



**The Impact of Improved Grades and Standards  
For Agricultural Products  
in Zambia**

**Phase One Assessment and Recommendations  
for  
United States Agency for International Development  
The Regional Center for Southern Africa (RCSA)**

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## **Abstract**

*The study assesses whether more effective and efficient systems of Grades and Standards (G&S) can improve Zambia's agricultural sector and expand its trade and development opportunities. It identifies key actors, both public and private, and elaborates on their roles in developing G&S. An assessment of regional and international trends and trade issues for G&S provide the background for an outline of the important opportunities and constraints. The study then briefly analyzes the structure, function, and flows of the supply chain for most of Zambia's agricultural products and, using a series of six filters, divides them into three categories:*

- 1. those with **Export Potential** (global and regional)*
- 2. those domestic trade potential that could effectively **Substitute Imports***
- 3. those with **Limited Trade Potential**, but with value for domestic productivity and social welfare improvements*

*This analysis, by identifying critical leverage points that can catalyze change, makes recommendations for commodities where G&S initiatives can be most productively applied to achieve significant improvements in trade or social well-being. Some of the most promising are presented in more detail as cost-benefit analyses. Finally, a series of cross-cutting and cross sectoral recommendations are offered for G&S improvements.*

## Executive Summary

### Relevance of Grades and Standards

Many agricultural commodities today exist in a **new business and safety environment**, one that has industrial specification characteristics, sophisticated logistics, concentration of actors, and increasingly more demanding grades and standards (G&S). As competition becomes global, markets tend to differentiate and are best served by logistically sophisticated supply chains that coordinate and concentrate information, finance, technology, and risk. These vertically integrated supply chains allow participants to achieve higher levels of service, and to capture substantial added value, but one of their prerequisites is adequate and consistent G&S.

Consumers in industrialized nations today demand increasingly sophisticated levels of quality and they are also driving a new set of standards that cover child labor issues, working conditions, and environmentally damaging processes. They are more than ever interested in processes that occur in even the most distant producer countries.

With the expanding globalization of trade, these various grades and standards help to set the ‘rules of the game’ and their implications for the participation and competitiveness of developing countries are becoming increasingly relevant. As the development and application of G&S are becoming a critical component of regional and international agreements, they have replaced tariffs as a hot political economics topic, particularly regarding sanitary and phytosanitary (SPS) issues and technical barriers to trade (TBT).

### Issues

Despite Zambia's landlocked position, its relative stability, varied agro-climatic zones, rich soils, and abundant hydrologic endowment make it an excellent candidate for agricultural development. The agricultural sector, since 1991 no longer wholly dependent on government involvement, is still adapting to this relatively new environment. To incorporate complex lessons of newly liberalized markets will take time and require new networks of partnerships and alliances between public sector, private firms, and civil society organizations. Zambia's market liberalization over the last decade has simultaneously created new problems and new opportunities:

- Farmers face increased risks and uncertainties leading to considerable production and price volatility.
- Lack of adequate market information, including G&S, diminish the ability of farmers and traders to make informed decisions, increase their risk, and raise transaction costs.
- Prohibitively high financing costs, coupled with inflation and currency devaluation, depress investment in rural areas thereby diminishing both the quality and competitiveness of the agricultural sector.
- Out of the vacuum left by the retreat of government from the agricultural sector, an entrepreneurial mindset and new, market-oriented institutions have begun to emerge along with new business opportunities e.g., floriculture, organics and export horticulture.

Zambia's volatile production patterns hinder the development of consistent export markets and agroindustries such as value-adding agroprocessing. These patterns are exacerbated by:

- Lack of adequate and timely information (production estimates, trade trends, crop prices)
- Inadequate support systems, both public (extension) and private (producers associations, retail inputs, vertical supply chain integration)
- The inability to smooth markets and improve food security by storing products (infrastructure, storage standards, financing)
- Continued distortions caused by public and NGO interventions (seed and fertilizer markets)

The shortage of capital and relatively thin domestic markets further depress the emergence of agroindustry, a subsector that is already hampered by high energy and transport costs, unsuitable processing varieties, inadequate quality, and costly production inputs and packaging.

Nevertheless, Zambia's agricultural export profile has changed dramatically over the last decade and is now concentrated on high-value crops such as fresh horticultural products, floriculture, and coffee. Fresh exports, although dominated by two large firms, are expanding to include smaller enterprises and they have spillover effects, in terms of quality standards and business skills, to the local community. Limited capacity to extend these technologies and standards, especially to smallholders, is one of the key constraints to fast growth without large capital investment. Traditional commodities, such as cotton and tobacco that experience stiff global competition, still have an important but proportionately diminishing role.

Responsibility for managing Zambia's grades and standards falls under several organizations. The Bureau of Standards is mandated to have primacy over agricultural G&S but is, by all accounts, ineffectual. This has led to an institutional vacuum that leaves the private sector to its own devices, with varying outcomes. On the domestic front there is evidence that G&S are manipulated by some buyers at the expense of growers. Where domestic commodities face competition, i.e. with certain imports or in the export market, there are typically marked improvements in G&S.

## **Findings and Recommendations**

Although private standards are common, particularly for exportable commodities, the increasing requirements, particularly those of U.S. and EU governments are difficult for many small and medium enterprises to meet. It is in this arena where the government has a clear role in supporting farmers' and SMEs' capacity to participate and become more competitive through a variety of mechanisms such as training, G&S information and regulated outgrower schemes.

1. At the **domestic level**, policies and regulations could be improved in order to speed the ability of both agribusiness and producers to adapt new technologies. Three areas that would yield significant benefits are:

- A. efficient contract enforcement to facilitate and encourage outgrower relationships

- B. changes to inputs regulations that would limit distortions and improve the flow of high-quality, updated products
- C. processing/exporting competitiveness, where a study could illuminate the costs and hindrances imposed on the private sector and the subsequent losses to the economy

2. There are three recommendations involving the **regional and international trade initiatives**<sup>1</sup> that are beginning to take a more active position toward the development of G&S:

- A. Encourage and support their closer interaction to facilitate the coordination of a cohesive strategy.
- B. Support a harmonized framework of good practices (i.e. COLEACP's that is gaining broad acceptance both in Africa and on the European markets) that will help firms meet the plethora of standards in export markets.
- C. Establish a central AGOA contact point in the FDA and USDA to assist African exporters in meeting the difficult U.S. market requirements.

3. There are a number of **cross-cutting issues** affecting consumers, enterprises, and markets. The most vital is the flow and dissemination of information. Private firms, government testing laboratories, farmers, and consumers all have extremely limited access to G&S information that would benefit them. Key recommendations are:

- A. The development of information systems on G&S that take into account the essential G&S requirements of different markets to enable interested entrepreneurs to adequately evaluate or take advantage of export possibilities.
- B. Hands-on learning visits that incorporate training for entrepreneurs interested in a particular commodity and/or processing method could be integrated into several existing institutions.
- C. An assessment of laboratory needs is recommended that will take inventory of the current capabilities and deficits of the existing laboratories. To be successful it must work hand-in-hand with the private-sector to determine and prioritize areas.
- D. A study looking more in-depth at organic production capabilities, certification options, market opportunities, and price premiums could help determine if this represent a viable opportunity to increase Zambian exports. With the notable commitment of some of the largest exporters, organic commodities are growing dramatically and since these are a niche category that requires considerable attention to standards and the establishment of market linkages, Zambia can use more support for production training, organic certification, and market information.
- E. Targeted training of smallholder farmers especially by strengthening the legal and business mechanisms around outgrower schemes that are necessary to reach the quality,

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<sup>1</sup> I.e. COMESA, SADC, ZMM-GT, and COLEACP

consistency, and quantity of products necessary for efficient added-value processing or export.

## **Conclusion**

G&S is a necessary but not sufficient factor to dramatically improve Zambia's competitive position. It must still address the formidable issues of inconsistent policy that does not foster investment and business development, non-performing public institutions, limited private sector capability and inadequate infrastructure. If Zambia undertakes to better understand and make use of G&S, it can utilize these strategic tools for product differentiation, market penetration, and system coordination, as well as quality and safety assurance. This applies to the domestic market as much as it does to its export markets. While improved G&S can make a considerable difference, Zambia will only be a strong competitor when it also addresses other macro-level issues noted above, sets achievable targets, and develops a consolidated strategy, preferably in cooperation with its neighbors, to coordinate and execute the necessary steps.

## Acronyms

<b>ACDI/VOCA</b>	Agricultural Coop Development Internat'l/Volunteers in Overseas Coop Assistance
ACF	Agricultural Consultative Forum
ACP	<b>Africa, Caribbean, and Pacific countries</b>
AGOA	African Growth and Opportunity Act
ARSO	African Regional Standardization Organization
ASIP	Agricultural Sector Investment Programme
ASTA	American Seed Trade Association
CLUSA	Cooperative League of United States of America
COLEACP	Liaison Committee for Europe Africa Caribbean Pacific
COMESA	Common Market for Eastern and Southern Africa
CBI	Center for the Promotion of Imports from Developing Countries (Dutch)
DRP	Drought Rehabilitation Programme
EBZ	Export Board of Zambia
EUREP	Euro Retailers Produce Working Group
FANR-PAN	Food, Agriculture, and Natural Resources Policy Analysis Network
FAO	Food and Agricultural Organization of the United Nations
FOB	Freight on Board
FRA	Food Reserve Agency
GAFTA	Grain and Feed Trade Association
GAP	Good Agricultural Practices
G&S	Grades and Standards
GMO	Genetically Modified Organism
GTZ	German Technical Co-operation
HACCP	Hazard Analysis of Critical Control Points
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ILO	International Labor Organization
ISTA	International Seed Trade Association
ITC	International Trade Center
ISO	International Standards Organization
MAFF	Ministry of Agriculture Food and Fisheries
MRL	Maximum Residue Level
NAIS	National Agriculture Information Services
NISIR	National Institute for Scientific and Industrial Research
NORAD	Norwegian Agency for Development Cooperation
NRDC	Natural Resources Development College
NTFP	Non-Timber Forest Products
OIE	Office International Des Epizooties
OPPAZ	Organic Producers and Processors Association of Zambia
PAM	Program Against Malnutrition
PQPS	Plant Quarantine and Phytosanitary Service
RCSA	Regional Center for Southern Africa (USAID)
SADC	Southern Africa Development Community
SIDA	Swedish Industrial Development Agency
SCCI	Seed Control and Certification Institute

SGS	Societe Generale de Surveillance
UNIDO	United Nations Industrial Development Organization
UNDP	United Nations Development Program
UNCTAD	United Nations Center for Trade and Development
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WFP	World Food Programme
WTO	World Trade Organization
ZABS	Zambia Bureau of Standards
ZACA	Zambia Agricultural Commodity Agency
ZAHVAC	Zambian High-Value Crops Association
ZAMPIP	Zambia Agricultural Marketing Processing and Infrastructural Project
ZATAC	Zambia Agribusiness Technical Assistance Center
ZCC	Zambia Competition Commission
ZCGA	Zambia Coffee Growers Association
ZEGA	Zambia Export Growers Association
ZMM-GT	Zambia Malawi Mozambique Growth Triangle
ZSTA	Zambia Seed Trade Association
ZNFU	Zambia National Farmers Union

# 1. Introduction

With the expanding globalization of trade, grades and standards (G&S) help to set the ‘rules of the game’ and their implications for developing countries are becoming increasingly relevant. While they are clearly important to trade, their formation and utilization is also undergoing a shift from being neutral market lubricants to also being tools of product differentiation. This implies a fundamental shift in the role of G&S from just reducing transaction costs of commodity market participants, to serving as strategic tools for market penetration, system coordination, quality and safety assurance, brand complementing, and product niche definition.

The issues of who is forming G&S, their privatization, motivations, and the impacts on various market participants and poor people must all inform the strategic responses to the changes in the roles and nature of G&S. The definition of their usefulness and value goes beyond the sometimes artificial distinctions between quality and safety to more current distinctions between process and characteristics.

All of these distinctions are predicted to become more relevant than ever as industries and governments, even in the most developed countries, are faced with a new sort of “food security” issue. G&S development and applications are becoming a critical component of regional and international agreements, particularly regarding sanitary and phytosanitary (SPS) issues and technical barriers to trade (TBT). In terms of international trade, G&S is becoming the hot topic of political economics in much the same way that tariffs were in the 1990s, with profound implications for less agile, i.e., poorer countries.

## Definition

Grades and standards (G&S) are defined parameters that segregate similar products into categories and describe them with consistent terminology that can be commonly understood by market participants. In agriculture a clear set of descriptive guidelines or standards help to determine grades and these together provide the common language and terminology for defining product characteristics and value. It is this information about the products that determines prices and helps define contracts for delivery, thereby improving the efficiency and transparency of markets. It can also serve to differentiate and segment in positive ways that define market niches and in negative ways that present a barrier to entry for certain market participants.

Unlike industrial products, which are produced to specifications and are relatively consistent, agricultural products are by nature much more varied. Since agricultural products can have a vast array of characteristics such as weight, size, shape, density, firmness, tolerance to insect damage, cleanliness, color, taste, odor, maturity, blemishes, moisture content, etc., a system for clear communication between buyer and seller is vital.

A common system and terminology have several benefits:

- Make it possible to buy product that one has not seen
- improve the incentives for quality and safety
- make market information meaningful
- facilitate price/quality comparisons

- reduce the risk of deception and fraudulent marketing
- enable diverse market mechanisms such as futures trading, commodity exchanges, inventory credit or warehouse receipts schemes, and letters of credit
- facilitate resolution of disputes regarding quality and/or composition of shipped products

While grades and standards have obvious value for international transactions, they also provide a valuable impetus to the **development of quality in the domestic market** by distinguishing among quality levels and rewarding, often with higher prices, the better products. In Zambia, for the interview process we used the following definitions of G&S' role:

1. Differentiate your products and thereby earn a premium (Grade A, vitamin fortified)
2. Create a market niche or prevent you from entering a market
3. Assure the quality and reputation of your products or organization (certification, seals, brands)
4. Communicate product characteristics necessary for efficient transactions between buyer and seller (quantity, authenticity, standard carton packing)
5. Protect safety of consumers (labeling, phytosanitary requirements, pesticide standards)

## 2. The Scope of the Study

The **goal of this study** is to assess whether more effective and efficient systems of G&S can improve Zambia's agricultural sector and expand its economic development opportunities, particularly in regional and international export markets. Similar studies have been conducted in Kenya, Malawi and Mozambique.

The **specific objectives** of this project fall into two phases – an initial exploratory phase and a second phase, in which the objectives are longer term. First phase objectives include:

1. Identify and prioritize commodities with significant potential for expanded trade that could benefit from G&S initiatives.
2. Identify and assess the G&S opportunities and constraints for expanded trade.
3. Identify key actors, both public and private, and their roles in establishing, implementing, monitoring, enforcing and sustaining G&S.
4. Assess the regional and international trends and trade issues for G&S.
5. Analyze costs and benefits of targeted initiatives in the above-mentioned areas that would leverage maximum improvements.

The second phase will design and implement local capacity building initiatives in collaboration with public and private sector representatives.

