of most Zimbabwean businesses, though this is unlikely to occur without significant changes in South Africa. Whether this will be generalized to regional reform or confined to a bilateral agreement with South Africa is still unclear despite being tabled at recent SADC meetings. South Africa's improved bilateral relations with Mozambique has already signaled to Zimbabwean producers that future South African market share is not a foregone conclusion.

Cotton production in Zimbabwe is traditionally export orientated although domestic demand has increased in recent years. Forty per cent of the crop is grown on commercial farms, the balance on communal farms.

Production should increase from its present level of 92,000MT as the Cotton Marketing Board is determined to promote both commercial and communal growers.

Tobacco production in Zimbabwe is virtually all carried out on commercial land. The industry is thriving thanks to strong international prices. There is talk at present of opening another auction floor in Harare, though this may be a political move to accommodate black growers rather than a reflection of industry expansion.

Cut flower production has grown rapidly in recent years. Export revenues could attain the levels of tobacco exports if expansion plans are realized. Zimbabwean producers are also imparting their skills in Zambia and have been instrumental in developing the also rapidly expanding Zambian industry.

At present, Harare is not a delivery point for South African agricultural commodities but this could change this year, although most trade will bypass the commodity exchanges as processors will deal directly with farmers.

F.4 MALAWI

Malawi has traditionally been regarded as an expensive source of agricultural products and therefore regionally insignificant for agri-business with the exception of tobacco exports. It was self-sufficient in maize but is now estimated by WFP as structurally deficient by approximately 100,000MT. Zambia, Tanzania and/or Mozambique are well positioned to take up this shortfall immediately. At present it seems that a significant amount of maize trade in these four countries is carried out informally across the border. Malawi's deficit, however, must not be regarded as a foregone conclusion. Seventy five per cent of maize plantings are open pollinated, and with the recent doubling of maize prices to producers and greatly reduced donor support, it remains to be seen how smallholder production will respond.

Land hunger is a constraint to increased production. Most arable land is farmed with maize production accounting for 80 per cent of hectareage. However, recent liberalization measures have already seen the movement of smallholders into cash crops such as burley tobacco and cotton. This process is likely to continue, though its effect on maize production will depend on the adoption rates of higher yielding hybrid maize seeds.

Smallholder burley tobacco production has moved from a situation in the early 1990's where it was banned (though many smallholders did produce illegally and sell to estates with licenses) to a position now where licenses have been given for the production of 30 million kg by smallholders. Next year, smallholders will bear no quotas and in the following season there will be no restrictions on anyone in the country. Allied to this is the liberalization of marketing, which is designed to improve the farm gate price of burley although estates producing with contract growers are experiencing side-selling and are having to tighten contract arrangements to realize their investment in inputs, etc. As a consequence, the estate sector is looking to diversify into other high value crops such as paprika, yellow maize, soy, marigolds and groundnuts.

At present, Malawian tobacco producers are producing and marketing tobacco more efficiently than Zambian farmers. However, world prices are such that returns still result in the highest margins for smallholders of any crop in Zambia. In addition, a stimulation of the Zambian industry could realize similar production costs as Malawi.

Cotton plantings are increasing in the smallholder sector, albeit from a small base. Quality is consistent and there is an established market in the UK for exports. Production of cotton lint has fallen from a high of 45,339MT in 1992-93 to failing to even supply the one local textile company at present. Malawi's production shows favorable competitiveness, but present policies and its shortage of land do not indicate that it will become a major exporter in the near future, though it should figure in the government's move towards diversification.

F.5 OTHER COUNTRIES

Zaire: The Shaba province in Zaire is often regarded as Zambia's tenth province. Its 4.5 million population represent a significant market for Zambian agricultural products in normal years. Unfortunately, the closure of the province's mines has resulted in a much reduced effective demand. In addition, much of this trade is carried out informally. Recent estimates of grain needs are approximately 150,000MT. At present, only a third of this is sourced from Zambia and the balance from South Africa and Tanzania. In the future, Zambia could provide maize for the whole of Shaba and indeed other provinces in Zaire. However, there is no reason, with stability, why Shaba should not provide for its own needs.

Angola: Again, there is an active informal grain trade from Zambia to Angola. However, it is difficult to assess the figures involved and the markets provided for in Angola. Since 1990, commercial imports have fluctuated between 46 million MT and 153 million MT. Donor food aid has, in the past, proved a market for Zambian exporters (80,000MT were exported in 1996), though this is difficult to transport, given the poor state of the road between the two countries and the distance to centers of population in Angola once the border is crossed. Angola is regarded as a potential importer-exporter of agricultural produce should stability return to the country.

Tanzania: It is unlikely that Zambia could rely on the export of grain to this country, given its traditional surplus. In recent years, it has not suffered from drought conditions to the same extent as other countries in the region, and has emerged as an important exporter. However, the collection of produce from smallholders in the surplus Mbeya area has proved time consuming, so that traders cannot rely on timely supplies from Tanzania.

Botswana: Sorghum has been exported from Zambia to feed the Botswanan cattle industry in recent years. Normally, there is a 30,000MT deficit which is sourced from the Americas. Should demand still be forthcoming in the present non-drought season, Zambian producers of maize in the south would be well advised to switch into the more drought resistant sorghum, though returns for other crops are sometimes higher. It should also be noted that some South African maize producers will switch to sorghum in the medium-term and would be well positioned to satisfy Botswanan demand. Both countries' membership in the SACU adds to the likelihood of this occurring.

Zambian fresh vegetables have recently penetrated the Botswanan market, with trucks arriving in Gaborone every weekend. This trade is still in its infancy but could develop as production develops in Zambia.

Food Aid: Donor food aid has recently had a large influence in the region. It is almost impossible to predict what level of demand or supply donors will exert on a yearly basis. This year's surplus maize crop in the region will give a better indication of the free market scenario as donors reduce their requirements. However, it could be that donors purchase some of the surpluses for emergency programs in other African countries, eg, Rwanda. In the past, there have been numerous interventions by donors which have severely affected local producers and traders who have attempted to supply deficit areas at market prices. This is especially so in Mozambique because of the war, but also during the regional droughts of 1994-95 and 1992-93. In 1995, in Zambia there are numerous reports of maize sourced from Zambia, sold by donors at a reduced price in Malawi and then returned to Zambia by traders!

Nevertheless, the donor market is traditionally strong in Africa. The United Nations has also recently mandated that the present procurement rate from developing nations of 36 per cent be increased. Zambia's central location in the continent could be a significant advantage in securing some of this demand.

ANNEX G

Crops: Overview And Intervention Opportunities

G CROPS: OVERVIEW AND INTERVENTION OPPORTUNITIES**G.1 MAIZE****G.1.1 Background**

This crop is of overriding importance to the small farmers, as their staple food, and as a cash crop, occupying some 70 per cent of all cultivated land. In the 1970s and 1980s the crop was heavily subsidized, absorbing as much as 16 per cent of the national budget. The small farmer sector is said to produce 65 per cent of the total crop, with yields as low as 12 - 15 bags of 90kg each per hectare. Maize is grown predominantly throughout a climatic zone which is well suited to the crop, apart from drought years. In the wetter areas in the North leached, acid sandy soils are marginal, with low clay and humus content, requiring the use of lime and fertilizers.

G.1.2 Production

Maize yields in recent years have been for Zambia as a whole for small, medium and large farmers and for the three Provinces which produce some 80 percent of the crop:-

	Zambia	Eastern	Southern	Central
	Yield in 90kg bags per ha			
1991	16	15	15	31
1992	11	4	2	19
1993	21	29	35	39
1994	17	14	16	15
1995 (forecast)	16	15	9	19

1992 was a year of severe drought, and the actual 1995 yields may have been below those forecast.

The recent World Bank study, Zambia's Agricultural Comparative Advantage by Keyser et al. used the following yields in their DRC/MOPAM calculations:

	<u>Smallholder</u>		<u>Emergent</u>		<u>Commercial</u>	
	<u>Normal</u>	<u>Potential</u>	<u>Normal</u>	<u>Potential</u>	<u>Normal</u>	<u>Potential</u>
	<u>Yield in 90 Kg bags per ha</u>					
Mazabuka (Southern)	20	35	25	40	50	90
Mkushi (Central)	24	35	29	40	60	90
Kasama (Northern)	22	35	27	40		
Chipata (Eastern)	24	35	29	40		

The lowest yields of some 2MT per ha are expected to be from smallholders, yet are higher than the average for all growers in years 1991-1995, above. The report stated that almost 50 per cent of small emergent farmers in a study averaged less than 20 bags per ha and that “on village lands yields frequently drop to less than one mt per ha even with the use of fertilizer.” Mano Consultancy confirms that the methodology used by Keyser assumed maize yields that should be achieved by the best farmers making proper use of the inputs provided for in the DRC calculations, and ignoring drought years. The assumption of such high yields for maize greatly improves the calculated comparative advantage of Zambian maize over other crops, and over other sources of maize, and does not fairly reflect the true position.

The yields assumptions of other crops in the World Bank study were:

	<u>Smallholder</u>	
	<u>Normal</u>	<u>Potential</u>
	<u>MT per ha</u>	
Cotton (Mumbwa)	0.5	1.2
Soybean (Mkushi)	0.6	1.0
Sunflower	0.4	1.0
Sorghum (White)	0.6	2.0

These are more in line with past results. In particular cotton and soybean, which are seen as alternative cash crops to maize in their natural climatic zones, would be expected to achieve the normal yields above over all seasons, and to be more profitable than maize.

Much of the small farmers maize is grown using local varieties (only 36 per cent of the 1996 crop used hybrid seed) and little or no fertilizer. Yields may be no more than 8 to 10 bags per ha, so requiring at least one hectare for the household's annual consumption. At a higher management level, aiming for 20 -30 bags per ha fertilizer inputs are 200kg basal fertilizer and 100-150kg urea, costing for the current crop some US\$0.40 per kg, or US\$120 per ha. Hybrid seed costs a further US\$20 per ha. Fertilizer and seed may be taken on credit from a trader, stockist or outgrower contractor, to be repaid in grain or cash after harvest. At Kabwe smallholders a standard contract is for 2.5 bags of maize for each 50kg bag of urea or basal compound D. To repay the cash inputs requires 14 bags of maize at US\$10 per bag, or 15 bags on a barter system. The small farmer cannot do this with an average yield or below.

The causes of the low yields are not well understood since climate and soils in many cases are favorable. Probably the main cause is the late planting and late weeding, with fertilizer inputs not available at the right time, or taken up by weeds not maize. Based on commercial farmers' practice there is a strong case for an application of 200 - 500kg of lime per ha, before considering the use of other fertilizers.