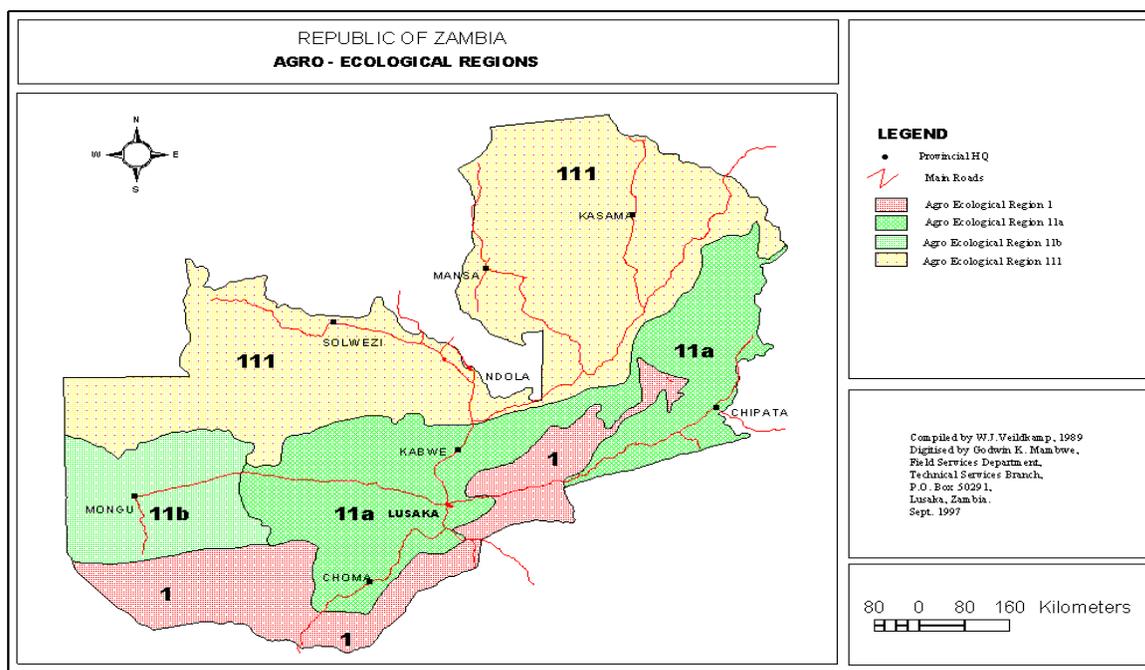
In addition to the review of the literature and secondary data, this study gathers much of its information from semi-structured interviews with more than 100 persons and organizations (see Appendix III). The assessment focuses on the critical standards points in the subsector: inputs, production, processing, transport, and markets. Once the major actors and issues at each of these critical points are identified, the following questions are pertinent:

- (a) Is there a market demand for G&S where a premium could be earned for quality and/or safety?
- (b) To what extent is unmet G&S demand due to failure of the commercial marketing system? Or government failure?
- (c) For each priority commodity, what are the constraints and what are the key market interventions to relax or remove those constraints?
- (d) To what extent does the current regulatory/standards system create unnecessary costs in the subsector and who is bearing these costs?
- (e) Who are the institutions and interest groups affecting G&S, and what are their roles?
- (f) What are the G&S distortions and their effects on competitive markets ?

### 3. Background

Zambia, with 752,000 square kilometers is somewhat larger than the state of Texas and nearly 4 times the size of the U.K. It has nearly six times as much arable land (42 million hectares) as its agriculturally successful neighbor, Zimbabwe, but less than 20% is cultivated (African Investment Council, 2000). Despite Zambia's landlocked position, its varied agro climatic zones, rich soils, extended growing seasons, and abundant hydrologic endowment make it an excellent candidate for agricultural development. *See Figure 3.1.* Plentiful water could well be one of Zambia's most underutilized assets. In addition to its capability of increasing agricultural production, it is also a vital component for many processing industries where G&S would be most effectively applied both both increase the capture of added value and improve the processing sub-sector's competitiveness.

**Figure 3.1**



Of Zambia's 11 million people, the majority live in rural areas where more than 95 % are engaged in agriculture. Overall, agriculture employs 67% of the total labor force and is the primary source of income for women. Agricultural production contributes approximately 16-22 % of total GDP and enjoys an average annual growth rate of approximately 2 %<sup>2</sup>, although it experiences strong annual fluctuations. Agricultural exports also fluctuate dramatically by subsector but have enjoyed double-digit annual increases, on average, over the last 12 years. Agro-industry, dominated by the few large

<sup>2</sup> Data from Ministry of Agriculture Food and Fisheries. Annual variation is highly volatile.

corporations, i.e., sugar and brewing, represents nearly 60% of total manufacturing GDP. Agricultural exports represent 23% of total exports and are second only to metal exports.

The economy, both pre- and post-independence (1964) has been very much dependent on the country's vast mineral resources. Since the 1974 collapse of world copper prices, Zambia's standard of living has declined. In human development terms, Zambia has actually declined from its position in 1975. This reversal can largely be explained by a considerable drop in life expectancy as a result of HIV/AIDS. Similarly, GDP per capita has also declined more than two percent per annum, from \$641 in 1975 to \$388 in 1998.

Zambia enjoys a relatively well-educated workforce, certain good agricultural factors of production, and relative stability among its neighbors. As a result, it is poised to receive increasing attention and investment in the agricultural sector<sup>3</sup>. Despite such advances and the gradual emergence of new support institutions, private sector development will continue to be hobbled without government's targeted support for critical leverage points which the private sector may be at a disadvantage to provide. One vital aspect of this enabling environment is the development and dissemination of G&S.

### **3.1 The Macro Picture**

For many years, the agricultural sector, like the rest of the economy in general, operated under a controlled policy environment. The past agricultural policies were characterised by excessive government intervention and control. Economic management was mainly through state institutions using various instruments, such as agricultural input and marketing subsidies, foreign exchange controls, and controls on interest rates. Revenue, mainly from the pre-1975 copper boom, was used to invest heavily in the parastatal firms and high tariffs and import licensing ensured their protection. Inevitably, this stifled private investment in productive sectors and retarded the development of the agricultural sector that became entirely dependent upon an increasingly inefficient public sector.

At the close of the Second Republic in Zambia, in the wake of dismal agricultural performance, serious economic reforms were undertaken that continue to have a profound effect on most of the economy. The liberalization of the agricultural sector (1991) included the near total retreat of government from its previously primal role in every aspect, from the inputs markets to final retailing. Most of the agricultural sector was unprepared for the consequences of this rapid shift to a market economy. Because of the abrupt retreat of government without the concurrent creation of new support systems, agriculture has been left in an institutional vacuum.

Government institutions that provided critical market functions closed or, in some cases, were privatized. Extension workers that supported farm production were no longer available as a free public service. The role of maintaining G&S for critical food crops such as maize devolved to producer cooperatives that were unable to fulfill this function. All state marketing functions ceased, as did rural credit and finance functions. As a result, several dramatic changes, both positive and negative, took place:

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<sup>3</sup> Foreign direct investment by medium and large firms has increased in recent years as has the development of both productive capacity and quality. Internal food markets are thriving, as evidenced by 18 "new" full-scale supermarkets and construction of a modern urban public market in the capital.

- Increased risks and uncertainties in production and marketing leading to sharp price fluctuations.
- Lack of adequate market information, including G&S, diminished the ability of farmers and traders to make informed decisions, increase risk, and raise transaction costs.
- Prohibitive interest rates for agricultural enterprises, coupled with inflation and currency devaluation, depressed investment in rural areas thereby diminishing both the quality and competitiveness of the agricultural sector.
- An entrepreneurial mindset and new, market-oriented institutions have begun to fill the vacuum.
- New business opportunities i.e., floriculture, organics and export horticulture have emerged.

**Table 3 Agricultural Policies of Liberalization**

<b>AGRICULTURAL POLICIES: The '91 shift</b>	
<b>Pre-1991</b>	<b>Post- 1991</b>
<ul style="list-style-type: none"> <li>▪ Absence of private sector activity in the areas of farm input/output supply, agricultural marketing and food processing.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Government deregulated the marketing of agricultural commodities and inputs. Marketing and processing are open to the private sector.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Government provides all agricultural extension, inputs, and veterinary services.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Government manages only a limited agricultural extension and information program</li> </ul>
<ul style="list-style-type: none"> <li>▪ A poorly developed agricultural sector which was dominated by a single crop maize. The production of maize was promoted even in areas where it is uneconomical.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Parastatals privatised to reduce direct government involvement in agriculture.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Large government subsidies contributed to inflation and government budget deficit.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Zero subsidies leave private sector to its own devices</li> </ul>
<ul style="list-style-type: none"> <li>▪ Enormous government bureaucracy</li> </ul>	<ul style="list-style-type: none"> <li>▪ The Ministry of Agriculture, Food and Fisheries has been restructured in line with public sector reform.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Absence of storage and processing techniques at the private (household and village) level.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Government-owned storage facilities given to the Food Reserve Agency for leasing to the private sector.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Low farm productivity and low incomes among smallholder farmers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Average increases in productivity and incomes, but volatility and new risks have increased the poverty of some.</li> </ul>

### **3.2 Zambia's Current Situation**

Until the current inflation rate of 30% can be brought under control, other types of investment are likely to appear more attractive than traditional farm enterprises. This is one reason why in the agricultural sector non-traditional, dollar-based, activities such as the production of export flowers, and herbs and spices have appeared so attractive in recent years. Domestically funded initiatives find it difficult to import the necessary inputs in the current devaluation climate (67% in the past two years).

The credit squeeze, with interest rates on loans from the 11 major banks ranging between 45% and 60% in early 2001, continues to constrain private sector response to agricultural liberalization. In a climate of uncertainty, government treasury offerings, rather than loans, are the banks' preferred investment.

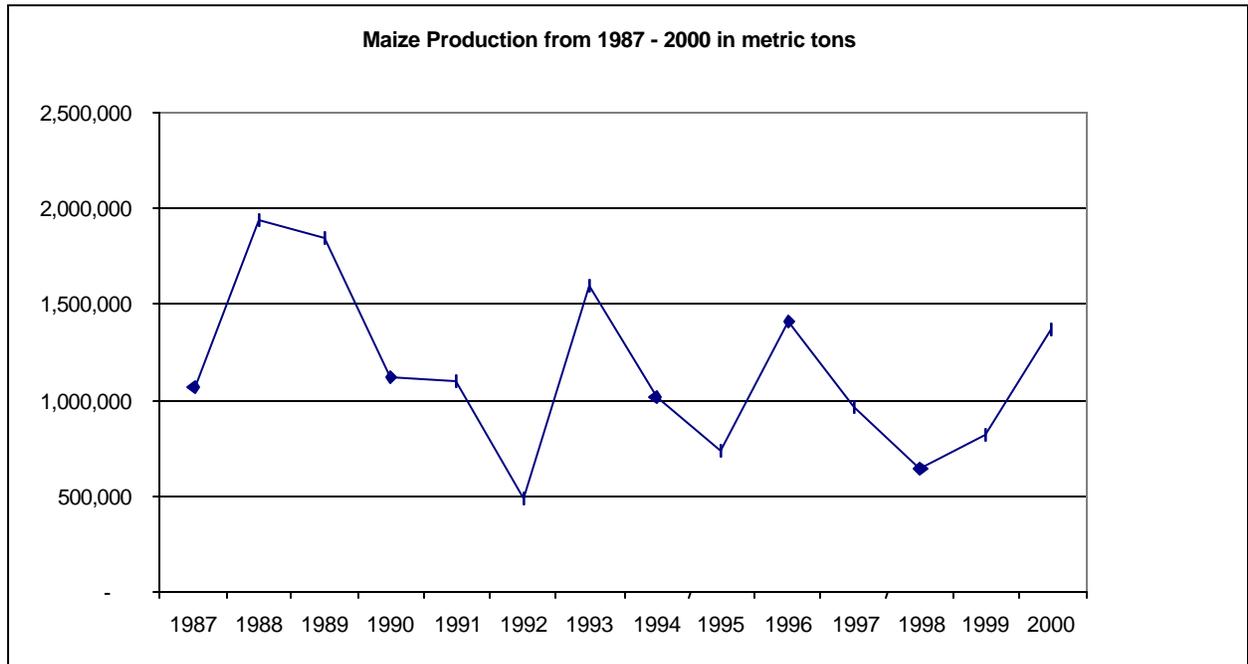
### **3.2 Zambia's Production Patterns**

One of the most distinctive features of Zambia's agricultural production is its volatility. In addition to weather, there appear to be four primary reasons for the dramatic ups and downs of production:

1. Lack of adequate and timely information about production estimates, trade trends, and crop prices
2. Inadequate support systems, both public (extension) and private (producers associations, retail inputs, vertical supply chain integration) that enable growers to adapt to changing situations
3. The inability, infrastructurally and financially, to smooth markets by storing products for sale when supplies dwindle
4. Continued distortions caused by public and NGO interventions (seed and fertilizer markets)

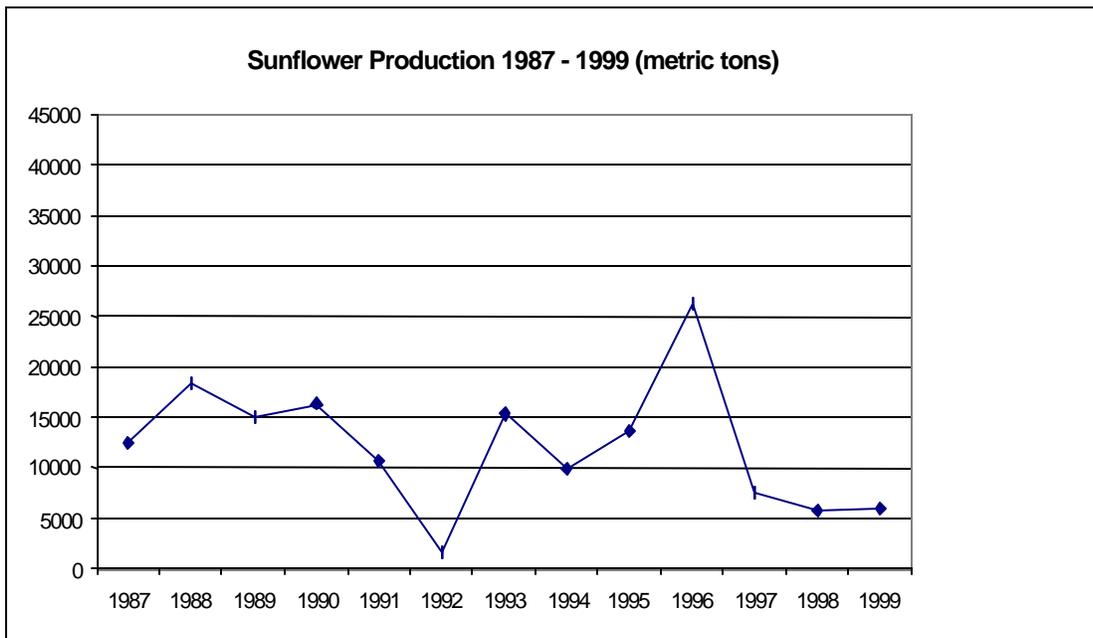
Given the past decades of state-run agriculture, it will take time to develop the skills and the institutions, especially rural ones, to support the agricultural sector's adaptation to liberalized markets. The current reactionary posture (market chasing) is only exacerbated when well-meaning public institutions themselves react by intervening heavily in the name of food security. In true emergency situations, there is clearly the need for immediate public action. Nevertheless, bypassing the private sector and flooding the market with fertilizer, grains, or seeds in non-emergency situations is a short-term solution that can inadvertently serve to deepen the problem. The solution to food security is more likely to be found in a longer-term process of strengthening private institutions and enterprises to help fulfill this need.