Post-harvest losses in maize are commonly estimated at 30 per cent, with the maize weevil *Sitophilus zeamais* and other common storage pests the main culprits. Control is by using hard (flint) maize varieties, stored on the cob or dusted with insecticide. A more recent pest is the Larger Grain Borer (LGB), *Prostephanus truncatus*, introduced from Mexico to Africa, reaching Zambia via Tanzania. It requires synthetic pyrethroids or fumigation for control, only feasible in large stores, and thus posing a serious risk to the small farmer's subsistence. The control of LGB is a national problem and if its spread and build-up its rapid will require a major long-term national programme for its control. Already there is a proposal under a Technical Assistance Programme to introduce a potential predator beetle, *Teretriosomo nigrescens*, as a natural control mechanism.

G.1.3 Marketing

Marketing of surplus crop is of major concern to the small farmer, whose maize is ready only at the times of maximum supply and minimum prices. Lack of on-farm storage restricts the opportunities for small farmers to hold grain until prices rise. Their remote location and poor road infrastructure often result in high transport costs, further reducing the price that traders are prepared to pay.

After decades of fixed prices, it is bewildering for small farmers to find price differentials according to their proximity to market. To encourage increased production there must be trust between the farmers and traders and transparency in the pricing information that is made available.

It is, therefore, necessary to put the production of Zambian white maize into the context of regional and world supply and demand. In terms of world grain, the market for white maize is relatively small. In years of surplus in Zambia, it is likely that other producers in the region due to favorable rains will also be in surplus. However, Zambia does have a strategic advantage to supply its immediate neighbors and has the land resource to meet this demand. Despite the favorable macro-

economic environment, the private sector lacks the ability and the infrastructure to exploit these opportunities.

Zambia is disadvantaged in seeking alternative markets outside the region due to being the furthest from any port. In six of the past ten years, Zambia has been in deficit, and has needed to import.

Large international grain traders may have a role to play by taking forward positions and bringing greater price stability. However, there is little understanding in Zambia of the mechanisms of international grain trade and the role such companies could play. This has resulted in a feeling of mistrust of the private sector and fear of the political consequences of possible food shortages that may develop if government does not participate in grain storage in the form of strategic reserves.

On the contrary, the large grain traders have the financial muscle to pay farmers cash for their grain, they would have the technology and management skills to maintain quality in store and reduce the losses. Daily access to the international markets would allow them to hedge their positions and import or export as required to maintain supplies to the domestic market. When fully in place and proven, this would allow government to withdraw honorably from its role as holder of a strategic food reserve and importer of maize at inflated prices in periods of apparent scarcity. The freeing of the market would encourage the emergent and commercial farming sector to be stable and efficient producers, and the best of the small farmers to enter the ranks of emergent farmers.

International traders need to be encouraged to lease storage facilities and participate in the domestic grain market and to export or import as stocks allow. It is unlikely that there will be a rush of such companies to enter the small Zambian market and that it may be a gradual process over several years.

A workshop on International Grain Trade and Trade Finance is proposed by the Food Security Division of MAFF. This will give the Zambian participants an insight into the mechanisms of international trade, and how appropriate they may be to Zambian conditions. The establishment of a regional commodity market, with international rules, regulations and arbitration may serve to stabilize prices. The World Bank is considering a study to establish the optimum location, the physical and policy requirements.

G.1.4 Interventions

The problems of small farmers' maize are summarized below with, in each case, suggestions as to how they may be alleviated:

- a) Lack of specific data on farmers' production, area and yield. Data was published, until 1990, by the Central Statistics Office (CSO), but more recently collection of crop statistics and forecasting is done by the Early Warning Unit (EWU) of MAFF. The results for 1995, are still in final forecast form, and probably overstate the area harvested and production by a wide margin, in what proved to be a drought year. Strengthening of the EWU is of national importance, and statistics of small, medium and large farms should be presented separately,

to allow policy decisions to be made on a sound basis and to recognize the very different nature of the problems facing each group. Being a national exercise it is outside the scope of the USAID technical assistance project, and must be tackled by GRZ and donors.

- b) For many small farmers, crop husbandry is at a low level with yields as low as a one-fifth of commercial farmers, or of the best small and emergent farmers. Low fertility, due to mono-cropping, no rotations, lack of liming of acid soils which lowers the response to other fertilizers, late land preparation, planting and weeding, low yielding varieties and poor seed, add to the effect of poorly distributed rainfall. These problems would normally be tackled by MAFF extension services which are no longer viable, so alternatives must be found.

Soil fertility could be a specific technical assistance intervention. It would need a soil scientist familiar with maize physiology, probably international, for at least two months during the growing season, backed by a locally based consultant, who knows the crop and farmers. Additional needs would be two soil surveyors, and laboratory facilities for pH, soil macro- and micro-nutrient determinations and possibly some foliar analysis. The aim would be to define the agronomic and chemical reasons for the low yields, how these are overcome on the best farms, and how to transfer this technology to the poorer farms.

- c) Small farmers often retain their own seed due to the cost and non availability of hybrids. This limits their potential yield and reduces the response to fertilizers if any is applied. Open pollinated seed, often grown in proximity to other maize, is a mixture of deteriorating types, and should be replaced regularly. The logical step is therefore to replace it with hybrid seed of higher potential, with or without added fertilizer. The hybrids should be specifically designed for small farmer husbandry, and tailored to the rainfall patterns of each region. Seed companies are able and ready to do this if there is demand for hybrid seed, and technical assistance should be designed to promote its use. Outgrower contractors, either in maize or targeting other crops, could be encouraged to assist farmers with minimal inputs, such as seed or insecticides, and in making available fertilizers for purchase. It is felt that a farmer who buys good seed will also improve the general husbandry of his crop. ATAC could provide the contractors with information on the hybrid versus open pollinated debate.
- d) Lack of extension services is a limiting constraint. New methods, for example in newspapers, on radio and television, are the modern equivalent, and technical assistance through ATAC could be used to bring in a media expert to design and implement a programme. The seed and fertilizer companies might sponsor plastic laminated extension cards for distribution through Farmers' Associations of ZNFU and through NGO's. In some of the drier zones, publicity should be given to more drought resistant cereals, millets and sorghum, and to alternate cash crops.
- e) Lack of on-farm storage of subsistence maize, and of surplus for sale, is a powerful constraint. Losses in farm storage are said to be as high as 30 per cent. The introduction and spread of the Larger Grain Borer (LGB) adds a new parameter, and even greater urgency in

finding a solution. One possible control method, the use of a predator beetle, is already being studied, and earlier reports by NRI give a sound basis for further work. An ATAC intervention could be set up to establish the current incidence of LGB, and its likely spread, and update the recommendations in the light of LGB, and also in light of the new selling, storage and milling arrangements for maize in the market economy.

- f) Maize marketing is currently in a state of flux as a result of two serious droughts in 1992 and 1995. Government is still involved and has a perceived need for a strategic food reserve. ATAC could provide expertise for the establishment of a regional commodity exchange.

G.2 COTTON

Cotton is essentially a crop of the small and emergent farmers under rainfed conditions, yielding about 0.5MT per ha seed cotton, from an annual hectareage of 65,000ha in the years 1989 -1995. Keyser, in his World Bank study, using modest yield estimates, shows the crop as the second most profitable on a per hectare basis behind burley tobacco. Cotton inputs are of course much lower than for tobacco so that on a risk basis cotton is the small farmer's most profitable crop. Even in the drought years of 1992 and 1995 the small farmer more than recouped his cash inputs although the average yield in Southern Province at 0.27MT per ha was halved. Normal yields for small farmers are expected to rise to 1.0MT per ha in five years time with minimal fertilizer inputs. Commercial rainfed crops yield 2MT per ha and under high management and irrigation 4MT per ha of a medium staple variety.

Until 1994 the cotton industry was controlled by the parastatal LINTCO with two ginneries in Southern Province, two in Lusaka and one in Chipata in Eastern Province. Lonrho had built a modern ginnery at Mumbwa in 1986 giving a good spread of processing units each with a reasonable production hinterland. Peak production was in 1989 with 58,500MT of seed cotton from 106,000 hectares. Lonrho has now acquired three of LINTCO's ginneries, while Clark Cotton, a leading South African ginner, is buying the Chipata ginnery and upgrading its equipment. With two major well financed companies, and the spinning mills also keen to secure their lint requirements locally, the industry is well set for expansion.

The cotton industry is leading the way in the development of an outgrower relationship with the farmers. There are claimed to be 80,000 out-growers with some ties back to the ginneries or to the outgrower coordinator, who in Zambia is sometimes called the "Outgrower". The system is most advanced by Lonrho at its Mumbwa ginnery, and is based on the World Bank T and V methodology. It has proven itself since 1994, prior to which year LINTCO was the sole buyer of small farmer seed cotton. Under the Agricultural Manager, the area is divided into five zones of approximately 10,000ha, each with a Zone Extension Manager, usually with a university degree and cotton experience. Each zone is divided into 10 Centers of 1,000ha with a Center Coordinator in charge, who will also have formal training to diploma level. Centers are divided into sub-centers, managed by an Extension Supervisor, of 200 - 250ha and perhaps 200 farmers. A sub-center is split into 8 groups for extension purposes, allowing for fortnightly visits by the Supervisor, with a contact

farmer in each group. Deliveries by Lonrho of seed, fertilizer and chemicals is made to individual groups, for collection by the farmers. Collection of purchased seed cotton by the ginnery may be from the group or from individual farmers. This would form a model zone and there are many variations. The staff are often recruited from previous MAFF or LINTCO extension workers.

Lonrho Ginnery has also promoted a scheme where its agents act as outgrower coordinators. The co-ordinator, an individual or a company, contracts with farmers to supply them with inputs of seed, fertilizer and agro-chemicals on credit against purchase of their seed cotton at fair prices and to recover the costs of inputs. There are many differing standards of coordinators providing extension advice through supervisors and contact-farmers, others who give minimum credits, for example seed only, and have no cotton or extension expertise to pass on. Most inputs given on credit by agents have been backed by the ginnery, which passes on the benefits of bulk buying to the grower. Although the 1995 Agriculture Credit Act gives some protection to both the farmer and any person who advances inputs, there are no industry controls for regulating coordinators. Later in this paragraph it is suggested that such guidelines could be given to a National Cotton Association of Zambia, representing the industry.

The ginnery companies would wish to be relieved of direct dealing with tens of thousands of individual growers and the provision of extension service to scattered farmers, often many kilometers from the ginnery. They want to promote the use of outgrower contractors, who eventually will operate as independent traders.