**Figure 3.2 Production Volatility Chart: Maize**



Source: authors with MAFF and Food Security Unit data

**Figure 3.3 Production Volatility Chart: Sunflower**



Source: authors with MAFF data

This volatility has other negative implications:

- Growers cannot readily adapt to the requirements and standards of different crops with which they have little previous experience. This tends to increase crop and marketing failures.
- Downstream market participants--wholesalers, processors, exporters--cannot depend on a steady supply of farm products, this tends to dampen their investments in growth and in quality improvements.
- Supply chain linkages are destabilized.
- Export potential is undermined because of inconsistent supplies.

### **3.3 Storage and markets**

The financial and infrastructural ability to store crops could significantly improve marketability by smoothing supplies. Lack of storage and few early/late maturing varieties mean that farmers are forced to accept low prices for their products during the harvest glut with a severe adverse impact on farm profitability. Improved storage standards would also enable increased adoption of hybrid seeds, e.g., maize, that currently are not used because of their poorer storability. Inadequate storage management standards, e.g., aeration & fumigation, create significant losses. One promising initiative, currently in the planning stages, could spearhead positive changes for grain commodities and set the stage for a functional commodity exchange (*See Box 3.2*). Nevertheless, considerable attention still needs to be paid to the post-harvest and storage capabilities for other vital crops, particularly at the smallholder level.

## Box 3.2 Warehouse Receipts

### Work in Progress: A Warehouse Receipt System

The lack of access to credit is a severe constraint for many farmers. Warehouse receipts are an important and effective tool for creating liquidity and easing access to credit. Such schemes also offer additional benefits such as smoothing the supply and prices in the market, improving grower incomes, enhancing market information and transparency, and reducing food losses.

In November 2000, the Zambia Agricultural Commodity Agency (ZACA), a private institution, commissioned a task force to establish a warehouse receipt system, an initiative supported by the Food Reserve Agency (FRA) and the Zambian Agribusiness Technical Assistance Center. Under the system, the FRA, the government organization responsible for managing over 700 storage facilities, will lease warehouse space to licensed warehouseman. Once in place, producers will be able to use their crop as collateral in securing loans, as the financial institution will have a simple means of establishing the value of the commodity in store and assurances that its quality standard will be maintained. Both producers and consumers will benefit from the ability to smooth the effects of production cycles with steadier supplies and prices.

While it is envisioned that several commodities will eventually be stored under this system, the task force has elected to pilot the design of the system using maize. All maize to be placed in storage must meet minimum receiving standards. A single quality standard is proposed for the pilot phase of the project due to the relative ease in application and understanding of a single standard. As confidence in the system builds and evolves, a multiple grading system may be developed.

Inspection of the commodity will be conducted by a licensed warehouse employee or an independent third party inspector. In the event of a quality dispute, a second inspection, the results of which are binding, can be requested. Once the commodity is placed in storage, the warehouse facility management is financially responsible for maintaining its quality.

With assistance from the UK's Natural Resources Institute and the U.S. Department of Agriculture, ZACA is developing standard procedures and practices to ensure grades accurately represent the quality of the delivered goods, minimum handling damage is incurred, and critical storage standards (i.e., moisture, temperature, pests) are adequately monitored to prevent quality degradation.

Several vital details remain to be worked out, such as who will have licensing authority, development of a viable quality control system, and who will serve as the independent inspection party to resolve quality disputes. Although the basic design and principle of the warehouse receipt system is sound, there is concern about the capacity to strictly apply the new standards. Notably, the system has yet to resolve the issue of affordable financing (currently 50% -60%) and the tendency of the FRA to release its reserves on the market or subsidize production inputs thereby distorting the markets at times when the warehouse stocks could be sold. Yet, even with these potential problems, the warehouse receipt system represents a positive step toward enabling Zambia to smooth the market flows for a critical staple, and also increases and maintains the quality of its strategic food reserves, thereby reducing import needs.

### 3.4 Commodity Overview

Zambia's cost and availability of land and labor is very competitive, but otherwise it has very high factors of production (energy, fuel, inputs, capital) in comparison with its immediate neighbors. Zimbabwean wheat flour, for example, lands in Lusaka, Zambia's capital, for less than the cost of producing the same flour in Zambia. The consequent relative unprofitability of wheat has led at least one major mill to consider closing its operations.

The **food processing** industry in Zambia is the largest of the manufacturing subsectors contributing approximately 60 % to the manufacturing GDP. Its nearly 300 enterprises employ approximately 18,000 people. The majority of these are in a handful of industries, most notably brewing, soft drinks, malting, sugar refining, grain milling, oil processing, dairy, and meat processing. Nevertheless, with some exceptions, food processing is notably underdeveloped.

Lack of development and investment in modern technology and international standards of health, safety and due diligence put many of these industries at a competitive disadvantage. Basic standards e.g., expiration dates on labels, have recently improved somewhat because of increased competition from imports but lack of reasonably priced inputs, e.g., glass jars, inhibit significant standards improvements. Failure to meet standards that are daily increasing even at the local level, will mean the imminent failure of these firms. Reports from the ministries and even local newspapers note that many firms are struggling to remain profitable. In addition to the shortage of capital and relatively thin domestic markets, this situation is primarily due to:

- high prices of factors of production (energy, transportation)
- volatile agricultural raw material supplies
- lack of quality standards throughout the food chain resulting in crops that are unsuitable for processing
- inappropriate processing varieties
- inadequate or high-cost imported packaging and other production inputs

**Maize** (by volume) is by far the most significant crop grown, followed by cotton, cassava, wheat, millet, sugar, and groundnuts. Sorghum, soybeans, mixed beans, and sunflower are also popular.

The **horticultural** crops include baby corn, leeks and carrots, asparagus, beans, sugar snap peas, mangetout, chilies, and onions. These are primarily for export to the UK. **Floriculture**, dominated by roses (90%) and some mixed summer flowers, goes mostly to the Dutch auctions although recent expansions to other European destinations and to regional southern African markets are showing promise.

Several hundred growers have already invested in **organic** production methods, while many others are interested or beginning the process. Organic certification has been conducted primarily by two European bodies (EcoCert and The Soil Association UK). The recent formation of the Organic Producers and Processors Association of Zambia (OPPAZ) has helped bring certification costs down from US \$1700 to approximately \$400 and several thousand hectares of land are currently certified.

Rice, sweet potatoes, avocados, cabbages, onion, citrus, melons, pigeon peas, tomatoes, potatoes, mangos, and bananas are all currently minor crops with significant potential for growth, food processing and substitution of imports. Sesame, paprika, marigold meal, chili peppers, essential oils, mushrooms, garlic and other spices, and honey products are currently exporting or have the potential to export.

There is a renewed upswing in **livestock** production following steady decline due to disease and government retreat from veterinary services at the time of liberalization. The livestock industry, dominated by one actor, sets two grades, Choice and Standard, but only the production of its own feedlots typically meets the top grade.

**Dairy** plays an important role in Zambia's economy, mobilizing improved herd standards in various parts of the country to comply with the increasingly competitive requirements and phytosanitary needs of the dairy industry. Several schemes to increase production and upgrade standards are underway in direct collaboration with the large dairy processors.

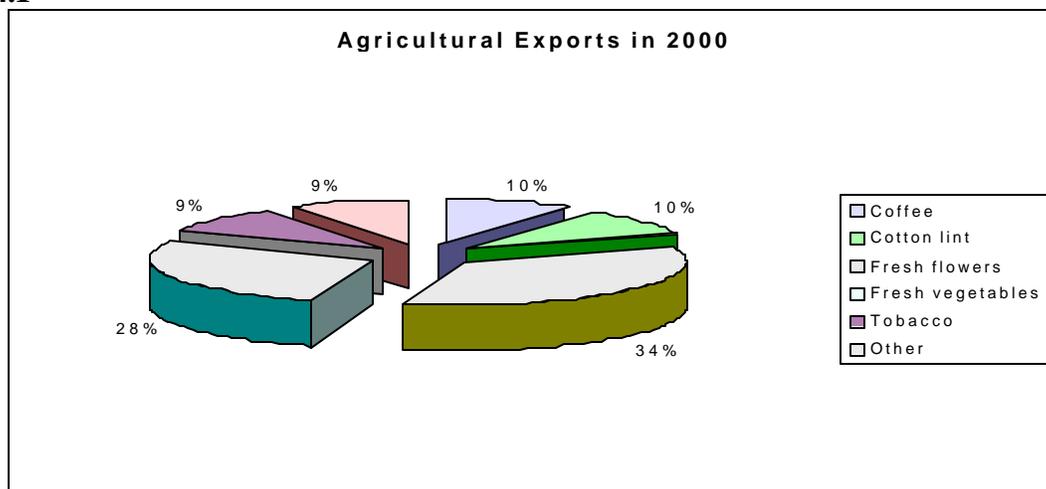
The **poultry** industry suffered from poor standards and modest production capability for many years. The recent SPS based import restrictions and new, international caliber entrants have revitalized the industry which is now growing, albeit without any foreign competition.

**Fish**, mostly caught wild, is not well tracked by government but there are indications of declining yields in many waterways. Fish farming is only conducted by small-scale local producers.

## 4. Zambia's Agricultural Trade Patterns

Year 2000 agricultural exports registered a 3% decline from the previous year to \$279 million and production likewise registered a small downward trend. In 1999 and 2000, fresh flowers were the leading export crop despite a drop in production. Only coffee showed a marked increase, ending the year at 62% over 1999.

Figure 4.1



Source: Authors from Export Board of Zambia (unpublished) data

### 4.1 Domestic Trade

There are many reasons to integrate improved standards into domestic trade and one of these is particularly relevant for the development of exports. Since export markets have sophisticated standards requirements, as well as other requirements for completing successful transactions, e.g., contracts and communications, it is useful and less risky to develop some of the skills at the local market level. "Walk before you run" is wise advice in this case.

Domestic trade appears to be growing despite the Kwacha's reduced buying power. More and more diverse products are available in markets. The nation's largest retailer, the Shop-Rite supermarket chain with 18 outlets, imports 60% of its products and has increasing sales in higher-value products. Higher standards, perceived and real, are the reason why imports are so popular. Nevertheless, the managing director warns that the majority of consumers are still very much price oriented.

Shop-Rite averages 25% duty on imported products from South Africa and an additional 14% for transport. Despite this 39% price advantage for domestic products, similar Zambian products are still more costly for them to purchase. Meeting import standards for processed or value-added local products is apparently very costly. In fact, Shop-Rite must take an average of 4%-8% less markup on Zambian products than that on South African products in order to sell domestic products.

The high cost of imported inputs also considerably affects domestic trade. For example, a processor cannot readily meet the accepted quality standards now that competition is international, when it must import costly, dollar-denominated packaging (glass and better cartons), sometimes from more

than one country (jars from Zimbabwe and jar caps from South Africa). With the advent of the Free Trade Area, the products of Zambia's more competitive and subsidized neighbors will likely enjoy an advantage over Zambian agricultural products. One prominent business person involved with many agricultural commodities stated that, in Zambia, you can make money trading products but not growing them. A survey of manufacturing and production inputs, perhaps as part of a trade facilitation study, would help to ascertain the reasons for these supply bottlenecks and suggest options to resolve them.

#### **4.2 Informal Trade**

A one-year study of Informal Cross-border Trade<sup>4</sup> estimates that approximately \$60 million worth of agricultural products (approximately 20% of total) were traded in the year ending August 1998 without any government record of the transactions. These informal channels probably respond very little to standards pressures and may even be an outlet for substandard products.

This considerable amount of trade appears to represent an appropriate response to market failures, particularly in Zambia's poorer and more remote regions where agile and low-cost movement of foods is vital, and the formal sector does not find it economical to participate. Although a variety of commodities are traded, maize is by far the most popular.

#### **4.3 Regional and International Trade**

If agricultural G&S is the primary constraint for accessing international markets, then transportation costs are probably the second most important constraint. Zambian transport costs for export shipments via Tanzania by truck cost 50% more to North America and 72% more to northern Europe than similar shipments originating at the Tanzanian port (UNCTAD, 1995). An international study (Sachs, 1998) monitoring 25 years of shipping costs in 61 countries notes that Zambia's export shipping costs for manufactured goods are the eighth most costly, behind only Mali, Rwanda, Chad, Malawi, Burkina Faso, Niger, and Togo.

Harmonized G&S are recognized in all regional agreements as a necessary element to facilitate trade flows both within and out of the region. Requirements of the WTO Sanitary-Phytosanitary Agreement and the Agreement on Technical Barriers to Trade (SPS/TBT) are mirrored in the COMESA and SADC regional agreements (see Appendix 2).

**The Common Market for Eastern and Southern Africa - COMESA** (20 countries) is spearheading a number of programs to harmonize standards with the goal of increasing trade. They are working with the African Regional Standards Organization, a technical body that helps design standards as well as serves as a reference body, to coordinate and revitalize national standards bureaus of the participating countries. Three EU-funded programs are of note:

- The Automated System For Customs Data and Management (ASYCUDA), originally developed by the United Nations Conference for Trade and Development (UNCTAD), provides simplified, harmonized and, eventually, standardized procedures and documentation for the Customs Department using computerized management software.

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<sup>4</sup> USAID funded for Zambia and other countries in East and southern Africa.

- The Advance Cargo Information System (ACIS) attempts to integrate shipping agents, freight forwarders, truckers, railways and ports into a regional transport system by tracking cargo, from shipment to delivery.
- The Standardization, Quality, Metrology, and Testing Programme includes several initiatives for grades and standards, particularly quality assurance and certification and training. In Zambia, this program is targeting 19 agro-processors to undergo quality audits with plans to move toward ISO 9000 certification and implementing HACCP programs. Zambian laboratories, particularly the ZABS metrology, University of Zambia, Food and Drugs Control Board, and the National Council of Scientific Research, have also been targeted for improvement and movement toward accreditation. This program has identified a need for a regional reference laboratory.

The COMESA Free Trade Area officially came into force in October 2000 and should serve to increase regional trade. The Agreement is already being tested with a formal complaint regarding a trade dispute over the importation into Zambia of low-cost Zimbabwean wheat flour. Currently, 23% of Zambia's agricultural exports go to the COMESA region. Zambia is one of the least subsidized agricultural economies in the region. It is not clear whether it will be able to sustain these regional exports. COMESA is also currently trying to mobilize funds to develop and implement a system of harmonized regional sanitary and phytosanitary regulations.