The main services that these contractors need to deliver to farmers are seen as:

- a) Timely provision and distribution of certified or good quality viable seed for planting.
- b) Timely provision of inputs, mainly pest control chemicals and applicators, also fertilizers when farming standards allow as they will greatly increase productivity of land and labor.
- c) Primary marketing, utilizing a network of buying centers, providing graders and buyers, and early cash payments to farmers for cotton deliveries.
- d) Transport to ginneries
- e) Advice on field agronomy and pest control in an Integrated Pest Management system, which might include a Controlled Droplet Applicator, such as the hand-held, battery-operated micron sprayer.

It will be some years before outgrower coordinators will be geared to supplying all of these services, which have to be paid for from cotton sales. The level of inputs shown in the Cotton Market Chain is low at US\$83 per ha, and includes US\$30 land preparation for ox ploughing, so that the ginnery or coordinator needs to recover only US\$53 per hectare or the equivalent in value of 166kg seed cotton. In order to wean farmers from credit dependency the ginneries or their agents should become

stockists of inputs for cash sales to farmers. The ginners export lint in dollar terms, and are able to source materials at favorable prices, which should encourage cotton farmers to buy for cash.

A problem for the industry is that farmers may take credit from one or more agents, and side-sell their produce to another. Knowing the farmer, and an element of trust based on a previous dealings should lower the risk. The industry, again through a National Cotton Association, may be able to regulate coordinators as a means of reducing side selling. Unlike food crops there are no other outlets for seed cotton than the ginneries so that greater control is possible, as the ginnery will know roughly whether its agents are buying only from contracted farmers.

G.2.1 The Cotton Industry's Path Forward

There are currently two major players in the cotton industry; however, it is likely that Swarp, a Zambian-based cotton spinning company, will purchase a ginnery in the near future. In addition to these companies, there are several smaller groups which are either trading or considering investing in Zambia's cotton industry. Assuming that expansion at Lonrho, Clark and Swarp all develop as planned, it is likely that the industry will see a doubling of its capacity over the next three years, and the major challenge will be sourcing sufficient cotton to satisfy that extra capacity.

As the number of players expands, it is essential for the industry to organize itself and the formation of a National Cotton Association (NCA) has already been suggested. Although it is not the mandate of the ATAC to initiate or promote such associations, any assistance and support that ATAC can give the NCA will benefit the cotton industry as a whole.

The goals of the NCA would include the following:

- represent the industry in all its relations with government
- promote legislation beneficial to the industry
- administer funds raised by a levy on seed cotton (and imported lint) contributed equally by grower and processor
- apply regulatory powers on crop hygiene, uprooting and burning of stalks by due date, and a "close" season
- oversee cotton research, seed import control and certification, variety control, seed production

The Executive Board Membership might be:

- An Independent Chairman, with a casting vote
- Three farmer representatives from a Cotton Farmers Association, one of whom should represent coordinators of out-growers
- Three representatives from a Cotton Ginners Association, one of whom should represent the Spinners and Textile Manufacturers

- The representatives of the Farmers and Ginners would have voting rights though it is hoped that consensus rather than votes should settle any differences that arise
- One ex-officio representative from the Golden Valley Agricultural Research Trust

Two bodies, a Cotton Farmers Association and a Cotton Ginners Association have been suggested above. The Cotton Farmers Association might be sponsored by the ZNFU and be affiliated to it, thus providing a focal point. Local Cotton Farmers Associations would be needed in say Chipata, Lusaka, Mumbwa, Magoye or more regional centers where ZNFU is represented.

G.2.2 ATAC Interventions to Assist Cotton Industry Development

Short-term technical assistance is required in cotton research and some longer term funding for cotton extension. Government funding is unlikely and it is suggested that a levy, contributed equally by growers and ginners, should fund cotton research carried out under contract by Golden Valley Agricultural Research Trust with an outstation at Magoye in the drier South Zone. Cotton research could benefit from international and local specialists provided through ATAC, until levies from the industry on seed cotton are in place and increasing with higher production and productivity. Permanent senior staff requirements are a cotton breeder-cum-seed specialist, an entomologist and a cotton extension specialist.

- a) Cotton research was previously a LINTCO function and funding is needed to maintain staff and field work. On-going research should cover agronomy, entomology, breeding or variety importing and testing under local conditions with due attention to lint quality. Agronomic studies should include minimum tillage using hand only or hand and ox-plough ripping methods to promote earlier planting and better weed control. A new improved variety, developed at Magoye, is already suitable for release.
- b) An industry extension service is needed as there is no viable MAFF alternative. The industry might use selected MAFF field extension staff by motivating them through topping up wages and giving minimal transport - a bicycle.
- c) Improved seed for planting, approved under the Seed Control and Certification Institute, grown, ginned and dressed specifically as seed by the ginners. The quantity produced annually should be one and a half times projected demand to allow for inaccurate projection or early crop failure.
- d) Regulations on the uprooting and burning of cotton stalks by end of August, and a closed season until October are in force but not policed. MAFF or the National Cotton Association, if established, should have strong regulatory powers.
- e) Under-resourced outgrower contractors may be limited by shortage of funds, technical abilities and management skills.

- f) At present there is a lack of field grading and classification which is needed to induce farmers to pick early, clean cotton, to separate all dirty or stained material and foreign material (including polypropylene packing bags) thus improving the general quality and acceptance of Zambian lint on the World Market. (A previous constraint, the ability to sell in US dollar terms, has been removed by the Government's liberalization exchange policy, and allows the ginner to pay farmers in either US Dollars or Zambian Kwacha).
- g) Lack of Industry representative bodies.
- h) Training is only provided by one ginner, but there is a much wider need throughout the industry for training of trainers, extension supervisors, contact-farmers and cotton graders for field work.

It is assumed that the major ginner will train their own engineers, technicians and classifiers, and that research staff can give training to workers in pest identification and control and field inspection of cotton seed multiplication.

G.2.3 Economic Benefit

Cotton is seen as the crop that in the future will bring the greatest benefit to the largest number of small farmers. It should give good cash profits, allowing families to have economic choices never previously available. The cotton agri-business sector is strong with spare capacity planned and will spread out of the existing cotton producing areas. Marketing to the local spinning mills, to Southern Africa and into world markets is all dollar based so that even a small farmer may take payment for his crop in hard currency. Emergent and commercial farmers are increasing their production, which will help to stabilize the industry. Unlike the maize sub-sector there is no fear of interference by government in the market which should allow the industry to plan ahead with confidence.

G.3 GROUNDNUTS

Groundnuts ranks equally with cotton on area planted, each being about 10 per cent of the maize acreage. Eastern Province is the main production area for confectionery quality nuts where climate and soils are suitable and labor plentiful. The 1995 crop suffered severely from drought and a high incidence of rosette disease, a virus transmitted by aphids. Generally yields are very low at 4 bags of 90kg per hectare nationally. Rather surprisingly, considering the high rainfall, Northern and North Western Provinces consistently show the highest yields, presumably helped by the sandy, well drained soils and the plant's ability to fix nitrogen from the atmosphere.

Groundnuts are highly valued for direct consumption and in cooking for their protein content in relish to be eaten with nshima. Thus groundnuts are highly priced and hardly used for oil extraction. Groundnuts are the most important source of protein in rural diets.

If the yield data from CSO and MAFF is accurate, there is tremendous scope for improving production especially in Eastern Province. Only when production matches local demand and gives a large surplus for shelling and packing as confectionery nuts, will the industry grow. The current low surplus production results in low levels of interest by the larger traders, which in turn gives farmers little interest in increasing production. A viable critical mass must be reached to stimulate the industry.

Intervention to assist the development of the industry should include studies to: improve yields of high quality confectionery nuts; control methods for rosette disease; post harvest work on the incidence and control of aflatoxin, which usually is induced by poor drying of the harvested crop before and after threshing; and market studies to identify the optimum outlets.

G.4 SUNFLOWER

Sunflower is the main crop grown for its oil content for local consumption, but at 20-30,000 hectares annually in the last five years it is a very minor crop, grown only by small farmers. It is usually late planted on very poor land after maize mono-cropping and receives no fertilizer. Although known to be capable of yielding some crop in a very dry climate, there was almost total crop failure in 1992, when late planting in its main areas of Central and Southern Provinces was followed by severe drought. Yields realized by small farmers are usually very low, relative to the crop's potential. It is estimated that small farmers, predominantly using their own local seed varieties, produce on average 400 - 500kg per hectare, whereas hybrid sunflower, when grown under fertilizer, will produce up to 2.5 MT per hectare.

There is currently excess capacity within the oilseed processing sector in Zambia. This is due, in part, to the low utilization of the Premier Oils extraction plant in Lusaka. The paradox of the oilseed industry in Zambia is that even though there is excess capacity, there is also very high domestic demand, so much so that oil must be imported to meet consumer requirements. Several firms have expressed strong interest in expanding their existing processing capacity and/or building oil processing plants on greenfield sites, to meet this demand. Processors will need to work closely with small farmers to ensure a consistent and high quality supply of raw product for the crushing industry.

For the rural areas the future must lie in the spread of the Ram Press, which allows the direct production of cooking oil from small quantities of sunflower seed. The oil may be sold locally at very much higher value than the seed, since cooking oil is expensive in the shops. Africare, an NGO supported by USAID, is popularizing the use of Ram Presses and is also involved in the production and distribution of improved Record seed. This is an open pollinated variety, softer and with a much higher oil content than local unimproved types. Hybrid seed which can yield up to 45 per cent oil is also available.

A national programme to get growers to plant sunflower early and give the crop due attention would, if successful, prove to the small farmer that better yields and profits were attainable. The same might be said of the whole cropping system, and sunflower would form a useful rotation crop with maize.

G.5 SOYBEAN

Soybean is mainly grown on commercial farms in rotation year-on-year with dry land maize. Where irrigation is available a soybean, winter wheat, maize rotation is practiced giving three crops in two years. Soybean if charged with full fixed costs may not be very profitable but the farming system is sound, and wheat and maize both benefit from the rotation. Much of the commercial soy crop is exported to RSA where whole seed entered at favorable tariff rates. This deprives the local millers of supplies, and the poultry feeds merchants of the soybean meal which is much in demand.

The World Bank study on Zambia's Agricultural Advantage rates soybean low on the scale of crops for small farmers in particular, at normal yield levels of 0.6MT per hectare. One reason given is poor drought tolerance of the crop, so that growing it in the Southern, Central or Eastern Provinces in a drought year would be hazardous, as was proved in 1992. In the wetter areas of the Copperbelt drought is not a hazard, and with some varieties suitable for small farmers soybean could prove a better choice than cotton. At current prices of US\$250 per MT and with yields higher than cotton small farmer profits should at least equal those of cotton.