**Southern African Development Community (SADC)** is a 14-member,<sup>5</sup> regional bloc established in 1992 to achieve development and economic growth. The SADC Protocol on Trade establishes a free trade area and provides for the elimination of tariff and non-tariff barriers among member states. The Trade Protocol has an 8-year implementation. It was originally scheduled to begin September 1, 2000 but has been delayed because many members have not implemented the necessary domestic policies. The SADC Protocol on Trade requires member states to use relevant international standards and promotes compatibility of conformity assessment procedures. This agreement is embodied in a memorandum of understanding which covers standards, quality assurance, accreditation and metrology (SQAM). An Expert Group (SQAM-EG) and four regional committees coordinate the SADC SQAM program:

- The SADC cooperation in standardization (SADC-STAN) committee deals with the coordination of standardization activities and services in the region.
- The SADC cooperation in measurement traceability (SADC-MET) committee coordinates metrology activities and services.
- The SADC cooperation in legal metrology committee harmonizes national legal metrology regulations of member states and between SADC and other regional blocs.
- The SADC cooperation in accreditation (SADCA) committee is working to develop a regional system of cooperation and capacity building in the area of accreditation (Mutasa).

**The Liaison Committee for Europe, Africa, Caribbean, Pacific - COLEACP**, is an inter-professional organization actively involved in several regional and international trade initiatives including a harmonized code of practice for the horticultural sector (*see Box 7.1*) and the Africa, Caribbean, Pacific (ACP) countries' pesticide initiative (*see Box 6.1*).

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<sup>5</sup> SADC members include Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe.

The **Zambia, Malawi, Mozambique Growth Triangle (ZMM-GT)**, conceptually similar to the Southeast Asian concept of growth triangles, encourages increased trade and investment in the contiguous areas of these three countries. By exploiting the differences in factor endowments and complementarities, this initiative proposes to leverage the strength of each region vis-a-vis land, labor, investment, processing and ports. The Growth Triangle includes a 61,000 square km section of the Northern and eastern provinces of Zambia.

This regional economic cooperation is private sector-driven with the support of all three governments and several donor agencies (primarily UNDP). Private enterprises, as part of a Private Sector Forum, are encouraged to invest jointly in these areas and contribute to the diminution of trade barriers. These investments are expected to rationalize increased government and private spending on infrastructure and capacity building in the target area. There is some concern that this initiative merely duplicates the efforts of COMESA and SADC but the Secretaries-General of these bodies have asserted that ZMM-GT is complementary to their work. Since the official launch in November 2000, at least one Zambian firm has already invested to increase its agricultural production capability in Mozambique.

In the ZMM-GT, no action has yet been taken regarding G&S and this represents an opportunity to help foster their development from the outset. Since ZMM-GT seeks to capture and enhance the markets and synergies already recognized by informal traders, any grades and standards ought to respond to the private sector's market demands in order to be truly effective.

Although these agreements should facilitate intra-regional trade flows, it remains to be seen whether they will also be a stepping stone to freer trade with OECD countries. A World Bank survey indicates that only 36 percent of Zambian firms imported agricultural inputs from the EU region and that none used North American inputs. Respondents in neighboring countries reported much higher inputs use from these regions<sup>6</sup>.

#### **4.4 Response of Key Agricultural Industries to Regional Formal Markets**

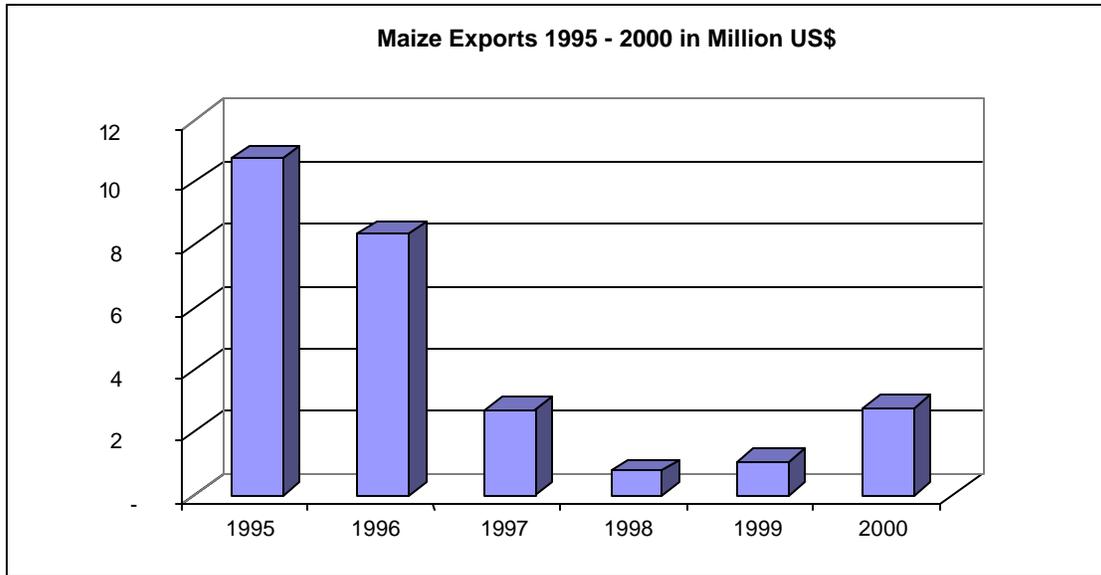
There are ongoing cross-border standards issues in poultry, dairy, and livestock between Zambia and its most developed neighbors, Zimbabwe and South Africa. The poultry industry has experienced a renaissance as the SPS ban (Newcastle disease) on imported products has created a ready market for what was previously a declining and regionally uncompetitive industry. This revival has attracted new high-caliber actors into the subsector and, as a result, there has been a notable increase in production, quality, and competitiveness. The industry has responded to this stimulus by considerably upgrading its standards in order to adequately substitute the considerable previous imports from Zimbabwe and South Africa.

Maize, Zambia's primary crop, is in sufficient surplus to be consistently sold on the regional market. Nevertheless, market and price distortions, in part due to public sector interventions, appear to be affecting both maize production and trade which have been declining since 1994.

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<sup>6</sup> Malawi: 50 percent used EU inputs; 6 percent used U.S. imports. Mozambique 78 percent used EU imports; 11 percent used U.S. imports. Zimbabwe 55 percent used EU imports; 27 percent used U.S. imports (Jaffee, 1997: p. 10).

**Figure 4.2 Maize Exports**

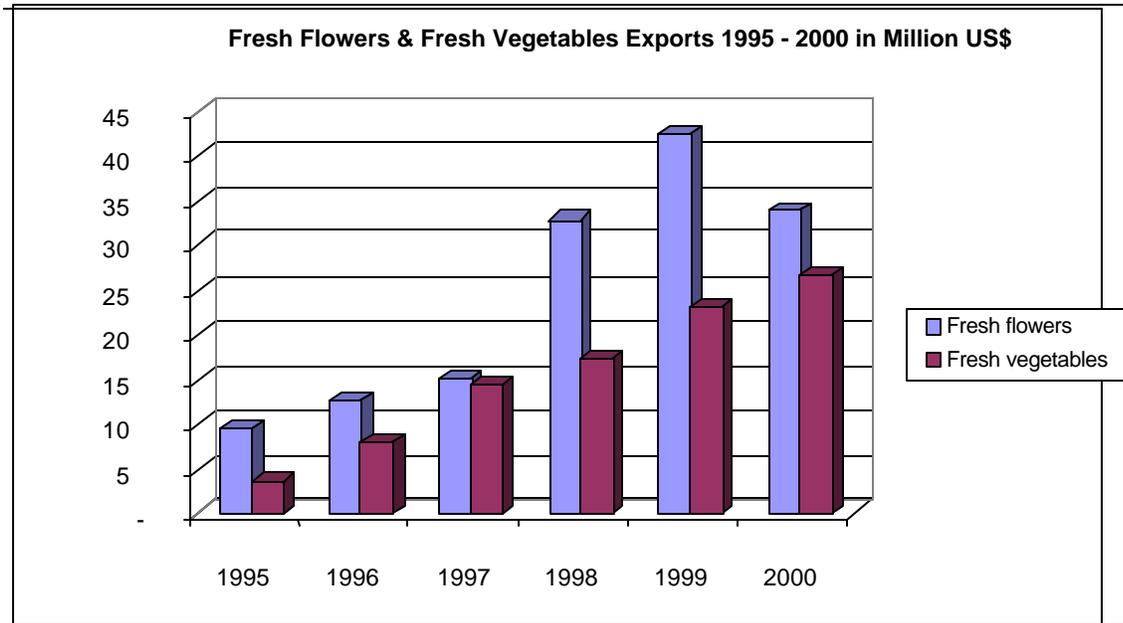


Source: Authors from Export Board of Zambia and Food Security Program data

Commodity imports (US\$115 million in 1998, and slightly higher in 1999) are primarily grains, horticultural products, animal feeds and edible oils. Zambia has the capability to replace a considerable portion of the value of these imports with its own production. There are 4 primary reasons why Zambia is unable to meet these production needs:

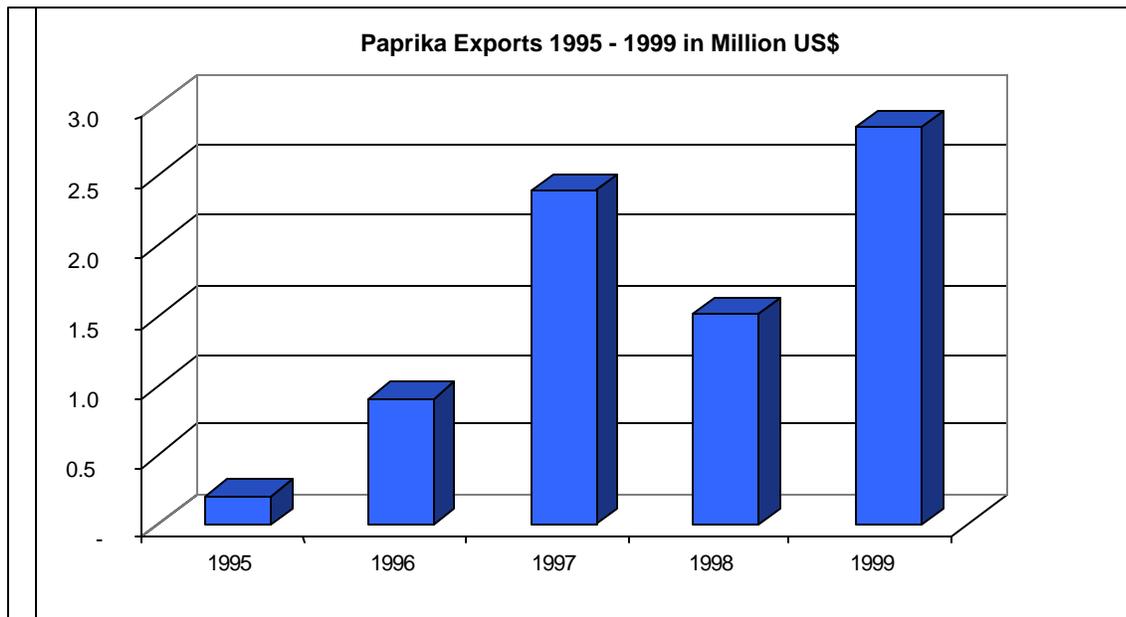
1. Inadequate input availability and standards (varieties)
2. Inappropriate production standards
3. High capital costs
4. Mixed market signals

**Figure 4.3 Horticulture & Floriculture Exports**



Source: Authors from Export Board of Zambia and ZEGA data

**Figure 4.4 Paprika Exports**



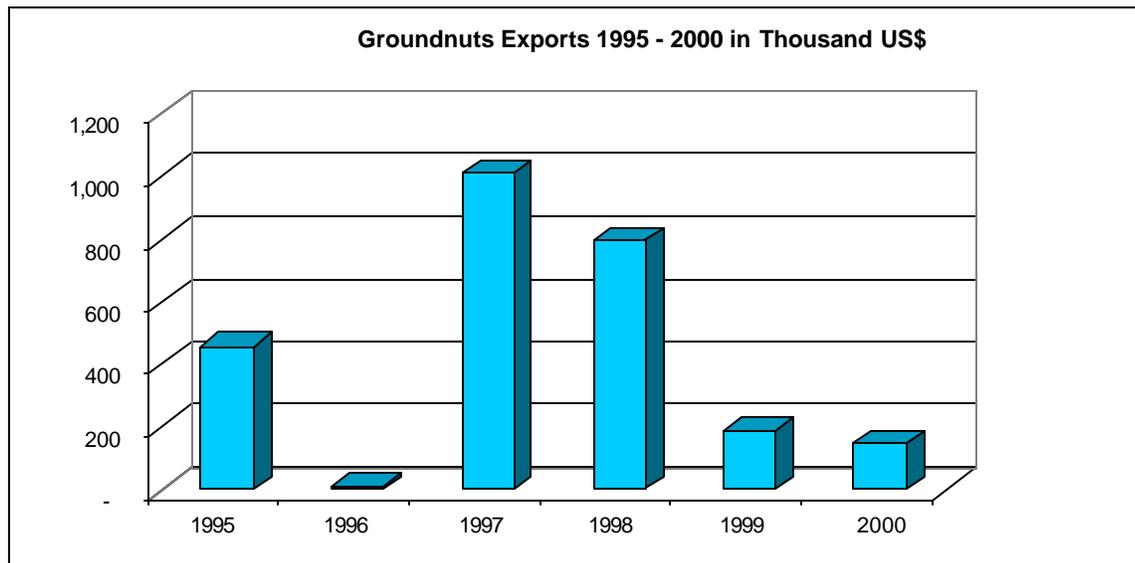
Zambia's refining capacity, particularly for milling and oil extraction, is underutilized due to the inadequate supply and standard of raw materials. The Grain Millers' Association estimates that the industry mills currently operate at less than 50% production capacity.

Although **livestock** exports, as carcasses and processed meats, move to neighboring countries, primarily the Democratic Republic of the Congo, standards and phytosanitary restrictions prevent exchanges between Zambia and South Africa or Zimbabwe. These restrictions are due to isolated

disease outbreaks (i.e., foot and mouth, east coast, and corridor diseases) in the three countries. Zambia has been able to isolate and contain its foot and mouth disease but it persists. Hides and leather products are freely exported.

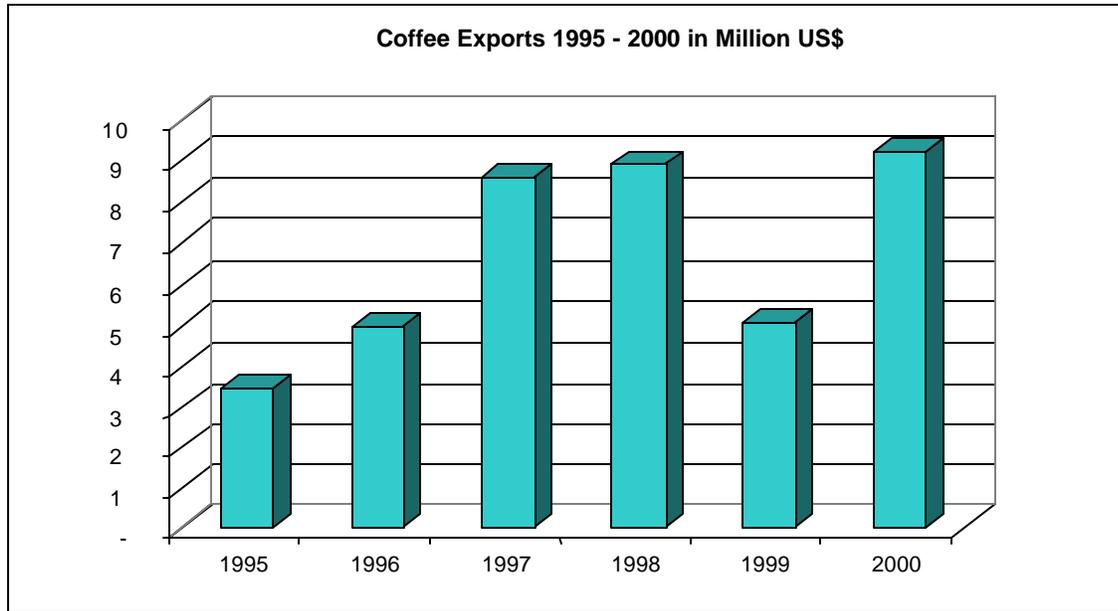
Refined sugar accounts for approximately 70 percent of **processed food** exports. These exports are otherwise limited to relatively small quantities of wheat flour, maizemeal, honey products, marigold meal, groundnut products, and edible oils. The DR Congo is Zambia's major importer for processed products (mainly maize meal), followed by the UK. There is relatively little value added to many agricultural exports and this represents a considerable opportunity and one where G&S would play an important role.

**Figure 4.5 Groundnut Exports**



Source: Authors from Export Board of Zambia (unpublished) data

**Figure 4.6 Coffee Exports**



Source: Authors from Export Board of Zambia and Coffee Board data

## 5. Emerging Trends

Many agricultural commodities today exist in a **new business and safety environment**, one that has industrial specification characteristics, sophisticated logistics, concentration of actors, and increasingly more demanding G&S. As competition becomes global, markets tend to differentiate and are best served by logistically sophisticated supply chains that concentrate and coordinate information, finance, technology, and risk. As a market framework, supply chains not only minimize transaction costs but also diminish the institutional barriers separating the individual links in traditional distribution channels. They allow participants to achieve higher levels of G&S and service and to capture substantial added value. One of the key prerequisites for participating in vertically integrated supply chains is adequate and consistent G&S.

To participate in supply chains and to compete in developed markets, Zambian exports must meet consistently higher standards that are not fixed but rather evolving. This will require a commitment to ongoing improvement, particularly updated information flows. Meeting shifting global performance standards is not only an issue of market access, but also a liability issue. Strict demands for due diligence are increasingly being enforced in many countries. The producers are held accountable and so, reputationally, is the country of origin, as a number of food safety mishaps have recently demonstrated (US: GMO contaminated grain, E. coli in meats and juice; EU: dioxin, BSE, aflatoxins, foot and mouth; Latin America: E. coli in berries, alar on apples).

Food safety has become a major export issue and its manifestations are complex. In addition to the food safety issues mentioned above, maximum pesticide residue levels (MRLs) are becoming steadily stricter and importing countries more likely to test for these. Most Zambian exports are not checked before leaving the country. Zambia is currently considering the divisive issue of genetically modified organisms (GMOs). The study team, is neither mandated nor qualified to address any potential environmental or health risks allegedly associated with GMOs. However, it suggests that the market potentials/risks ought to be taken into careful consideration. This study does not take a stand for or against GMO crops and does not make a case for either side. Growers should simply understand the marketing issues involved in selling GMO/non-GMO crops to different markets before planting. While some GMO crops i.e. soybeans have been widely approved for processed feed/food use, some GMO crops, i.e. food grade soy and corn have been rejected by some food processors and markets<sup>7</sup>. This could be a factor for Zambian farmers who, in many cases, rely on niche markets not dominated by larger and more efficient producers. For example, Zambia cannot realistically compete on the export markets with Argentina or Brazil for crushed or feed grain soy (usually GMO soy) although GMO soy might possibly be a more cost efficient production for domestic use. However, there are export opportunities already realized for Zambia's high-quality, food grade soy (non-GMO) i.e. South Africa.

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<sup>7</sup> Agrisystems International quotes US farmer losses, mostly in soy and corn, at USD\$350 to \$550 million in lost business with major supermarkets and food companies who seek non-GMO crops. A number of US farmers have experienced difficulties in doing business with their GMO crops in the EU and some Pacific Rim countries.

Although there is some cursory knowledge of HACCP and ISO principles, these are not yet seriously considered by any but a few of the most up-to-date firms. The same is true for traceability methods wherein a product and the processes it has undergone can be traced from farm to table. These processes, as prerequisites of international trade, are on the horizon and ought to be considered well in advance by firms wishing to venture or expand into this arena. The operational standards necessary for these processes to work can take years to develop.

A **new consumer environment** has emerged, particularly in developed countries, but also in richer markets of developing countries. Consumers seek more sophisticated foods and expect year round supply. They expect food to be "fresh" and, above all, safe. They want foods that are more "healthy" (low-fat, low salt) and also more "rich" (meats, processed foods). These foods (fresh horticultural products, meats, processed blends) all share a higher risk of serious deterioration or contamination than staple crops (grains, pulses, tubers). According to a quality management expert in COMESA that works with a number of Zambian processing firms, minimizing this risk necessitates a higher level of standards than most firms currently employ.

A new set of standards, incorporating social and environmental concerns, have become increasingly more visible in transactions with industrialized markets. These include child labor issues, working conditions, exposure to harmful chemicals, and environmentally damaging processes.

Evidently, there are a number of rapidly emerging new rules of the game. It can instantly depress an exporter to read through this list of hurdles, but enterprising countries and businesses will instead see these as new opportunities and undertake these challenges as a means of differentiating their offerings and accessing higher value markets. To do so, they will seek out natural allies with whom to collaborate and develop these new G&S skills.

The agricultural sector for many decades depended on government to provide inputs, dictate production, and purchase outputs. It is easy to forget that only ten years ago, the state began its exodus from agricultural markets. That process, **breaking with the past**, is nearly complete but the lessons of newly liberalized markets will take much longer to be absorbed. This is a new economy and as such could benefit from increased partnerships and alliances with private firms and NGOs with international links to assist in the transfer of technology and improve the levels of foreign investment. This is particularly true in the realm of G&S where a number of organizations offer training, support, and investment (UNCTAD, ITC, UNIDO, COMESA, ASRO, CBI, ILO, COLEACP, FAO).

The notable **domestic concentration of formal trade**, particularly retail concentration (Shop Rite), is shaping the patterns of Zambian production, consumption, and selling. Upgraded requirements will mean that those who are unable to meet the standards will be unable to do business. This could have a considerable impact on the informal markets. Zambian suppliers will have to meet new requirements with products that are:

- Shelf stable
- Quality consistent
- Competitively priced
- Safety assured
- Bar coded and traceable
- Attractively packaged

- Delivered on time year-round

Another emerging trend that is already a significant factor in Zambia's agricultural success and appears to be the key to involving smallholders in agricultural trade is **outgrower schemes**. Issues of financing, input and output market distortions, and energy costs have limited both the number and the participation of large farmers. The quality, consistency, and quantities of products necessary for efficient added value processing or export must be reached through coordination and training of smallholder farmers. (*See Box 5.1*).

Outgrower schemes typically involve a business whose ability to gather large quantities of products and access a market enables it to arrange for growers to produce the products it desires. This "contractual" arrangement can be either formal or informal and often includes the provision, on loan, of extension service and/or inputs to the grower who is expected to sell his crop to the business that then deducts the loan from the final selling price. Although they are relatively new to Zambia, outgrower schemes have been with us since pre-Egyptian times.

Outgrower schemes are a vital production factor in many Zambian industries, e.g., cotton, dairy, paprika, horticulture, and poultry. Even though many of these subsectors often lend themselves to large-scale production, in Zambia they appear to be significantly more cost effective as contract farming operations.

Outgrower schemes often motivate improved production grades by paying a premium for better quality. Indeed, the largest horticultural exporter is more satisfied with the grades produced by smaller growers.

Outgrower schemes can also contribute to transparency and improved information flow by performing the grading of products at the collection points. Farmers are learning faster because they are able to observe the grading process directly. Zambia's most successful small farmer outgrower scheme, (for cotton) successfully communicates necessary grades to their producers by having sample reference grades available to them at the pickup points. Finta, a large dairy processor, understands the value of immediate feedback on grades to help producers improve their quality and to improve trust. Their scheme grades milk both at collection points where farmers are present and again at the processing plant to ensure quality and safety tests e.g., mastitis, TB, bacteria counts.

Outgrower schemes sometimes extend vital credit for inputs. According to a recent Central Statistical Office survey of 897,000 agricultural households (CSO, 2000:27), 118,000 received formal loans and 82% of these were received from outgrower arrangements.

Middlemen, often serving as transmitters of G&S information, are not very active in Zambia. Their usual functions of coordination, transportation, and lot size management may be fulfilled by the outgrower system and could benefit from further investigation since these functions are vital to the transmission of G&S.

## Box 5.1

### Outgrower schemes: a prayer answered or neo-feudalism

Successful outgrower schemes can serve many valuable functions:

- Cost-effective means of production
- Means of transferring technology
- Train farmers in advanced production skills
- Transmission of market information and G&S
- Distribution of risk
- Facilitate credit for inputs
- Reduce transaction costs of getting to the marketplace

But outgrower schemes have distinct drawbacks. The contractor invests in a grower without any assurance of receiving the agreed-upon products or quality levels. When there is more than one buyer, the opportunity exists for **side-selling** to someone other than the original contractor who extended the loan. Some schemes, where contractors have reported side selling in excess of 30 %, quickly become unprofitable. Dunavant, the nation's largest cotton buyer and outgrower contractor, keeps a database of 120,000 growers of whom only 50,000 are trusted to participate.\* Growers lose because contractors are reluctant to invest in providing inputs or training; and contractors lose because their investment is stolen and the anticipated production does not materialize.

There is currently no recourse when side selling happens and, even if there were, growers rarely have assets worth pursuing. Many contractors claim that legislation is necessary to enable the next phase of outgrower schemes. Inevitably, increased production and increased competition will result in more side selling and contractual default, which at the moment are not addressed or enforceable in the Agricultural Credit Act. Nor is there a small claims or fast track legal option. Some have even suggested that the buyers who purchase from side sellers be held legally liable.

Growers have their issues as well. Although outgrower schemes can provide a reasonably assured market, occasionally the contractor buys late, opts not to buy, or offers a lower than expected price thereby leaving the grower little option since the number of local buyers for outgrower products is often limited. Occasionally growers receive necessary inputs late or not at all. Some schemes promote hierarchical systems with individual contact persons rather than supporting or enabling cooperative organizations that can help consolidate the growers' internal capacity to manage themselves.

At least one outgrower scheme has found a proven method, borrowed from micro-finance, to reduce side selling. By organizing growers into small groups that are mutually responsible for each other, the likelihood of default or side selling should be reduced. These small groups also make the distribution of inputs and information more efficient as well as the weighing, storage, and grading of crops. Investing in these cooperative local processes is likely to be far more effective and sustainable than any legal or punitive approach. This formation of effective, collective-action groups also serves as a useful exit strategy to take up the roles of NGOs or contractors that are currently involved in facilitating these schemes.

\*A number of outgrowers choose to grow other crops while others who have not repaid input loans are blacklisted from receiving any further loans.

## **HIV/AIDS**

Any agricultural or agribusiness development in Zambia that requires skilled labor must take into account one very serious factor. With 20 percent of the total population infected with HIV/AIDS many families and employers are having to deal with single parents and parent less families. Infection rates are considerably higher in urban areas and for the most productive segments of society (age 15-45). This pandemic has almost single-handedly contributed to a dramatic decline in average life expectancy from the mid-'60s to below 40 years of age. The capability to train people for new capacity and to work productively will be significantly diminished for a large proportion of the population including both the sick and their caretakers. Any sound strategy must take this considerable threat into account.

## 6. The Grades And Standards Situation

Currently the Zambia Bureau of Standards is mandated to set, monitor, and help enforce agricultural grades and standards. Survey respondents have unanimously agreed that due to inadequate resources and management, the Bureau has not fulfilled its role. Indeed, it currently maintains no relevant standards for the sector. On the other hand, several agricultural subsectors i.e. horticulture, spices, floriculture, and coffee, set their own standards in accordance with market demand. Without exception, these standards are considerably higher than government standards and are managed and updated by relevant grower or trade associations.

This private model functions reasonably well and could serve as the benchmark for most further standards development. Private sector associations take the lead in developing and implementing appropriate standards. Government's participatory role, in order to secure the public good, would be to support monitoring and coordination to assure equity. In the areas of public safety, hygiene, and equity, the Government could ensure enforcement and take the lead role on standards, as it does in the Ministry of Health's Food and Drug Department.

In terms of international trade, Zambia, is a relative unknown. While this can certainly present a challenge when accessing foreign markets, it can also be a distinct opportunity. The country has no negative baggage as a "brand" and therefore it has the potential to create a **national brand** image. To do this requires a coordinated effort between government and the private sector (ACF, FANR/PAN, and ZMM-GT come to mind as facilitators) with some outside assistance. Among other things, it will require a clear set of G&S that enable better Zambian farmers and industry to produce at consistent standards of quality for export. Failure to establish accredited food safety and quality standards places Zambian agro-industry at a considerable disadvantage, both against imports, and increasingly competitive export markets that have adapted or are moving toward these standards.

If Zambia is to meet these challenges, then the quality of **business management**, particularly given the new demands of emerging agrifood enterprises, will need to improve. Currently, formal educational institutions do not provide adequate training. The NRDC/ZEGA Training Trust has notably begun to incorporate basic management skills but meets only a fraction of the demand for its services. For exports and industry to develop, management, particularly Zambian management must do so as well. Given the AIDS pandemic among the more educated/affluent working age professionals, this need will likely become even more acute.

## 6.1 Current Situation

Zambian grades and standards can be grouped in three categories (Toomey, D. Sterns, P. Jumbe, C. 2000):

1. Grades and standards that relate to **phytosanitary, microbial contamination, and chemical residues** are mandatory standards for all exporters, set by regulatory agencies in importing countries.
2. The buyers set grades and standards that relate to **quality attributes** of the produce such as color, size, taste, appearance, texture, uniformity and packaging with significant influence of the consumers. These grades and standards are obligatory for exporters but vary from place to place and from time to time depending on consumer preferences and trading norms.
3. Grades and standards that relate to **social and environmental issues** are newly emerging market requirements that are more flexible and still partly voluntary. The strictness on conformity to these standards varies from market to market. These standards are usually embodied in codes of practice, which set the rules, regulations and practices that producers and exporters must meet. The main objective of these standards is to ensure humane treatment of employees, insure safety (of the workers, bystanders and consumers), reduce use of agrochemicals, and the conservation of the environment. Current trends indicate that the importance of these standards will increase and eventually play a very significant role in future entry to markets. Already UK and other European retailers are asking their suppliers to comply with these standards.