Although seed requirements are high (1,000kg per ha) compared with cotton, soybean is less technically demanding and does not require chemical sprays. The crop unlike cotton is weed competitive and labor inputs are much lower. The harvesting period is short and intensive in order to reduce shattering losses, perhaps a constraint for new growers. A major disadvantage of soybean for the small farmer is the low availability of dressed seed, or a variety that is self inoculating and not too prone to shattering. This problem might be overcome by encouraging commercial farmers to grow a seed crop for local distribution, even to act as outgrower co-ordinator and buying the produce for export or sale to the local processor. Once production in an area has built up traders will take over the marketing function.

There are a number of small or medium sized mills mainly in the Lusaka and Mazabuka areas, where there is high demand for soybean meal for animal feeds.

Soybean can be produced satisfactorily in Central and Southern Provinces in good rainfall years, though it might be better for farmers in these areas to concentrate on cotton. Soybean may also be used for direct human consumption, provided the seed is properly boiled, dried and pounded to mix with nshima.

The high protein and oil content makes for a highly nutritious supplement. Soybean is the protein source for corn-soy blends, an important but small outlet for soybean.

Soybean interventions to be considered should include: the continued selection at Golden Valley of varieties suited to hand cultivation; the supply of seed to small farmers, favoring the higher rainfall belt North of Kabwe; varietal improvement through Golden Valley, and as a component of any national extension programme on crop diversification.

G.6 CASTOR BEANS

Castor beans are simple to grow over a wide range of climate and soils and are included in the Golden Valley Farms seed program. Small farmer production/collection of castor beans is currently being undertaken in Western Province and the World Bank are considering locating a 20MT per day processing plant in Lusaka.

The main constraint to development is the toxicity of the residues which require careful separation from any other crop used for human and animal consumption. This toxicity requires specialist advice for successful oil extraction. ATAC could assist with preparing specifications, evaluating tenders, supervising the equipment supplier when he is installing the equipment and checking that the commissioning conforms to the specifications quoted in the tender. In addition, it is important to supervise any civil work for the same reasons.

G.7 DRY BEANS

Dry beans are a minor crop in Zambia, not yet included in CSO Statistics Bulletin on Agriculture. There is an ongoing FAO programme funded by GRZ and donors, Integrated Crop Management - Food Legumes of which Phaseolus beans form one legume component, along with cowpeas, groundnuts and soybeans. The project aims at improving the productivity and sustainability of small-scale farming, and as a result, better nutritional standards. The benefits to agri-business would lie in general improvement of the rural economy, resulting in higher demand for goods and inputs, and in surplus production being available.

There is a strong market demand locally and in South Africa for this high value crop. Lusaka traders have begun to develop this market, and have expressed strong interest in receiving ATAC support to improve crop production, cleaning, packing and marketing systems. If sufficient volume is reached of uniform quality and color, agri-business would follow in processing and canning.

G.8 ROOT CROPS

G.8.1 Cassava

Traditionally, cassava is viewed as a famine reserve crop and a staple of the wetter agricultural areas of Zambia. A limited amount is traded as fresh roots or dried chips for cassava eaters in the urban centers. However, it is possible to process cassava into a range of products for domestic consumption and import substitution.

The development of cassava processing would enable small farmers in the non-maize areas to have a cash crop that also provides their food security.

G.8.2 Sweet Potato

Sweet potato is widely grown in small unutilized land patches on many farms. Sweet potatoes are eaten as an alternative to the traditional nshima in the period March-August, as storage in high temperatures is difficult. It is commonly marketed on the roadside and open markets and is available before the new season maize.

G.9 SORGHUM AND FINGER MILLET

These are important traditional, drought tolerant cereal crops that have been swamped by the highly subsidized maize, even in areas where the rainfall is too uncertain to guarantee a maize crop. White sorghum and millet are also better able to produce on very low inputs, although as in all cropping systems will benefit from fertilizer. These cereals should form an important part of any food security programme.

Golden Valley has had a programme to improve productivity and has developed eight sorghum varieties, five pearl millet and four finger millet varieties. It is understood that this programme will cease in 1997.

Red sorghums are grown mainly by commercial farmers, supported by the privatized brewery.

The focus of intervention should be to increase seed production of locally adapted varieties and to encourage farmers to replace part of their maize with these cereals. Outgrower coordinators already targeting cotton could be encouraged to include sorghum seed as part of their input package, recovering the cost from cotton purchases.

G.10 TOBACCO

In the past, Zambian tobacco was much in demand in the world market, but production has been overtaken by its neighbors Malawi and Zimbabwe. Neither of these countries have any particular soil or climatic advantages. Virginia tobacco requires high levels of investment in barns, requires high levels of technical capability, and is confined mainly to commercial farmers who can carry the risks involved.

Burley tobacco on the other hand is well suited to small and especially emergent farmers, and according to the World Bank Comparative Advantage Study, is the most profitable crop that can be grown in Zambia by small farmers. Production is mostly in Eastern Province and too low, with a total area of less than 5,000 hectares, to attract more than one buyer. The crop is transferred to auction floors in Malawi or Zimbabwe.

The intervention envisaged is to encourage international tobacco companies to return and to set up outgrower schemes. These companies have a record of developing model and successful outgrower schemes in many African countries and throughout the world.

G.11 HORTICULTURE

Value Added Processing

For Zambian producers to break into the international processed pineapple market will take time and will require improvement in product quality. The market is well established with many large and dominant suppliers. Bulk concentrate and bright stock markets exist, and are suitable for Zambian processors.

There is also a market for high quality dried fruit for use in the confectionery, bakery and breakfast cereal industries. Relatively inexpensive technology exists to produce consistently high quality dried pineapple pieces for export and a sweet syrup by-product that can be used in domestic soft drink manufacture.

There is a large and growing market for fresh fruit and vegetables in the large urban centers from Lusaka to the Copperbelt. One supplier, Farm Veg, has recently opened a small wholesale business in Lusaka and hopes to expand this and possibly enter the export market. There are opportunities for the ATAC to work with a number of firms which purchase vegetables from small farmers around the urban centers. Specific technical assistance examples include improved varieties, chemical safety, packing, grading, short-term storage, and marketing. In the processing sector, technical assistance is likely to focus on improved varieties, raw product sourcing, business management, improved packing and distribution.

There is a small horticultural processing industry operating in Zambia. With the break-up and privatization of ZAMHORT, there are now approximately six companies capable of processing canned horticultural products. These firms have been plagued by shortages in raw products, poor inventory and cash flow management, and a reduction in the purchasing power of the Zambian population. The sector is enthusiastic to receive raw product sourcing, in-plant and marketing technical assistance.

G.12 OTHER NON-TRADITIONAL CROPS

Over the years, many non-traditional or new crops are reported in the international press and their applicability to Zambian conditions discussed in the local press.

For example, *Vernonia galamensis*, a wild plant indigenous to the drier areas of Africa was reported by the USDA to have potential industrial applications. The plant is day length sensitive and although it germinated, early attempts to grow vernonia in the USA failed to set seed. Research undertaken by the Coatings Research Institute in Michigan has demonstrated a functionality that allows vernonia oil to be substituted for environmentally unfriendly oils currently used in many paint formulations. Trials carried out in Kenya have indicated that vernonia is ideal for small farmers/out-growers. Golden Valley Farms are currently undertaking research into the agronomic requirements of vernonia under Zambian conditions. Research will also be required to establish if the oil can be produced at a price that would be competitive with existing paint ingredients.

New Product Development - Vernonia - 1989/92

CTS was commissioned by USAID to review published information on a new oilseed crop and visit Zimbabwe to discuss findings and conclusions of a five year agronomy research program. Sites for trials, seed multiplication and test production were selected in Kenya and field layouts prepared, along with an organization/management structure for a commercially oriented assessment. The results were evaluated and a research program prepared in consultation with the Kenya Agricultural Research Institute (KARI).

The program included the collection of vernonia seed from the wild including a visit to Ethiopia where small plots of the crop had been grown.

Cargill Research and Chemical Products Division provided CTS with background on the potential applications for the oil. This was followed by visits to the Coatings Research Institute at Ypsilanti, Michigan and to potential end users in the trade. The study concluded that a substantial market for the oil did exist if it could be provided at competitive prices.

There are numerous opportunities for agri-business to exploit the development of non-traditional crops in Zambia. ATAC will stand ready to support entrepreneurs in their quest for business growth, as well as small farmers and the national economy. It is anticipated that ATAC will be able to help businesses to access published data to quickly determine if a real market opportunity exists that can be exploited by Zambian farmers.

ANNEX H

The Agri-business And The Small

Farmer Relationship

15

H THE AGRI-BUSINESS AND THE SMALL FARMER RELATIONSHIP**H.1 WINNERS AND LOSERS IN ZAMBIA'S LIBERALIZED AGRI-ECONOMY**

The reform process so far has produced few clear winners. A greater percentage of the population have been losers on the other hand, though this may change over time as drought and the adjustment process have affected agricultural production negatively since 1992. The following table from a recent World Bank survey, summarizes the situation:

<i>WINNERS</i>	<i>LOSERS</i>	<i>MIXED EXPERIENCE</i>
<i>Small/micro agro-processors</i>	<i>Large industrial millers</i>	<i>Local transport companies</i>
<i>Export crop producers</i>	<i>Remote area farmers</i>	<i>Centrally located food growing farmers</i>
<i>Small/large traders</i>	<i>Cooperatives</i>	<i>Consumers</i>
<i>Corporate agri-business</i>	<i>Lima/CUSA/ZCF</i>	<i>Commercial banks</i>
<u><i>Factors:</i></u> <i>Elimination of market controls</i> <i>Access to/retention of forex</i> <i>Privatization /leasing process</i> <i>Specialized finance/TA lines</i>	<u><i>Factors:</i></u> <i>Elimination of market controls</i> <i>Loss of official privileges</i> <i>Higher transport/other costs</i> <i>Increased market competition</i>	<u><i>Factors:</i></u> <i>Increased market competition</i> <i>Wider range of available foods</i> <i>Food imports</i> <i>Financial market deregulation</i>

As yet, liberalization has not produced an extensive list of winners. Agri-business has generally profited from liberalization in Zambia. The privatization of many parastatals, including farms, has given agri-business the opportunity to invest in Zambia. The foreign owned firms enjoy an advantage over indigenous ones in that they can overcome the shortage of domestic finance offshore, as well as access their already established research facilities. Joint ventures are common. Examples include the Zambia Sugar Company, various cut flower dairy and poultry initiatives, and groundnut de-shelling/packing facilities. According to the World Bank, of the 100 licenses granted by the Investment Center to agricultural projects in 1994, 25 per cent involved South African companies and 20 per cent British.