## 6.2 G&S in the export market

The Export Board of Zambia indicates that domestic firms have had some problems in interpreting buyers' standards. This has resulted in shipments rejected by buyers because of nonconformity despite local pre-shipment inspection. Some of the necessary information is being channeled through agencies like the Center for Promotion of Imports from Developing Countries (CBI), a development Agency of the Ministry of Foreign Affairs of the Netherlands that is supporting this and other export development projects through the Export Board.

The stiffening of standards in the most developed markets is a concern for several exporters, particularly those without the product tracing mechanisms and testing capabilities to meet standards such as maximum residue limits (MRLs) and the European Commission's aflatoxin standards. *See Box 6.1.* Concern over social and environmental standards and their influence over local requirements is currently evident only among the few exporters whose business are primarily with the UK.

## Box 6.1

### **Stricter Standards Change the Rules of the Game: Meeting European MRLs**

Harmonization of the Maximum Residue Levels (MRLs) of pesticides permitted for food entering the European Union poses new challenges for exports from developing countries. MRLs are set based on the experimental data now required of every pesticide manufacturer and for each crop on the basis of good agricultural practice (GAP), taking into account the toxicity of the substance and its effect on the environment and on human and animal health. However, if the required experimental data are not submitted, MRLs are automatically set by default at zero.

Chemical manufacturers have usually assumed the responsibility for the submission of experimental data for the pesticides they manufacture. However, their interest in investing substantial resources in data generation is governed by the returns expected from sales. Thus, they tend to concentrate reporting data to establish the MRLs for pesticides which have the greatest potential for high sales volumes, applied on the major crops. They have no interest in providing data for older pesticides or those that are beyond patent protection and are now also produced by competitors.

This represents an enormous potential threat to developing country exporters particularly for horticultural crops that are often considered minor use crops by chemical companies. Since companies are unlikely to invest resources to submit data for minor use crops or second generation pesticides, there are many pesticides currently used in the African horticultural industry whose MRLs will be set to a difficult to meet level of zero due to lack of experimental data.

In order to address the issues of MRLs and pesticide use in general, COLEACP proposed a “Pesticides Initiative” in April 2000. The plan consists of four units.

- The “INFO” unit continuously disseminates user-friendly information to the ACP countries on matters concerning pesticides by developing databases on the European Union's regulations governing MRLs.
- The “MRL” unit is conducting trials in tropical regions for the generation of data to support the setting of appropriate MRLs, reflecting good agricultural practices in fruit and vegetable crops.
- The “Best Practice” unit is providing assistance to producers and exporters in ACP countries to adjust their practices by training operators and developing crop protocols that comply with EU regulations.
- The “Capacity Building” unit is supporting the establishment of local knowledge to facilitate the achievement of the program's objectives.

This sort of regional collaboration and coordination should serve as a model for future challenges, particularly those posed by strict policies implemented in industrialized countries.

In Zambia, grades and standards for export products are essentially market requirements, set by foreign buyers and governments, that must be met. Only a few exporters see G&S as a means to differentiate their products and create new markets. An emerging and noteworthy exception is the interest in organic production within several agricultural subsectors.

Although improvement in domestic G&S would likely help to facilitate and spur improvements in export G&S, currently there is limited demand for quality in the domestic markets, except in areas where there is a perceived need to compete with imported goods or with products where food safety concerns are prominent, e.g., milk. Otherwise, the system of G&S, i.e., setting, implementation, communication, and enforcement of standards, is weak.

### **6.3 Regional markets.**

Regional markets are considerably less demanding of G&S. Concerns are primarily for phytosanitary standards and for quality attributes. Under regional cooperation agreements, the harmonization of standards could facilitate an increase in trade. On the other hand, if standards are aligned closer to the international standards prevalent in OECD countries, this harmonization could hinder trade in the short run and likely improve it in the long run as exporters and countries respond to these new market requirements. With the removal of tariff barriers, SPS standards are quickly becoming the preferred policy management tool to prevent competitive trade. There is evidence of such actions taken by the Zambian government in recent months.

Regional standards are also somewhat flexible for commodity crops, depending on seasonal weather and availability. Similar regional growing conditions diminish the quality variants throughout the supply. However, there is very little flexibility for high-value, differentiated crops that are exported to Europe and the USA. Global sourcing, when localized climatic conditions affect quantity and quality, can be used to maintain standards.

### **6.4 G&S in the domestic market**

Declining buying power, combined with already low income levels, limits domestic demand for improved G&S. With the exception of globally traded commodities, most domestic products only comply with most rudimentary G&S, i.e., surface imperfections and product size. Trade, particularly export trade, is affected by this low quality syndrome. It is difficult to raise the consciousness of producers and to train them for the export market when the majority of products in the domestic market do not require stringent G&S. The lack of demand for improved G&S and similar value-adding attributes also means that domestic achieving capacity has difficulty reaching economies of scale, particularly for the necessary imported inputs, e.g., glass jars, to adequately service the export markets.

Low G&S reduce domestic competitiveness and can also encourage unnecessary imports with a corresponding impact on foreign exchange. Low G&S also encourage the dumping of poor quality and expired products onto the market. An area of particular concern is that of poorly enforced food safety and health regulations that can lead to increased sickness and loss of productivity. Particularly at risk are the significant population of immuno-compromised individuals suffering from HIV/AIDS. Because there are very few mandatory product quality standards, e.g., expiration dates, product branding becomes the most important quality signal in the marketplace. This situation is inherently risky for consumers who must then depend on the availability and consistency of a particular brand.

There is circumstantial evidence that Zambian consumers are increasing their quality consumption standards. Nevertheless, the general manager of the country's largest food retailing operation insists that more than 90% of his customers are primarily price oriented. He also indicates that a number of Zambian products meet basic domestic quality demands (albeit not packaging quality), but not international levels.

## 7. Grades and Standards Institutions

Government institutions and private organizations, as well as regional organizations, are involved in the setting, implementation, and enforcement of grades and standards. In order to have a well-functioning system of grades and standards, there must be understanding and capacity at several levels:

- technical
- policy
- public - media
- private sector

An overall “snapshot” of the institutional environment is provided in Table 7, a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis of the institutional environment.

**Table 7 SWOT Analysis of the Institutional Environment**

<p style="text-align: center;"><b><u>STRENGTHS</u></b></p> <ul style="list-style-type: none"> <li>• Successful public-private sector partnership – NRDC/ZEGA training trust</li> <li>• Emergence of industry-led standards initiatives and training – ZEGA, OPPAZ, Coffee growers, ZACA warehouse receipt system</li> <li>• Zambian reputation is good for certain commodities</li> <li>• Local alliances – ACF</li> </ul>	<p style="text-align: center;"><b><u>OPPORTUNITIES</u></b></p> <ul style="list-style-type: none"> <li>• Regional collaboration – ZMM-GT, FANR-PAN</li> <li>• Build reputation as a quality exporter</li> <li>• Certification strategic alliances – local licensing of US and EU labels, i.e., organic labels, COLEACP</li> </ul>
<p style="text-align: center;"><b><u>WEAKNESSES</u></b></p> <ul style="list-style-type: none"> <li>• Inadequate coordination and information among institutions</li> <li>• Weak system of information dissemination</li> <li>• Lack of or archaic standards for some commodities</li> <li>• Weak testing and lab capacity</li> <li>• Weak enforcement</li> <li>• Inadequate testing equipment. In some cases very basic equipment, e.g., scales, moisture meters and grinders are lacking.</li> <li>• Education and training capacity</li> </ul>	<p style="text-align: center;"><b><u>THREATS</u></b></p> <ul style="list-style-type: none"> <li>• Strict standards in importing countries, particularly the EU (e.g., MRLs and aflatoxin)</li> <li>• Local standards, like the ZEGA Code of Practice, are not recognized by European buyers</li> <li>• Political use of G&amp;S, e.g., creating non-tariff barriers</li> <li>• Budget and capacity constraints</li> <li>• Poor macroeconomic climate (Kwacha devaluation, etc.)</li> </ul>

## 7.1 Government Institutions

The **Zambia Bureau of Standards (ZABS)** is housed in the **Ministry of Commerce**. Under the Standards Act of 1994, ZABS is the national government body charged with the responsibility of setting, reviewing, monitoring, and implementing grades and standards for all industries including agriculture. It also serves as the Zambian contact point for the WTO and the ISO.

ZABS sets standards through technical committees drawn from the specific stakeholders. Although it involves the most relevant stakeholders in the standard setting process, the Bureau does not have capacity to conduct feasibility studies or socio-economic studies to determine the impact of the proposed standards. Very few agricultural standards have been set by ZABS. There is only one agricultural committee, the Cereals and Cereal Product Technical Committee, which has developed and published standards on animal/stock feed (10 standards), maize (1 standard), and fertilizers (1 standard). Most of these standards have not been updated since the original publication.

ZABS suffers from severe capacity limitations and static or declining annual funding even though they are considered a "priority" by the Ministry of Commerce. Several donor projects directed toward capacity building in the Bureau never disbursed funds (1994 World Bank ZAMPIP, 1996 ASIP I). Thus, it does not have the capacity to enforce grades or standards or disseminate G&S information.

Regarding agricultural G&S, ZABS is essentially inactive and unresponsive to both public needs and market demands relating to grades and standards. This has led other government institutions as well as private sector organizations to fill the G&S capacity gap. However, this has led to a disjointed system without an institution to provide an oversight role. Part of this oversight role is to ensure that inspections are impartial and that standards are applied consistently. However, in order to accomplish this, ZABS will need to regain the confidence of the private sector as well as other government institutions.

ZABS also has a role in coordinating the private sector's desire to establish grades and standards in order to avoid the different sectors acting independently and creating needless duplication of tasks. It also has the knowledge and skills to coordinate G&S activities among the different ministries (Agriculture, Food & Fisheries, Health, and Trade) which would shorten the development process and avoid duplication of activities and wasted resources.

Several departments within the **Ministry of Agriculture, Food, and Fisheries (MAFF)** are responsible for G&S activities. All departments in MAFF report funding and capacity constraints, in terms of both personnel and equipment:

- The **National Agricultural Information Service** works in conjunction with the agricultural extension officers to provide information and training on grades and standards and related issues. However, the capacity of the current extension service to provide relevant market information with respect to grades and standards is extremely limited. The extension officers, like many farmers, are still learning how to operate in a free market system and thus can not provide the necessary information and training to farmers. This has led to a severe capacity gap in information flow. Competent, market-oriented NGOs can serve a key role in filling the void in information flow. Successful examples of this in Zambia are ZATAC and CLUSA.
- The **Plant Quarantine and Phytosanitary Service** implements the Plant Pests and Diseases Act (1995). The Act requires that all importers and exporters of plants and plant materials obtain a plant import permit and phytosanitary certificate prior to shipment of the consignments.
- The **National Livestock Epidemiology and Information Center** implements the Stock Diseases Act (1995). The act controls the import of all livestock products, including poultry and poultry products, through import permits. The Center provides three main functions: livestock epidemiology, information management and dissemination, and control and regulation.
- The **Seed Control and Certification Institute** implements the Plant Variety and Seeds Act (1995). The act provides for the testing of seed for compliance with minimum

standards for purity, germination, weed, and moisture content. Other provisions include the control of quality in the multiplication, production and distribution of seed. The testing process takes two years. Due to capacity and laboratory limitations, the testing process is now done within some of the seed companies with SCCI oversight. Proposed legislation to mimic South Africa's private sector, self-monitored seed testing and control would enable the Zambian government to focus on monitoring rather than implementation. This is currently being tested with Zamseed, the largest seed company. This ought to improve subsectoral efficiency and the ability of seed companies to respond to market demand.

- The **Department of Planning and Cooperatives** executes the Control of Goods Act (1994). This entails dealing with the inflow and outflow of agricultural goods and products through the issuance of export and import permits. Thus, when importing or exporting, one must obtain the relevant sanitary or phytosanitary certificate, as well as the import or export permit. While the sanitary and phytosanitary certificates are necessary to maintain plant and animal health within Zambia and protect the reputation of Zambian exports, the import and export certificates do not seem to fulfill a necessary function and appear to increase the transaction costs of trade.

The **Food and Drugs Control Board** in the **Ministry of Health** administers the Food and Drugs Act, which deals with food safety and hygiene standards. The Food and Drug Regulations, updated in 2000, appears to be in line with U.S. and Canadian standards, including provisions for expiration dates, accurate labeling, and traceability. Unfortunately, there is very little knowledge of this regulation and it is not enforced for various reasons, e.g., lack of staffing, lack of simple equipment to crimp expiration dates on packages, etc.

The Food and Drugs Control Board is also responsible for pesticide regulations and uses the maximum residue levels set by the Codex. However, there is no monitoring.

**City Councils** (municipal authorities) are responsible for the enforcement of the Food and Drugs Act and thus have inspection authority for the food service industry and food processors. The Ministry of Health provides inspectors in the rural areas. However, inspector capacity is limited in the Ministry and even more so at the municipal level. Thus, only the larger enterprises are inspected on a regular basis.

The **Environmental Council of Zambia** in the **Ministry of Environment and Natural Resources** administers the Environmental Protection Act. Pesticide use regulations prescribe the importation, marketing, and appropriate use of these products. Manufacturers must register all pesticides before they are allowed on the market. But this registration process entails submitting data pertaining to the chemical and biological properties of the product, as well as potential health and environmental effects. The regulation does not require additional testing to be undertaken in Zambia. Once a product has been registered, anyone can import it into the country, making it difficult to monitor the quality of imports.

The **Food Reserve Agency** is a semi-autonomous, independent, grant-receiving organization responsible for the assurance of a food security reserve, as well as overall market support and marketing information. By statutory mandate, the FRA should work with four commodities: maize,

rice, sorghum, and millet, yet it only deals with maize. Their entire market information effort over several years consists of irregular communications to 30-50 farmers. A part of their mandate is to promote the re-introduction of quality and quantity standards for food commodities. To this end, they have achieved the following:

- Standardized bag sizes for maize to international 50 kg standard (from 90 kg bags)
- Pursued collaborative grain standards with some success
- Enforced international standards (Codex) for some grain purchases by food donor organizations

The FRA has also filled some of the agricultural support vacuum that emerged after liberalization by occasionally providing agricultural inputs, such as fertilizer, to farmers. Curiously, its mandate and literature unequivocally state that they do not deal with fertilizer. The FRA gives free fertilizer to farmers with the expectation of being repaid in maize. Several informants noted that these "fertilizer loans" have a very low rate of repayment (35%). Besides being a drain on the public treasury and very distortionary for fertilizer markets, this operation encourages a handout mentality rather than the honest repayment of loans. Furthermore, those lucky enough to receive this subsidy can afford to sell their maize at considerably lower prices, thereby undercutting honest farmers. The FRA was investigated and found guilty of a number of irregularities in the fall of 2000 and yet appears to continue on hindered.

The **National Institute for Scientific and Industrial Research** in the Ministry of Science and Technology provides testing and advisory services to private companies on a fee basis. Among the staff are several competent food scientists with experience in food processing and HACCP training. However, the capacity to provide such services is severely limited due to lack of funds and equipment.

Export oriented information is disseminated by the **Export Board of Zambia** to the National Farmers Union and other producer associations via regular post, e-mail, and workshops. As the Board collects buyer requirements and specifications, they transmit these along the same channels. For other information the Board is heavily dependent on donor assistance, mostly through the Dutch sponsored CBI and EU as well as ITC. The Board has been in existence since 1987, and has 22 people on staff. Twelve of these are market advisers. The Board confirms that, for most products, Zambia remains at the low end in terms of price rewards for grades and has not consistently penetrated grade "A" categories.

## 7.2 Private Institutions

The **Zambia National Farmers' Union (ZNFU)** is Zambia's primary farmer organization representing both commercial and small scale farmers as well as commodity associations. ZNFU is an important political lobby for farmers and farm interests.

The Organic Producers and Processors Association of Zambia (OPPAZ) is a newly formed organization under the auspices of the **Zambian National Farmers Union (ZNFU)**. OPPAZ provides information on the organic market, co-ordinates organic certification, and provides training to

farmers on organic production practices. This new organization recently facilitated organic certification<sup>8</sup> of 47 individual farmers and 7 farmer groups. OPPAZ achieved significant cost savings for the farmers by spreading out the fixed costs of certification (travel, etc.) as well as providing pre-inspection and mapping services. However, most of these services were provided at no cost so a realistic estimate of the savings is not available. OPPAZ currently is self funded and in need of external funding support to jump start its mission. Until the Association reaches a position of financial sustainability, external support will be necessary. This situation is particularly pressing due to the rising demands for these services from the Zambian farming sector at this time of rapid expansion in organic farming and production in Zambia. The Zambia USAID office has considered funding its proposal/business plan.

**Commodity-Specific Grower Organizations** are the leaders in setting and implementing grades and standards in Zambian agriculture. Among these, export focused commodity groups like the Zambia Export Growers Association (ZEGA) and ZCGA provide the information and training needed to meet buyers specifications. Grower organizations are market focused and thus are the logical organization to set and implement certain standards. However, a core capacity of growers must exist. This model has been successful in the export market and is now being tried for local commodities. The **Zambia Agricultural Commodity Agency (ZACA)** is a newly formed, private organization working now with the Natural Resources Institute to establish and implement a warehouse receipt system for maize (*See Box 3.2*). As a part of this system, ZACA helped to develop recent maize grades and standards.

Market-oriented NGOs like ZATAC and CLUSA are providing information and training to small scale farmers. These services are crucial for the smallholder to meet the standards of the export market.

### 7.3 Public-Private Partnerships

The **Natural Resources Development College/Zambia Export Growers Association Training Trust (NRDC/ZEGA Training Trust)** operates as an independent organization providing certificate and diploma training in export horticulture as well as on-farm short courses. The trust is a unique public-private partnership between the Natural Resources Development College (NRDC is part of MAFF) and the Zambian Export Growers Association. It is located at NRDC where it has been provided land, a building, and facilities. Course fees, plus ZEGA and some exporters cover the operating budget for the Trust. It is expected that income will also be generated through exports of vegetables and roses that are being produced on the training farm. The Training Trust can be used as a model of how industry groups and government can work together to overcome deficiencies in training.

Even though its focus is limited to horticulture and floriculture, the Trust is unique among the institutions of higher education in that it is the only one providing practical experience and market oriented skills. It is one of the few public-private success stories, uniting the Ministry of Agriculture Food and Fisheries, which provides the infrastructure and some of the teaching staff, with the Export Growers Association which develops the curriculum and provide some of the teaching. The caliber and relevance of their work has given them a measure of international

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<sup>8</sup> Certification was done by EcoCert Germany and the Soil Association of the UK.

credibility, as evidenced by their potential collaboration with a major European organic certification body (EcoCert) to serve as their auditor for Zambian certification.

As an institution it serves a unique function of conveying current standards and the necessary commercial orientation to implement them, i.e., supervision skills and practical field experience.

The **Agricultural Consultative Forum (ACF)** is the leading policy and advisory think tank in Zambia's agricultural sector. It is composed of members from six ministries, several NGOs, major donors, the National Farmers Union, and members of the private sector who chair it. The ACF's primary objectives are to:

- facilitate continuous consultation among key stakeholders in Zambian agriculture to improve consistency and a shared vision
- advise on formulation, updating, and operationalization of agricultural policy
- promote the operation of public-private sector partnerships and collaborative mechanisms

The **Liaison Committee for Europe, Africa, Caribbean, Pacific (COLEACP)** is an inter-professional organization actively involved in several standards setting initiatives including a harmonized code of practice for the horticultural sector (*See Box 7.1*) in a number of countries and the ACP pesticide initiative (*See Box 6.1*).

## Box 7.1

### **Opportunities for Regional Collaboration: The COLEACP Harmonized Framework**

A diverse array of stricter quality standards is currently emerging in a number of countries that will have tremendous impact on the ability of developing countries to gain access to those markets. Overcoming these challenges can be a considerable challenge for developing countries' firms especially given the many variations of standards. Importing firms in developed markets also find it difficult and costly to monitor the diverse production standards that exist among developing nations.

COLEACP (Committee for Liaison between Europe, Africa, the Caribbean and the Pacific ) recent launched an initiative to adopt a Harmonized Framework for horticultural exporters that seeks to address this issue and can potentially serve as a model for regional collaboration. COLEACP is a private, non-profit, inter-professional association with close links to a number of governments, set up in 1973 and composed mainly of exporters and importers in the ACP-EU horticultural industry. This Framework is the product of the harmonization of the national Codes of Practice of 8 exporters' associations in 5 countries of Eastern and Southern Africa, notably Kenya, Tanzania, Uganda, Zimbabwe, and Zambia.

The Harmonized Framework addresses key issues in horticultural production including hygiene, pesticide usage, and social conditions. The impetus for harmonization is the "code overload" currently taking place in the export horticulture sector. On average, most large export firms are trying to meet 12 to 15 different codes of practice. These include codes set by European retailers, primary market organizations (importers), and industry groups/associations. While most codes cover the same general areas, managing the requirements of so many different sets of standards is becoming increasingly difficult for even the very large exporters.

Standards in the harmonized framework are strict and are benchmarked against Europeans codes of practice such as EUREP. Moreover, this initiative has the support of other key stakeholders in the European standards arena including the Ethical Trading Initiative (UK), the Fair Trade Labeling Organization, and industry groups and associations in the horticultural import sector.

The harmonized framework was completed and approved by members in 2000. Implementation and adoption of the harmonized framework in member countries and promotion in importing countries began in early 2001. While it is too early to determine the success of the COLEACP harmonized framework, it can serve as a useful example of the potential for regional collaboration where developing countries can pool together resources and talent in order meet standards in developed countries.

## 8. Cross-Cutting Grades and Standards Issues

Although key standards issues are covered by legislation, the current regulatory framework for the implementation and monitoring of this system is not functioning due to capacity and funding constraints. This section identifies several key, crosscutting grades and standards issues.

### 8.1 Information

Information flow and dissemination are critical in a market system and grades and standards are an important medium to transmit market requirements. The absence of grades and standards, both formal and informal, exacerbates the information void in the agrifood system. In many economies middlemen or traders are transmitters of G&S information as well as serving a function of coordination, transportation, and lot size management. However, the trader link in the supply chain is not well developed in Zambia. Outgrower schemes are filling some of this gap. However, they only target a limited number of commodities and producers.

Even when information is available, unsophisticated farmers may not know how to use it. This is evident in the "market chasing" phenomena whereby many farmers respond to previous seasons' demands, not realizing that many others are doing the same and consequently flooding the markets with products that were in shortage the prior year. This boom and bust cycle, due to the inability to use information properly, furthers the farmers' mistrust of the market and increases their poverty. This phenomenon has a further consequence for market development. Since supplies are erratic, investment in infrastructure, growing skills for the product, and processing are dampened. A warehouse receipt system, currently under development, will attempt to smooth out the seasonality of maize prices.

Inadequate flow of information has also caused particular difficulties at the start-up level, even in such capital intensive, well-researched subsectors as floriculture. Without good information, local growers, especially smaller ones, are at the mercy of consultants and unsubstantiated information. This has caused investments in substandard varieties that are costly to replace once market requirements are better understood. In the absence of market signals, like standards, reputations fill the gap and are the basis of many transactions in Zambia. This, of course, makes it more difficult for new players to enter the market place.

Even where information is available, it is often difficult to interpret. For example, the Plant Quarantine and Phytosanitary Service through ZNFU and ZEGA disseminate SPS information. However, they only pass along the official notices and they are sometimes difficult to interpret. The failure to both have enough information (adequate inflow of international and regional grades and standards issues) as well as the outflow to relevant stakeholders, e.g., extension workers, growers, exporters, customs officials, diminishes the ability to both adapt and monitor relevant phytosanitary standards. This results in diminished trade capabilities, increased risk of contamination and spread of disease, and exacerbates conflict between buyers and sellers. The lack of updated and

decipherable information has also contributed to confusion among clients and in some cases exports into certain countries have been denied entry.

This lack of SPS information is beginning to be addressed by international and regional information dissemination including staff exchanges, database building and sharing, and mailing lists (listserve and USDA bulletins). There is discussion about exchanges among the Plant Health and Inspection departments of the SADC region that could be further explored and supported.

## **8.2 Testing and Laboratory Capacity**

Laboratory testing capacity was identified by many interviewees as a constraint for improved standards and for exporting to the US/EU. While several of the large export and processing firms operate their own laboratories, most companies must rely on government testing facilities for some or all of their needs. The four laboratories used are The University of Zambia Department of Food Science, the Food and Drug Control Board, Mount Makulu Research Station, and the National Institute for Scientific and Industrial Research (Ministry of Science and Technology). While some laboratories have recently been upgraded, adequate staff training and, in some cases, equipment are still not up to international standards (*See Box 8.1*). Since these labs serve several functions, only one of which is commercial testing, the timeliness of results (30 days) is often unacceptable for many private enterprises.

There is a clear need for standardized testing methodology and equipment. Without adequate controls, even the same instruments can produce different results, e.g., two different electronic chips in the same model of moisture meter. A system of checks and balances for quality assurance and consistency across the spectrum of test sites and personnel is crucial for the uniform and consistent application of grades and standards.

The cost of operating a quality independent lab is too high to be supported by the relatively low volumes of current use and would therefore require initial government participation, perhaps setting it up as a public-private endeavor. While quality equipment exists in the country, there is a notable shortage of qualified and experienced laboratory technicians. A certification program for technicians will be particularly useful as industries requiring more sophisticated grades and standards grow.

The lack of an accredited lab or other independent dispute resolution mechanism gives the dominant party an unfair market advantage. Exporters suffer from the inability to defend their production standards when these are challenged by importing countries. Stories abound of foreign buyers discounting shipments claiming G&S discrepancies with the exporters' tests. In extreme cases, shipments have been destroyed in both the U.S. and EU (one notable incident in Hamburg involved five containers of paprika).

Without an accredited laboratory or international standard testing facilities, Zambia limits its ability to defend itself against imported low quality products and risks becoming a dumping ground for substandard or expired products.

## Box 8.1

### **Laboratory Testing: Improved Capabilities May Not Be Enough**

Changing market demands mean that Zambian exporters must meet stricter quality standards and more sophisticated testing regimens. The equipment costs and specialized training necessary to conduct some of these tests severely limit the number of laboratories available for producers, processors, and merchants to test products for contract conformity. Consequently, test results are not always provided in a timely fashion and products are often traded on the basis of the buyer's (destination) test results.

Obviously, in the event of a quality dispute, this places the seller at a distinct disadvantage with little or no recourse. Compounding this problem, when origin test results are available, buyers are reluctant to consider sellers' test results if they are not performed by a reputable, commonly recognized or accredited laboratory. While efforts to increase testing capacity in Zambia are necessary to facilitate regional and international trade, attention must also be devoted to the negative perceptions that trading partners have regarding Zambia's testing capabilities.

International credibility is enhanced when laboratories seek accreditation with an authorized institution. Collaborations with other laboratories enable information exchanges and provide opportunity to investigate differences or trends, and uncover problems that may have gone unnoticed.

With a history of demonstrated congruence between origin and destination laboratories, there is rarely a valid reason to question the credibility of the origin result. Without this credibility, a buyer can simply use "inferior quality" as leverage against the Zambian seller. With this in mind, laboratories should verify that:

1. The testing methods used are properly calibrated and/or aligned to recognized reference methods
2. Once aligned, all instrumentation should be periodically checked to ensure it continues to provide accurate, repeatable results
3. Test procedures, including sample preparation, should be sufficiently documented in "cookbook" fashion to enable multiple analysts to consistently perform the test in the same fashion, as some tests are extremely operator sensitive
4. Conformity to established standard operating procedures is critical and must be enforced to ensure the consistency and reliability of test results

### 8.3 Certification and Enforcement

While sufficient standards exist in some areas, such as the Food and Drug Act, enforcement is extremely limited. Capacity limitations in the agencies responsible for enforcement are likely to continue in the future. Thus, the current system of standards, particularly enforcement, needs to be reconsidered. Government agencies should work with industry associations, NGOs, and consumers to develop partnerships that can realistically implement and enforce standards.

The current lack of adequate enforcement of standards, such as phytosanitary standards and pesticide residue limits, creates several risks. In the short run, there is a risk of import bans on Zambian produce if one exporter violates certain standards like pesticide residue limits. In the long run, these incidents will harm Zambia's reputation in the world market. Reputation is a high exclusion cost good<sup>9</sup> and government is often the preferred agent to secure this. However, due to the current capacity limitation in Zambia, the more logical home for this type of standards enforcement is with the relevant trade association acting either independently or in a private-public partnership.

### 8.4 Transparency/checks and balances

The lack of consistency and clarity in grade and standards permits buyers, both in the domestic and international markets, to take unfair advantage of sellers whose reduced information and lack of recourse make them vulnerable (*See Box 8.2*). Information on standards can be used by buyers to increase their bargaining power with respect to price negotiations. The lack of any system of arbitration either through government or trade/farmer associations exacerbates this problem.

To most growers it is unclear how certain crops are graded thereby diminishing their ability to meet the market's demand. Simple learning tools such as posters, color charts, pamphlets, and reference samples could dramatically improve this situation with minimal effort. Zambia's most successful small farmer outgrower scheme, that for cotton, successfully communicates necessary grades to their producers by having sample reference grades available to them at the pickup points. Similarly Cheetah Zambia Ltd, the country's largest processor and exporter of paprika provides visible reference grades for farmers.

Also, the use of file samples to monitor the accuracy of inspections provided by an inspection company or inspector can help to facilitate the transparency of transactions.

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<sup>9</sup> Where a good exists for one user, it is costly to exclude other users.

## Box 8.2

### Moving targets: A Case of Multiple Marketing Standards

In Zambia, grain producers, processors, millers, and exporters agree that practical, meaningful grading standards are necessary for efficient marketing of agricultural commodities, but they disagree on which quality attributes to measure and the acceptable limits for these. Circumstantial evidence points to some millers' reluctance to agree on any general standards since the absence of transparent standards puts them at a bargaining advantage with farmers.