Winners in the smallholder sector are those smallholders who have managed to move out of maize and into crops with higher returns.

The losers in the process are in the majority and easier to identify. Remoter farmers are now suffering the absence of a pan-territorial pricing policy both for inputs and the harvested crop. The removal of fertilizer subsidies has also impacted negatively on maize plantings which are now 18 per cent down on the 1985-90 average, with a greater fall in marketed output. Groundnut, millet and mixed beans have all increased in production, as the trend is for crops requiring less fertilizer and other variable costs. The shift to more drought resistant crops is taking place in the drier southern and western provinces. Others suffering from the absence of State protection are the larger millers.

Consumers are reacting to high mealie prices by buying the cheaper and less refined meal of small-scale millers, almost exclusively in the rural areas and also the majority in the cities. Several of the recently privatized mills are unlikely to survive.

H.2 THE LINKAGE BETWEEN SMALL FARMERS AND AGRIBUSINESS

Any smallholder not exclusively engaged in subsistence has links with some kind of agri-business, whether it be an informal trader who buys a few bags of maize or a multinational who provides inputs, extension and marketing arrangements.

Before liberalization, this relationship was generally through a parastatal. Today, it is more likely to be with a commercial agri-business company. However, since the private sector in Zambia is still in its infancy, markets in credit, inputs, extension and sales do not function efficiently. As a result, agri-businesses looking to source raw material inputs are obliged to provide these services. As inputs and extension are forwarded as unsecured credit, this arrangement is known as contract farming.

While contract farming is a common arrangement for an agri-business to secure supplies, it has now become a necessity in Zambia, as the lack of credit to smallholders would otherwise gravitate farmers towards crops requiring little or no inputs. Agri-business therefore plays an important role in facilitating smallholders to grow higher value crops.

Furthermore, under liberalization, agri-business has increasingly adopted the role of input supplier and extension service provider so they would normally have a presence at the farm gate. This will be crucial as the competitive environment increases and greater scope for side-selling results.

In Zambia, outgrowing has now developed in a number of crops. The MAFF-funded schemes through Cavmont Merchant Bank and SGS have encouraged a range of intermediaries to develop out-grower schemes including Zambian traders, farmers associations and agricultural input suppliers. At present, the limited credit available has restricted these schemes to the growing of maize, though they could easily be developed to grow a range of crops. Export crop agri-businesses have administered their own schemes in cotton, tobacco, and paprika and now other companies are also developing schemes, realizing the good market there is for these products. Other products currently grown by out-growers are soybeans, castor beans (purchased by processor in Zimbabwe), sugar

beans, sunflowers and sorghum. The number of farmers already involved in out-grower schemes is very difficult to estimate. A recent study by Mano Consultants identified 16,500 farmers (including 8,500 growing cotton for Lonrho) but this figure is now probably much higher. Lonrho itself is expanding production and other companies are rapidly developing schemes.

Side-selling is a common phenomenon of contract farming. As the contractor has forwarded inputs, this must be recouped by way of a reduced price for the crop at harvest. This provides scope for other unscrupulous traders to buy the crop. This problem will discourage the increase of forwarded credit in Zambia unless tackled properly. It will also tend to favor the forwarding of credit to commercial farmers who are easier to trace for debt recovery.

H.3 TRANSPARENCY, MARKETS INFORMATION AND THE REGULATORY ENVIRONMENT

Illiteracy, remoteness and a lack of trusted information in a period of change has rendered much of the relationship between agri-business and smallholder non-transparent. Reputable companies calculate prices paid on a World Bank recommended formula. However, the above constraints do allow for the exploitation of smallholders by unscrupulous companies and traders. Bulletins and radio broadcasts provide MAFF information on prices and other information. In this election year, the transparency of the market price may well be undermined by government interference in the market. Zambia has a long history of political appeasement by way of its maize pricing policy.

Recent changes in the Credit Act allow for the prosecution of both buyer and seller should the contracted buyer not be supplied with output. While this discourages side-selling, it remains to be seen how efficiently it can be policed.

Land tenure presents a problem to agri-businesses wishing to invest in Zambia.

H.4 CONSTRAINTS TO INITIATION AND EXPANSION OF SMALL FARMER AND AGRI-BUSINESS LINKAGE

In order of priority, the following constraints are seen as the most important to overcome should Zambian agriculture realize its potential: agricultural extension/grower skills, credit, customs supervision/control, level of technology, worker skills and productivity, transport facilities and services, policy consistency and stability, land buying/leasing procedures and seasonal labor shortages. (source: Southern Africa Agri-business Development Study 1995, World Bank).

Many of these constraints are a legacy of the old regime, which nurtured a culture of dependence. The lax attitude to credit repayment is now changing, as credit is refused more and more to identified bad payers. However, the lack of understanding of market functions is more difficult to overcome. A fully operational free market environment has still not occurred as drought and bottlenecks have tempted the government back into some market interference. Nevertheless, the private sector is playing more and more of a role, and should develop sorely lacking commercial networks and rural

enterprises in the medium-term. Furthermore, the lost skills associated with on farm storage and crop production (other than maize) and rotations should be revived as maize mono-cropping and secure marketing becomes outdated.

Contract farming has developed as a means for overcoming some of these constraints, but is risky from the point of view of the agri-business in that it is basically the forwarding of unsecured credit. Recent legislation and the increased incidence of refusing credit to bad debtors has alleviated somewhat some of these risks, but the long-term goal should be the development of a vibrant commercial sector which can assume many of the "middleman" roles now played by agri-business, so that agri-processors can concentrate on what they do best, growers can concentrate on growing and those specialized in credit, extension, transport etc can provide these services to facilitate the smooth operations of large agri-business and smallholders.

The Ministry of Agriculture (MAFF) has recognized this point, and in its maize fertilizer scheme administered by Cavmont and SGS, is really trying to develop a class of stockists (or medium sized traders) who will eventually develop into fulfilling these roles commercially and without the present subsidies forwarded into the scheme by MAFF. So far, however, many of the stockists are simply representatives of existing agri-businesses in Zambia, though the development of stockists by genuine farmer groups in some areas is very encouraging. There is a strong argument for the stimulation of farmers or crop associations to be intermediaries between growers and buyers, as only if the farmer's position is developed will production reflect Zambia's comparative advantage.

Support of some or all of these stockists and the encouragement of them to facilitate the production of other crops besides maize is possibly the most effective way to develop the smallholder/agri-business relationship. These stockists require training in business management, accounting, extension, out-grower organization, and credit access. Farmers should also be educated as to their rights and obligations under out-grower schemes, as should contractors on contract design and management.

Improvements in this direction would facilitate the movement of Zambia into the next phase of agricultural development, whereby increased business trust and a more predictable policy environment would provide farmers and agri-businesses with a greater incentive to invest more inputs (including extension) so that yields could increase in the crops already grown or a switch could be made to crops with a higher rate of return.

ANNEX I

ATAC Project Planning Workshop

Minutes and Those Attending

22 and 25 March 1996

I SUMMARY OF MINUTES FROM THE AGRI-BUSINESS LINKAGE TO SMALL FARMERS TECHNICAL ASSISTANCE PROJECT PLANNING WORKSHOP:

Friday, 22 March, 1996: Following approximately one hour of review of overhead transparencies (copies of which are attached to this document), several initial questions were posed to kick off discussion. These questions included:

- How can the ATAC facilitate the privatization of the government's fertilizer credit program?
- What is the optimum location for the ATAC (both physically and administratively)?
- Is a credit management system shared by financial institutions doing business with small farmers in Zambia a viable tool to the industry?

The first question generated the most discussion, as representatives from both the private sector fertilizer industry (Omnia Fertilizer) and the government-financed Cavmont Bank were present. It was agreed that the current government intervention in the fertilizer market is most likely a temporary arrangement. The government is likely to exit this sector in the next few years and the ATAC can be a valuable tool in strengthening the stockists (government distributors) business skills. This will help rural distributors to stay in business and service the rural community.

Omnia, in particular, was adamant that the government get out of the fertilizer business and allow the free market to service the agricultural community. Omnia stated that 70 percent of the fertilizer sold in Zambia is sold to small farmers, and as long as the government is involved, they (Omnia) are locked out of this market segment.

On the location of the ATAC, participants did not have particularly strong feelings on where to locate the project. To get a clearer picture of biases and prejudices within the agri-business community, it would be useful to discuss this question on a one-to-one basis with key industry leaders, rather than in an open forum.

With regard to developing a credit database which can track credit histories of small farmers (as well as others) in Zambia, there was interest from the Cavmont Bank representatives. There was concern from the group at large that this would be a difficult system to manage, as people in rural Zambia are very difficult to track and may apply for credit through various family members, or use other methods to hide the true identity of the person(s) receiving the credit.

Monday, 25 March, 1996: As in the earlier workshop, approximately a one hour introduction was given, using the overhead transparencies. The transparencies were given to provoke thought as to what areas the ATAC could (if sufficient demand was present) provide technical assistance in. Again, similar questions were raised as in the Friday session.

There was a long discussion on who could benefit and who the target beneficiaries were. The question was raised, "Can the ATAC assist cooperatives or other groups?" This was answered by

saying that the project does not view helping agri-businesses or groups of farmers as mutually exclusive. The ATAC can help both agri-businesses, as well as groups of farmers in almost any organizational unit. The decision as to who will receive technical assistance will be decided on a case-by-case basis.

There was some concern on location of the ATAC and potential conflicts of interest between agri-businesses and potential locations such as the Zambian National Farmers Union. This was not discussed in great detail in the open forum, but seemed to be addressed on a one-to-one basis between agri-business community members and the CTS/USAID staff after the formal meeting adjourned.

There was a general consensus that the fertilizer industry should be privatized. SGS commented that they had not yet committed themselves to pursuing a stake in the private sector fertilizer business once the government pulled out of its credit program (administered by SGS).

With regard to the database for financial institutions, there was limited discussion but again, it was felt that training in credit restructuring and management would be useful for both agri-businesses and financial institutions, but a database would need to be looked at closely before implementing.

In both workshops, there was a very positive feeling by the agri-business community that technical assistance targeted at specific problems in operations management, processing, raw product sourcing and marketing would be very useful to them. The businesses were supportive of this idea and their primary question following the workshop was "When will it start?"

I.1 PERSONS ATTENDING THE CTS & USAID AGRI-BUSINESS LINKAGE TO SMALL FARMERS TECHNICAL ASSISTANCE PROJECT PLANNING WORKSHOP - 22 AND 25 MARCH 1996

LUSAKA, ZAMBIA

1.	D. Soroko	Chief Office of Ag.	USAID/Zambia
2.	F. van der Ven	CTA, Mkt Management	FAO/MAFF Food Security Div.
3.	G. Melville	General Manager	Lonrho Cotton
4.	L. Phiri	Agri-bus.	Prog. Coordinator Africare
5.	K. Mwanamwambwa	Managing Director	Bimzi Ltd
6.	J. Mumba	Ag. Dev. Officer	Bimzi Ltd
7.	T. Lindholm	Head, Promotions	Cavmont Bank, Lusaka
8.	M. Chilufya	Promotions Officer	Cavmont Bank, Lusaka
9.	A. Fletcher	General Manager	Agric. Commodity Exchange
10.	M. Chitalu	Manager Credit Coord.	SGS, Zambia
11.	D. Lungu	Founder, Director	Dickens Company Ltd, Chipata
12.	G. Gray	Executive Director	Zambia Nat. Frmr's Union
13.	G. Godson	Chairman	Mazabuka Farmers Assoc.
14.	O. Mwewa	Business Dvlpt Man.	High Protein Feeds, Mazabuka
15.	S. Dawoodjee	Managing Director	High Protein Feeds, Mazabuka
16.	M. Miyoba	Ag. Development Officer	Barclays Bank of Zambia Ltd
17.	M. Chenkatisha	Representative	Omnia Fertilizer, Zambia
18.	S. Shambweka	Representative	Omnia Fertilizer, Zambia
19.	T. Durgan	Export Dev. Advisor	Kenya Export Dev. Project
20.	B. Mulala	GM Ag. Credit Man. Prg	Cavmont Bank, Lusaka
21.	A. Mundia	Operations Officer (Ag.)	The World Bank, Lusaka
22.	E. Mwape	Quality Controller	Zambia Horticul. Prods Ltd
23.	C. Mwafulira	Ag. Development Officer	Barclays Bank of Zambia Ltd
24.	G. Semiti	Representative	Zam. Grain Growers Assoc.
25.	P. Connolly	Managing Director	Enviro-Flora Ltd
26.	R. Stockell	Managing Director	SGS, Zambia
27.	A. Aho	Manager	Riverside Dev. Authority
28.	Jim Turnbull	Regional Manager	Cargill Technical Services
29.	David Neubert	Team Leader	Cargill Technical Services
30.	Gordon Biggar	Ag. Processing Consultant	Cargill Technical Services
31.	Joe Mulholland	Out-grower Consultant	Cargill Technical Services



**CTS & USAID
Welcomes You
to the**

**Agribusiness Linkage to Small Farmers
Technical Assistance
Project Planning Workshop**

**22 & 25 March 1996
Lusaka, Zambia**

**The Goal of Linking Small Farmers
and Agribusiness in a Liberalized Economy**

- **By providing technical assistance to agribusinesses that purchase products from small farmers we improve the efficiency of the businesses and drive demand for additional raw products. This in turn increases the potential market size and income for small farmers as well as increasing agribusiness profitability.**

Who Can Benefit From Technical Assistance

- Input Suppliers: Chem, Feeds, Raw Product
- Outgrower Contracts, Traders & Warehouses
- Vegetable Oil & Cake Producers
- Horticultural Producers: Fresh & Processed
- Fiber Industry: Farmers, Ginners & Spinners
- Agri-Sales & Marketing Firms
- Finance Institutions & Agri-Business Startups

Example Target Improvements From Technical Assistance

Small Farmers

- Crop Diversification
- Improve Quality
- Improve Yields
- Efficient Input Use
- Chemical Safety
- Increase Incomes
- Improve Nutrition

Agri-Business

- Consistent Supply
- Plant Efficiency
- Human Resources
- Product Quality
- Cost Control
- Competitive Position
- Increase Revenues

Crop Specific Technical Assistance

- **Small Farmer Cotton Producers**
- **Small Farmer Sunflower Producers**
- **Small Farmer Dry-Bean Producers**
- **Small Farmer Maize Producers**
- **Small Farmer Pineapple & Other Horticultural Crops**

Credit & Risk Management Technical Assistance

- **National Credit Database**
- **Debt Restructuring & Recovery Training for Institutions**
- **Financial & Inventory Management and Reporting for Stockists**
- **Outgrower Contractors; Accounting & Contract Management**

Debt and Equity Capital Identification and Sourcing

- **Venture Capital Funds**
- **Joint Ventures**
- **Loan Guarantees Fund**
- **Inventory Credit Promotion**
- **Commercial Debt (Re) Structuring**
- **Business, Market & Strategic Planning**

Fertilizer Market Privatization Technical Assistance

- **Strengthen Credit Worthiness of Stockists**
- **Develop Year Round Cash Spot Market**
- **Streamline Inventory Control Systems**
- **Reduce Handling, Storage and Application Losses**
- **Develop an Open MAFF Bidding Process**
- **Adjust Program Price For Import Duty (5%)
Plus a Real Interest Rate**

Example Out-Grower Contractors

Future Growth In The Agri. Sector

- Lonrho wants to be out of the direct relationship with small farmers in two years and work with only 40 outgrower contractors.
- Lyon's Ltd. currently uses a outgrower contract in sourcing its raw product pineapple inputs.
- In raw product sourcing from small farmers, it is (in many cases) more management effective to use out-grower contractors.

Post Harvest Handling

Example Technical Assistance

- Optimizing Hardware and Processes in Medium Scale Maize Milling, Oilseeds & Hort. Crops
- Strengthening Management of Small Maize Milling and Other Agribusinesses
- Formulation & Optimization of Stockfeeds
- Improved Refining of Edible Oils
- Delinting of Cotton Seed
- Crop Storage: Maize, Beans, Oils & Legumes

Post Privatization Agribusiness Activities

- Strategic Planning
- Business Operational Planning
- Cash Flow Management
- Human Resource Development: Skill & Capacity
- Marketing & Sales Training
- Raw Product Procurement

Possible Locations Agri-Technical Assistance Center (ATAC)

<u>Location</u>	<u>Concerns</u>
Ministry of Agriculture	Policy
Investment Center	Different Focus
Independent	Isolated
Non-Governmental Organization	Non-Bus. Focus
Chamber of Commerce	Non-Agri. Focus
Zambia National Farmers Union	Limited History of Small Farmer Link

ANNEX J

People met During Mission

J PEOPLE MET DURING MISSION**ZAMBIA**

1	R.Thomas	Deputy Mission Director, UDAID/Zambia	01-254303
2	D.Soroko	Chief Office of Ag., USAID/Zambi	01-254303
3	S.Donald	General Manager, Cargill Hybrid Seeds, (Z)	01-225849
4	J.Kasalo	Field Manager, Cargill Hybrid Seeds, (Z)	01-225849
5	C.Fischer	Director of Sales, Africa, Lummus Corporation	N/A
6	F.van der Ven	CTA, Mkt Mgt, FAO/MAFF Food Security Div	01-250417
7	D.Johns	Representative, CDC, Lusaka	01-253657
8	E.Mtamboh	Executive, CDC, Lusaka	01-253657
9	S.Jaffee	Economist/Agri-business, The World Bank	N/A
10	M.Drinkwater	Ass.Country Director, CARE, Zambia	01-220136
11	G.Mburathi	Representative to Zambia, FAO, Lusaka	01-252277
12	G.Melvill	General Manager, Lonrho Cotton	01-224587
13	T.Evans	Director: Corp.Finance, DEVCORP Ltd.	01-261741
14	L.Phiri	Agri-bus. Prog. Coordinator, Africare	01-227279
15	J.Paton	Programme Coordinator, Export Board of Zambia	01-222260
16	G.Scott	Partner, Mano Consultancy	01-254619
17	C.Harland	Partner, Mano Consultancy	01-254619
18	J.McKenzie	Consultant, Independent	01-254619
19	G.Wulfse	Managing Director, Meadow Feeds Ltd.	01-272705
20	G.Wallace	Executive Director, Tobacco Association of Zambia	01-286636
21	K.Mwanamwambwa	Managing Director, Bimzi Ltd	01-247353
22	M.Wright	Human Resource Manager, Bimzi Ltd	01-247353
23	T.Lindholm	Head, Promotions, Cavmont Bank, Lusaka	01-224286
24	M.Chilufya	Promotions Officer, Cavmont Bank, Lusaka	01-224286
25	A.Fletcher	General Manager, Agric.Commodity Exchange	01-228881
26	A.Sichinga	Permanent Secretary, MAFF, Food Security Division	01-250471
27	F.Javaheri	CTA, FAO/UNDP, Int.Crop.Man.Proj.	01-225522
28	K.Maramwidze	Agricultural Manager, Lonrho Cotton, Mumbwa	01-800066
29	R.Mutelele	Zone Extension Manager, Lonrho Cotton, Mumbwa	01-800066
30	S.Mainza	Ginnery/Processing Mgr, Lonrho Cotton, Mumbwa	01-800066
31	H.Munamunungu	Chairman, Mumbwa Farmers Association	01-800216
32	F.Munakombe	Chmn.O/Seeds&Food Legumes, Mumbwa Farm Assoc	01-800216
33	K.Wotela	Ass.Executive Director, Zambia Nat.Frmrs Union	01-223222
34	P.Lintini	Dir.Investment Promo, Zambia Investment Centre	01-255241
35	E.Nsofu	Investment Promo Off., Zambia Investment Centre	01-255241
36	M.Chitalu	Manager Credit Coord., SGS, Zambia	01-
37	T.Wilkinson	Managing Director, Clark Cotton, J'berg	011-836-8131
38	A.Fourie	Deputy Managing Director, Clark Cotton	011-836-8131

39	T.Isherwood	Financial Director, Clark Cotton	011-836-8131
40	J.Arlett	Marketing Director, Clark Cotton	011-836-8131
41	R.Patel	Director, SWARP Agric.Dev.Co. Ndola	02-655734
42	C.Chakonta	Ag. Dev. Officer, SWARP Agric.Dev.Co. Ndola	02-655734
43	S.Sadoki	Ag. Dev. Officer, SWARP Agric.Dev.Co. Ndola	02-655734
44	L.Kafwanda	Ag. Dev. Officer, SWARP Agric.Dev.Co. Ndola	02-655734
45	F.Mpundu	Ag. Dev. Officer, SWARP Agric.Dev.Co. Ndola	02-655734
46	R.Mistry	Deputy Managing Director, SWARP Spinning, Ndola	02-650821
47	W.Sokoni	Corporate & Audit Manager, Lyons (Foods), Ndola	02-611809
48	S.Cruickshank	Technical Director, Zambia Privatisation Agency	01-221417
49	H.Marmelstein	General Manager, Mpongwe Development Co.(CDC)	02-510584
50	J.McIndoe	Financial Controller, Mpongwe Dvlpt Co.(CDC)	02-510584
51	W.Trustrick	Arable Manager, Mpongwe Development Co.(CDC)	02-510584
52	R.Stringfellow	Consultant(outgrower), ODA/NRI, UK	N/A
53	G.Davis	Resident Rep., UN System & UNDP, Zambia	01-254417
54	R.Landless	Research Chairman, Golden Valley Ag.Res.Trust	01-223222
55	S.Muliokela	Director (Seed breeder), Golden Valley Ag.Res.Trust	01-278170
56	J.Mulila	National Proj Coord., FAO/UNDP Int.Crop.Man.Proj.	01-225522
57	J.Hanalete	General Manager, CPCU Ltd, Kabwe	05-221028
58	F.Joosten	Mkt & Info. Officer, Kabwe Smallholder Dev.Proj	05-223511
59	K.Maine	Castor Outgrower, Whitecross Farm, Lusaka West	01-235281
60	D.Lungu	Founder, Director, Dickens Company Ltd, Chipata	01-289247
61	R.Mumba	Project Manager, Dickens Company Ltd, Chipata	062-21675
62	J.Phiri	General Manager, Clark Cotton, Chipata	062-21215
63	H.Chibesakunda	General Manager, Zambia Horticult. Prods Ltd	01-241453
64	S.Humphreys	Chief Executive, Zambia Export Growers Assoc.	01-700499
65	T.Constantinou	Proprietor, Southern Oil Mills Ltd.	01-286505
66	C.Constantinou	Partner, Southern Oil Mills Ltd.	01-286505
67	D.Fischer	Proj.Man.Oilseed Pros.Proj, Africare, Oils Off.Lusaka	01-233578
68	A.Mwalusaka	Oilseeds Technical Officer, Africare, Oils Off.Lusaka	01-233578
69	B.Mudenda	Field Manager, Oilseeds, Africare, Oils Off.Lusaka	01-233578
70	P.Stevens	Programme Adviser, Palabana ADP Dev.Programme	01-264560
71	G.Gray	Executive Director, Zambia Nat.Frmrs Union	01-223222
72	N.Magande	Project Coordinator, Zam Ag Mark Proc & Infra Proj	01-250532
73	W.Simfukwe	Cred.Market Info.Off, Kabwe Smallholder Dev.Proj	05-223511
74	B.Mungabo	Provincial Coordinator, Zam Nat.Farmrs Union	05-221367
75	G.Godson	Chairman, Mazabuka Farmers Assoc.	032-30686
76	S.Burgess	Partner, TAZARA Corridor Dev.Company	01-239468
77	O.Mwewa	Business Dvlpt Man., High Protein Feeds, Mazabuka	032-30667
78	S.Dawoodjee	Managing Director, High Protein Feeds, Mazabuka	032-30667
79	L.du Plessis	Manager, Omnia Fertiliser, Zambia	01-224164
80	M.Miyoba	Ag. Dvlpt Officer, Barclays Bank of Zambia Ltd	01-228858

81	M.Toza	Acc.Relationship Mngr, Standard Chartered Bank (Z)	01-229242
82	E.Walker	General Manager, Zambia Farmers Coop.Soc.Ltd	01-221416
83	M.Amin	Manager, Farm Veg, Lusaka	01-287717
84	F.Tembo	General Manager, ZENECA Agrochemicals	01-226765
85	P.Mwansa	Staff Member, Zambia Coffee Company Ltd.	01-221591
86	D.Craig	Manager, Mkushi Agricultural Co.Ltd.	05-362191
87	M.Chenkatisha	Representative, Omnia Fertiliser, Zambia	01-224164
88	S.Shambweka	Representative, Omnia Fertiliser, Zambia	01-224164
89	T.Durgan	Export Dev.Advisor, Kenya Export Dev.Project	N/A
90	B.Mulala	GM Ag.Credit Man.Prog, Cavmont Bank, Lusaka	01-224286
91	A.Mundia	Operations Officer (Ag.), The World Bank, Lusaka	01-252811
92	E.Mwape	Representative, Zambia Horticult. Prods Ltd	01-241453
93	C.Mwafulira	Ag. Dvlpt Officer, Barclays Bank of Zambia Ltd	01-228858
94	J.Mumba	Ag. Dev.Officer, Bimzi Ltd	01-247353
95	G.Semiti	Representative, Zam.Grain Growers Assoc.	N/A
96	P.Connolly	Managing Director, Enviro-Flora Ltd	01-230634
97	R.Stockell	Managing Director, SGS, Zambia	01-255323
98	A.Aho	Manager, Riverside Dev.Authority	01-311810
99	R.Hoehle	Representative, GrainPro Inc, USA	N/A
100	J.Nkole	Operations Manager, Cotmark Ltd.	01-226528
101	P.Kotecha	Representative, B & P Group, UK (Traders)	N/A
102	H.Hichilema	Managing Director, Coopers and Lybrand	01-221742
103	A.Pope	NAO, Office of the President	01-250828
104	M.Simfukwe	NAO, Office of the President	01-250828
105	E.Voss	Ag.Adviser, EEC	01-250711
106	P.Jackson	Director, Gayatech Ltd.	01-295331
107	S.N. Ngwenya	Sen. Transport Export, COMESA	01-229727
108	P.Mutiwanyuka	Agriculture Expert, COMESA	01-229726
109	Mark Terken	MD, Cheetah (Zambia)	01-287660
110	Penroy Morris	GM, Tazara Dev. Corp.	01-700711
111	I. Fraser	Advisor, Zambia Priv. Ag.	01-223859

ZIMBABWE

112	R.Armstrong	Professor, Africa University	20-61611
113	I. Goggin	MD, ZIMACE	4-792420
114	Dr.P Maramba	Horticulturalist, Ag. Dev. Authority	4-705841
115	Dr.J Made	Dep. GM, Ag. Dev. Authority	4-705841
116	D. Zausmer	MD, Beira Corridor Group	4-739302
117	K. Dapoor	World Bank, De. Res. Rep.	4-729611
118	A.Shapleigh	Chief, Priv. Ent. Div., USAID	4-720630
119	N. Wright	Chief Economist, Comm. Farmers Union	4-791881

120	W Edwards	Business expert, Ram Press Study, CTS	
121	C. Blair	MD, Agronomic Consultancy Services	4-490134
122	S. Harrison	Ag. Comm. Merchant, Cargill	4-739313
123	D. Newman	GM, Ag. Comm. Merchant, Cargill	4-739313

MALAWI

124	L. Moriniere	Country Rep., Famine EWS	721877
125	S. Hiwaa	Ag. Prog. Officer, World Bank	780611
126	Dr. BK Patel	Ag. Officer, Rockefeller Foundation	781182
127	J. Allison	Consultant, FAO	783255
128	J. Snell	Ad. Officer, FAO	783255
129	A. Mathotho	Op. Exec. CDC	780222
130	R. Sanderson	GM, Cargill	672466
131	E. Hazledon	GM (Seeds), Cargill	765082
132	K. Rockman	Ag. Dev. Off., USAID	782455
133	Dr. G. Rozelle	Chief, USAID	782455
134	N. Christie	MD, Press Agriculture	784411
135	E. McPhearson	Farmer (contract)	
136	Dr. A. Ogutu	Regional Coordinator, Informal Cross Border Trade	02-443577
137	C. Clarke	Emergency Officer, WFP	
138	J. Engle	Project Dir., Smallholder Agri-bus. Dev. Proj.	782866

SOUTH AFRICA

139	B. Bayley	Ag. Economist, Land & Ag. Policy Center	011-403-7272
140	Dr. J. du Toit	Chief Econ., SA Ag. Union	012-322-6980
141	J. Tarica	Mill Owner (Shaba)	011-706-7366
142	T. Duvenhage	Agro-Ind. Projects, Ind. Dev. Corp.	011-883-1600
143	R.J. Otto	Ass. Dir: Marketing, Dept. Agriculture	012-319-6160
144	BvanderMerwe	Director: Marketing, Dept. Agriculture	012-319-6168
145	J. Faroux	Trader, Louis Dreyfus	011-784-6446
146	BH Randles	MD, Louis Dreyfus	011-784-6446
147	E. Brock	Ex-Chairman, Cotton Association	011-786-6963
148	D. Frost	Group Economist, Premier Foods	011-328-9460
149	R.G-Blondin	Manager, SAFEX (Futures Ex.)	011-728-5960
150	J. Wicksley	GM, SAFEX (Ag.)	011-728-5960
151	M. Adams	TA, Dept. Land Affairs	012-312-9552
152	A. Riach	Trading Manager, Cargill	011-463-3298
153	T. Coff	MD, Cargill	011-463-3298
154	S. Quigley	Client Service Exec., SA For. Trade Org.	011-883-3737

MOZAMBIQUE

155	J. Macamo	Cross Border Trade Coord., World Vision	1-429594
156	J. White	Country Rep., World Vision	1-429594
157	L Sitch	Plant Breeder, World Vision	1-429594
158	N.Jackson	Third Sec., British Embassy	1-429594
159	C. de Voest	Op. Off. Ag., World Bank	1-492841
160	F. Rohde	Food Aid Div., EU	1-490266
161	C. Lahoz	TA (Food Aid), EU	1-490266
162	A. Vicente	Fin. Dir., LOMACO	1-422126
163	R. Newberg	Ag. & Priv. Ent. Dev. Off., USAID	1-491667
164	T. Born	Reg. Rail Proj. coord & Comm. Man. Off, USAID	1-491822
165	D.Tschirley	Food Sec. Coord., Min Ag. (USAID)	1-460131
166	A. Manjate	Economist, Austral	1-430143
167	J. Hanlon	Journalist, Freelance	1-421072
168	D. Fritz	Transport Policy Specialist, SADC	1-420246
169	B. Cogill	Proj. Dir. (Food Sec. & Nutrition), IMPACT	703-807-2092 (US)
170	I.MacDonald	Country Rep. FAO	1-493410
171	J. Coulter	Consultant, FAO	
172	P. Kinney	Sen. Trader, Ralli Bros.	151-242-7500

ANNEX K

Scope of Work

Statement of Work: Business Development
Assistance to Agribusinesses with Linkages to Small
Farmers

Background:

The Government of Zambia has instituted significant agricultural sector reforms since 1991. Until that time, Zambian agriculture was dominated by a centrally controlled maize production and marketing strategy. Under this strategy, credit and marketing subsidies were provided almost exclusively for maize production. This led 80% of Zambian farmers to depend on maize as their primary source of agricultural income.

Government policy now supports more productive crop diversification as maize and other commodity prices are market determined and inputs are not subsidized. Although evidence of a producer response to market liberalization and price decontrol is skewed by drought affected data trends, hectareage planted to ground nuts and sunflower increased 11 and seven percent over the last year. Farmers now consider crop diversification as essential in adjusting to higher credit and input costs and less reliable rainfall.

Within the southern African sub-region, it appears that Zambia is unique in its ability to significantly increase cereal and oil crop production. Zambia's many neighboring countries are constrained in this respect by a shortage of productive land and water, population pressures and internal strife. South Africa, a major producer and market to the south, is traditionally a net importer of cereals and oil seeds. Changes anticipated in the South African agricultural sector in the next decade are not likely to alter this situation. Zambia is unique in the region in having abundant, unpopulated land and relatively suitable climatic conditions (i.e. like Zambia, its neighbors are subject to periodic drought).

The Zambian and international private sector's confidence in the ability to profitably operate in Zambia is increasing. All of the 1993/94 maize crop surplus of almost 500,000 tons was collected and traded by private operators using commercial financing. Two major multinational seed and fertilizer firms distributed half of all sales on credit. A local trader distributed 6,000 tons of in-kind fertilizer credit to smallholders in exchange for her access to their marketable surpluses. In 1993/94 South Africans imported soyabean production and provided guaranteed markets and pre-financed - negotiated prices. Lonrho's expanding cotton outgrower scheme provided production inputs on credit to 8,000 farmers, paying over \$1.2 million dollars for their output. In a local daily, Food Botswana recently advertised its desire to buy 10,000 tons of Zambian sorghum.

Government also dominated maize processing during the Second Republic. In 1991, all major processing facilities were owned and operated by parastatal companies, apart from small scale, mostly rural-based hammermills. Two large parastatal firms have also dominated Zambian oil production. All of these agroprocessing facilities are of being privatized although this will take a long time. Partially as a result of slow privatization private investment in smaller scale maize and oilseed processing is increasing.

USAID would like to see Zambia's rural families increase their incomes. As many rural families are involved in small scale agricultural production, agribusinesses marketing of small farmer cereals, oilseed, and other commodity production in domestic or regional markets contributes to rural incomes.

Therefore, business development assistance to agribusinesses with linkages to small farmers may be appropriate. These agribusinesses may be production, processing or marketing agencies servicing domestic, regional or international buyers. They may wish to increase the production and processing of crops already produced in Zambia or introduce new crops or production and processing technologies. To date USAID has been approached by a potential oleoresin production and processing scheme; a maize production, marketing and processing firm wishing to expand soybean production, processing and exporting; a small farmer maize marketing "holding company" with interests in expanding backward and forward linkages; a fruit processing firm; an essential oils and spices trade association; and others.

Scope of Work:

This scope of work's objective is to assess the potential for Zambian agribusinesses to increase small farmer incomes by servicing domestic, regional and international crop and processed commodity markets. As a result of scope of work implementation, USAID, the Ministry of Agriculture, Food and Fisheries (MAFF) and private business people will better understand the potential for beneficial small farmer - agribusiness linkages and how to support their development.

Tasks: Information should be obtained by reading background documents, obtaining copies of relevant legislation, reading newspapers, and conducting interviews. If deemed appropriate, formal survey methods may be applied. In addition to an overall discussion of issues and questions posed below, the consultants should develop at least 4 case studies describing existing agribusiness-small farmer linkages. (Note: For the purpose of this scope of work, the term small farmers refers to farmers with 5 hectares or less under cultivation.)

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1. With relation to Zambia's potential regional agricultural commodity and processed product competitors, assess Zambia's comparative advantage in small farmer cereals, oilseeds and other crop production. What regional markets currently exist for products emanating from small farmer production? What are the future prospects for those markets? For Zambian small farmer ability to compete in those markets? How does Zambian infrastructure, agricultural production and marketing technology, currency valuation, forex access, entrepreneurial tradition and investment climate affect small farmer comparative advantage? How do transport costs affect the regional comparative advantage of Zambian smallholder production? How does the availability (or lack thereof) of post harvest technology affect Zambian comparative advantage?
2. Do Zambian import, export, financial and commercial policies and regulations benefit larger, formal sector firms over smaller, informal sector firms? Which type of firms are most likely to develop linkages to small farmers?
3. What is the most important characteristics of agribusinesses that obtain significant throughput from small farmers? Are there shortages in investment or operating capital? If so, what are the impacts of these shortages? How can the government, donors and commercial financial institutions respond to agribusiness capital constraints? What could be equity's role in addressing agribusiness capital constraints?
4. Should donors consider providing financial resources to agricultural producers, rural assemblers and food product distributors via agribusiness firms? What capacities must be present to enable profitable agribusiness on-lending of commercial finance to other food sector participants? Are these capacities present in Zambia and would agribusinesses like to on-lend financing to producers, assemblers or distributors? What are the operational considerations and potential pitfalls facing agribusiness firms as financial intermediaries dealing with small farmers? What potential does this approach have for reducing lending costs, providing adequate loan recipient monitoring, and reducing intermediation risks?
5. "Marketable surpluses are more the result of favorable rains and growing conditions than conscious decisions by producers to grow more for the market." How true is this statement in Zambia? If it is true, does the unpredictability and unreliability of supply constrain the development of domestic firms that market and process small farmer production? How can this constraint be addressed? What impact do "thin" rural markets have on rural agribusiness development in Zambia?

6. How appropriate is Zambian agroprocessing capacity in terms of small farmer production? Is processing small holder production profitable? Why or why not? Does current processing capacity adequately reflect Zambian resource endowments and operating environments? Geographically, is it properly located? What technical capacity upgrading is necessary to increase profitability? Are appropriate technologies available locally or regionally or must they be brought in from outside Africa? Are potential Zambian agroprocessors with linkages to small farmers able to identify and source appropriate processing and marketing technologies? Is there potential for introducing mini-processing capacities that use intermediate technology, keep processing costs low and allow increased rural capture of value added? Could these technologies increase Zambian competitive advantage in regional trade? What is the impact of parastatal agroprocessing on small farmer linked agribusiness development? What is the current and potential impact of privatization?

7. Is there a role for government in small and medium-scale agribusiness promotion? How can government assist the private sector in identifying technology options, testing pilot techniques, and promoting adoption of successful technologies? Would this responsibility be more suitable for a trade association?

8. How do small farmer linked agribusinesses currently articulate their needs to government, lobby for policy or regulatory reform, and identify technical and financial support? Could (or does) industry representation enhance the development of agribusinesses with linkages to small farmers? Do agribusinesses with small holder linkages have an adequate voice in policy making? How high a priority should be accorded to strengthening industry/commodity associations?

9. What are the most binding constraints to the initiation or expansion of mutually beneficial linkages between agribusinesses and small farmers?

10. How will GATT affect the ability of Zambian agribusinesses to export small farmer production? How will the restructuring of the South African agricultural sector affect this ability? Is there adequate market and other information available to inform agribusiness investor or operator decisions? Is information on foreign market opportunities available? on joint venture partners? Is information on foreign market requirements (grades and standards, packaging, labeling, and desired product attributes) available?

12. Could USAID/Zambia provide cost effective support to small farmer linked agribusiness development? What form should that assistance take?

Requirements/Level of Effort: Four consultants will be required:

	Zambia weeks	U.S. & regional weeks
Team Leader/Agribusiness Economist:	8	2
Macroeconomist	4	4
Agroprocessing Specialist	8	0
Agriculturalist/Outgrower Specialist	8	0
Seminar Co-ordinator	1	0
Total:	29	6

The COP's one week in Washington will be used in gathering information from USAID, the Bank and others. The COP's second week in the U.S., in Washington or at another location, will be for report finalization and reproduction. Therefore, the total level of effort will be 35 person weeks. (Note: Within this 35 person weeks, the contractor may want to consider sending the COP to Zambia earlier than the rest of the team to facilitate contacts, arrange logistical support, etc.)

The Macroeconomist will be responsible for gathering information in southern African countries where Zambian agribusinesses export or might export commodities resulting from small farmer production. These countries include, but are not limited to, Botswana, Zimbabwe, South Africa, Malawi, and Mozambique. Therefore, an estimated 4 weeks has been allocated for Macroeconomist work outside Zambia.

The work will begin upon contract finalization. Contract Week 1 will see the COP working for five days in Washington. Contract Week 2 will see the team members arriving in Zambia. The contractor may decide that the Macroeconomist should travel to other non-Zambian destinations first. This is up to the contractor's discretion. Contract Weeks 2 through 9 will see the team members working in Zambia (or for the Macroeconomist, southern Africa). Contract Week 10 will see the COP finalizing the report in the U.S.

When the team arrives (Contract Week 2) in Zambia they will meet with the USAID Agricultural Economist. This first meeting will be to share information on contacts, orientations, logistics, etc. An initial, written work plan will be developed at this time. This will provide the basis for contract monitoring but will be updated and revised as the

scope of work is implemented.

The consultants will also meet with Ministry of Agriculture, Food and Fisheries representatives during Contract Week 2. At the end of the Contract Week 5 the consultants will brief selected government and non-government representatives, donors and USAID on findings to date. This briefing will provide an opportunity for client feedback and perhaps team orientation. This briefing will not require a draft document but should include a written outline of preliminary findings.

Deliverables:

At the end of Contract Week 8 the consultants will submit a draft final report. During Contract Week 9, USAID, MAFF and others will provide feedback on this draft final report to the consultants during one or more seminars/workshops. At the end of Contract Week 10, the contractor will submit 20 copies of the report in final to USAID/Zambia.

Delivery Schedule:

The Contractor will provide services in Zambia commencing on/around January 15, 1996 for a period of a maximum of 35 person weeks. The Chief of Party will carry out further work in the U.S.A./Washington DC for a period of 2 work weeks.

A Six Day work week is authorized in Zambia and southern African countries. The contractor will carry out work as delineated in the Scope/Statement of work in Lusaka and other areas of Zambia and southern Africa as appropriate.

Technical Directions:

The consultants will report to David Soroko, Agricultural Economist at USAID/Zambia.

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