In the mid-1980's, purchasing decisions were based on grades and standards set by the Zambia Bureau of Standards and implemented by the parastatal National Agricultural Marketing Board. After liberalization of the agricultural marketing system, the use of these grades and standards gradually declined. Instead, companies customized individual standards to satisfy their own needs, which, on the surface, seems appropriate. However, from the farmers' viewpoint, this approach fractionates and complicates the marketing process, and puts them at a clear disadvantage. When the quality parameters vary for each buyer and are no longer clearly defined, the quality signals and market incentives that encourage consistent production deteriorate, and the producer either assumes more risk or produces less.

While it is understandable that some factors, such as those affecting product wholesomeness or end-use quality, may vary and require special consideration, certain quality criteria and optimum grade parameters exist for each commodity, regardless of its intended end-use (e.g., extraneous material, damage, moisture, and broken/shriveled kernels). Identifying important quality factors common to all milling/manufacturing processes and end-use products and using them as a basis for establishing general quality grades and standards is encouraged and necessary to:

1. Estimate the relative value of the commodity
2. Ensure consistency
3. Convey clear quality/cost signals to the farmer
4. Lower transaction costs and improve market efficiency
5. Improve transparency and fairness

If both the common and special quality parameters required by the industry are not conveyed to producers and traders in a clear and consistent fashion, then the suppliers are expected to hit a moving target, which hampers the marketing process. Thus, where possible, efforts to harmonize standards are encouraged and should be accomplished through the participation of producers, handlers, processors, millers, and exporters. As Zambia expands food processing and formal trade, the need for harmonization and transparency of grades and standards will become increasingly important.

## 8.5 Education and Training

Education and training was identified as a key element to improve grades and standards and thus, quality of agricultural products. The University of Zambia, which has a five-year degree program in Agronomy, focuses on traditional crops, particularly maize, rather than high-value crops like horticulture, spices, and coffee. Internal and political difficulties at the University have caused repeated closures and the degree programs can take several years longer than expected; hence participation in these is diminished. The NRDC/ZEGA Training Trust can be used as a model of public-private partnership to provide a curriculum tailored to the needs of emerging industries where abundant employment opportunities exist.

The most pressing need for training with respect to grades and standards is “training of the trainers.” Most farmer training is conducted by agricultural and livestock extension officers. However, these officers have been trained in the traditional model, which focuses only on production practices of crops such as maize. Thus, they need basic training in agronomic practices for other crops as well as business management and marketing, particularly how grades and standards function and transmit information. Again, the NRDC/ZEGA Training Trust should be used as a model for the development of such training programs. Moreover, NGOs, such as CLUSA, are involved in retraining extension staff to assist in their outgrower programs. Grades and standards should be an important element in both of these models of retraining.

Training is also needed in other grades and standards institutions. For example, a shortage of capacity in the Plant Health Inspection Service diminishes the ability to keep safe borders, e.g., preventing karnal bunt in imported wheat. A realistic solution is not exponentially increased staff but a better trained group and updated methods such as statistical determination of efficient methods for testing and sampling. Outsourcing this to a private firm would be more efficient and effective but there are currently capacity problems in this area as well.

## **8.6 Coordination and Collaboration**

There is little coordination and collaboration among grades and standards institutions within the government as well as between the government and private sector organizations involved in grades and standards setting and enforcement. There is considerable scope for developing synergies between agencies, e.g., inspection process, staff training, sampling, and information sharing. According to one seed company, lack of coordination between government institutions, the SCCI and the Plant Quarantine and Phytosanitary Service, forces companies to repeat the same tests, doubling their testing costs.

Indeed, collaboration, especially with international entities, is one of the most cost-effective methods of securing G&S information and improving local capabilities. Some examples:

- The Center for Promotion of Imports from Developing Countries (CBI) is supporting organics and other export development projects through the Export Board of Zambia
- The Natural Resources Institute (NRI) brings its considerable expertise developing the Warehouse Receipt Schemes where G&S are critical.
- NGOs, such as ZATAC and CLUSA, are providing important linkages between smallholder farmer groups and agricultural processors and export firms like Agriflora.

- NRDC/ZEGA Training Trust is a successful model of a collaborative partnership between the government and a private-sector industry association for the provision of education and training in the horticultural export sector. Lessons can be drawn for education and training in other crops for both the export and domestic market.

## 8.7 Policy and regulatory – global macro

Several policy and regulatory issues were cited by interviewees as constraints to implementing and/or improving grades and standards and increasing trade. The lack of contract enforcement and efficient legal systems, particularly small claims courts and fast track conflict resolutions, represent a major obstacle to the growth and development of agricultural trade both domestically as well as internationally.

Any discussion of regional or even long distance domestic trade must take into consideration the considerable cost of fuel<sup>10</sup>. A pineapple costs a farmer in Northwest Zambia 100 Kwacha, transporting it to the capital costs 600 Kwacha.

Foreign investment is greatly hampered by considerable instability and fluctuation of the Kwacha which has devalued 400% in the last five years and 30% during the last quarter of 2000. Foreign Exchange volatility is a disincentive to invest in export crops that, in Zambia, require foreign exchange dominated inputs.

Infrastructure is a constraint for improved grades and standards. In the rainy season, greatly diminished rural access (roads and bridges) reduces the ability to transport inputs and products as well as the ability to monitor agricultural practices.

The lack of legislation regarding Plant Breeders Rights could impede the availability of the full range of hybrid seeds with improved characteristics. One report claims that Pioneer has withdrawn some products (hybrid maize seeds) because they are not willing to identify and provide government agencies with information about their genetic material without a system to protect intellectual property. This could also limit the entry of genetically modified seeds into Zambia.

The implications of segregation and traceability are critical factors for at least the EU markets and potentially to access the US market as well. These ought to be considered given that in Zambia such standards would likely be difficult to test for and enforce in the near and mid-term. Of course, monitoring and enforcing segregation and traceability of crops also applies to the organics market although most of the organic standards can be tested for in Zambia.

Since the implementation of COMESA, complaints have been lodged concerning the use of standards as trade barriers. The Zimbabwean government blocked the entry of Zambian maize seed, claiming that it was necessary to prevent infestation of the larger grain borer, a pest which is now endemic to both Zambia and Zimbabwe.

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<sup>10</sup> Fuel costs in Zambia are among the highest in Africa and can be two to three times that of their immediate Southern neighbors. In February of 2001 diesel fuel costs US\$.31/liter in Botswana and US \$.91 in Zambia.

## 8.8 Competition

Grades and standards affect competition and competitiveness in several ways. Monopoly power can be used to control or manipulate grades and standards to the detriment of fair market functions causing reductions in transparency, information flow, and market access.

Competitiveness is improved when research into G&S issues, like crop varieties, is oriented toward private sector demand, e.g., facilitating the adoption of locally relevant (locally adapted) crop varieties. For this to happen, researchers need to collaborate with the private sector as stakeholders that are integral to the process. This will likely not happen unless a formal mechanism of regular consultation is initiated between the government, private sector, and research institutions. The ACF could be an excellent venue from which launch such an initiative.

Grades and standards regulations can hinder the competitiveness of a particular sector. For example, a disadvantage of the seed control and certification system is slow acceptance of new varieties due to the two-year testing period and certification process. It can take several years to complete the testing process and for growers to adapt their production systems to the new seed. When the seed sector is not aligned with export quality demands, producers lose first mover advantage in export markets.

On store shelves, Zambian food products are priced at similar levels to imported products and, according to one large retailer, actually have a smaller profit margin than the similarly priced imports. Zambian manufacturers explain that they incur higher production costs e.g., energy, fuel, and other inputs. Given the 25% average duty on agricultural products from South Africa and 14% average transport costs into Zambia, it could be inferred that Zambian products cost 39% more to produce than international brands. This margin of difference is considerable and a cost/availability survey of manufacturing inputs is needed in order to ascertain where the bottlenecks are. This is a research activity that can potentially be commissioned by FANR-PAN. There appears to be scope to consider options such as duty drawback schemes for manufacturing inputs and the Zambian government is considering lower customs duties.

## 8.9 Distortions

The issue of seed starter packs, now abandoned as a failed approach by its former champion, the World Bank, was resuscitated by the government in February, 2001. The intention of improving food security is certainly laudable but the project currently makes no provision to mitigate the likely distortions to the existing seed markets, thereby reducing the role of the private sector that will in turn reduce future seed availability and probably dissuade the private sector from fulfilling this need.

A provision to have farmers pay back the seeds in kind to community seed banks is a positive step but will not change the distortion and, without enforcement provisions and seed bank quality/standards management, is unlikely to succeed. Using vouchers to acquire seeds from existing rural vendors would be preferable but is still open to abuse.

Furthermore, the idea of crop diversification incorporated into this scheme has one dramatic drawback. The failure to provide extension agents with adequate training for these new seeds means that farmers will receive "new" varieties with unfamiliar production and marketing requirements they may not be familiar with.

## 9. Six Steps to Achieving Better Grades and Standards

There are several useful principles to follow in the establishment of a system of grades and standards. Perhaps the most important is to **identify the key players** by determining those on whom it will have the most impact. Since the process of developing and implementing standards may be long and arduous, it is important to solidify the commitment of the stakeholders by ensuring that they fully appreciate the value and importance of such a system. Any G&S initiative must ensure the ongoing inclusion of all relevant stakeholders throughout the process in order to assure transparency. If important players are not involved, key information can easily be missed and the omitted entities can later hold up effective implementation.

One of the most valuable considerations that should be addressed early on in the process is **clear identification of the purpose(s)** for pursuing G&S. The sort of grades and standards that wholesalers might find useful (differentiation & homogenization) might not fully serve the needs of government (record-keeping and safety) or consumers (quality and safety). Therefore, it is important to conduct participatory assessments to identify the resources available and how they are to be used so as to equitably and effectively determine the following:

- What are the current systems and processes for grading agricultural products?
- Which grades and standards are to be used in the future? Consider the costs and realistic capacity for testing.
- How can both domestic and international recognition be achieved?
- How can domestic, regional and international systems be harmonized?
- Which institution or entity will be responsible for their development?
- Which will be responsible for their promulgation?
- Which will be responsible for their enforcement? If quality is not as contracted or advertised, is liability defined and enforced in the legal system?

### 9.1 G&S as a barrier to participation

A transparent and broadly-based participatory selection process is important for several reasons. Political considerations in the determination of a system of grades and standards raise certain ethical questions related to unfair trading advantages, consumer welfare and environmental quality. There is growing concern about WTO influence and the trend toward customized, non-conforming standards among powerful business entities such as multinational corporations and food processors. Furthermore, grades and standards, especially when they are mandatory (de jure or de facto) rather than voluntary, can constitute barriers to entry, especially for the poorest market participants.

In general, lack of formal G&S increases transaction costs (Reardon et al., 2001).<sup>11</sup>, particularly for the poor, in the national (not to mention the international) market and thus reduces the scope and profitability of their market. This increases their poverty in a vicious circle that justifies public action. In practice, however, it is hard for governments of poor countries to address this need. Apart from sensitive issues of politics, it is costly to define, implement, monitor, and enforce G&S for the products bought and sold by the poor. This was already clear in the earlier days of marketing boards, which incurred deficits (for this and other reasons) trying to administer such markets. It is even harder in an era of liberalized domestic markets and the elimination of most state marketing institutions.

Complying with new or more stringent G&S requires investment to promote:

- changes in production practices
- access to updated information
- adaptation to new technologies
- access to improved equipment
- developing and maintaining new processes

Some of these investments are difficult to achieve or unaffordable to small and medium enterprises. Therefore, improvements in G&S and the corollary investments are increasingly putting small farmers and enterprises out of business and acting as an entry barrier for smallholder participation. In the past decade this trend has favored larger and better capitalized businesses and driven the increasing concentration of enterprises. Examples abound in subsectors that were traditional smallholder strongholds such as dairy, pork, poultry, and horticulture.

An interesting and contrary phenomenon has occurred in Zambia where, for the various reasons noted above (tight financing, high capital costs, high-cost inputs), large-scale farms have not grown to dominate the rural landscape. Rather than a concentration of actors, supply chains, even the more advanced ones that export fresh horticultural products, are finding it more cost-effective and more efficient to expand their smallholder relationships and choose to rely more on small to mid-scale farmers. Grades and standards, mostly private, are being channeled directly from the exporting (coordinating) firms to these smallholders. As a consequence, there has been a growth in the number of smallholders and outgrower schemes in various subsectors ranging from commodities like maize and cotton to higher value products like fresh vegetables, paprika, and various organics.

## **9.2 Step by Step Approach**

Six steps can be distilled from global experience:

### **9.2.1. Select products**

Select what product or products to address first, usually the most traded or those with the most export potential. This will narrow the focus of the task and define some of the stakeholders.

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<sup>11</sup> Low G&S typically increase coordination costs, as noted by several researchers throughout the 1990s (Reardon T. et al. 2001. Global Change in Agrifood Grades and Standards: Agribusiness Strategic Responses in Developing Countries. International Food and Agribusiness Management Review, 2(3).

### 9.2.2. Identify stakeholders

The relevant stakeholders may vary for each sector. They typically include:

- the relevant government Ministries such as Agriculture, Trade and Health
- existing organizations or agencies that are involved in establishing trade and industry associations such as processing, packing, transport, wholesale, retail, distribution, private farmers, import and export
- scientific and academic experts
- consultants on trade and standards
- consumer groups

### 9.2.3. Determine the specific sectoral and national needs

Using various methods such as subsectoral analyses, begin by asking: "What exactly do we want to accomplish with these grades and standards?" and "What are the specific needs of the different stakeholders?"

**Some important grades and standards are often already in use informally although sometimes they are neither official nor codified.** It is important to identify these systems and processes and to assess their advantages and disadvantages. Market leaders can often set their own unique standards. Where possible, it is best to build on the market norms that are already in use since it is often difficult to change long-standing customs. Market participants suffer confusion and sometimes increased transaction costs where guidelines change or are not clear.

This situation is further aggravated by sometimes overlapping jurisdictions and contradictory regulations of government agencies involved in G&S. Clarification of this situation at both the legislative and the institutional levels is important for further advancement because when a number of agencies, regulations, statutes, and traditions have evolved over time it is quite possible that they contradict each other or allow for confusion.

Whether existing standards have evolved to serve a useful function or not, they ought to be evaluated to determine how clear, thorough, up-to-date and equitable they are. The results of such evaluations can yield the basic factual and statistical knowledge with which to leverage or influence necessary changes. Such assessments must be conducted by an outside agent to ensure independence. The following questions can serve as a guide:

- What are the established regulations and inspection requirements?
- What specific procedures are required as part of the application process to the existing standards committee in order for standards to be recognized?
- How difficult and how long is the process?
- What factors are standards based on? Are they appropriate? Are they clear?

- Are grades based on product quality, product yield quantity (e.g., lean to fat ratio) or both?
- What is the purpose of current grades (wholesale, export, import, retail)?
- Which grades and standards are in use and to what extent are they being applied by countries in the region and by key trading partners, competitors, and relevant associations or participants in the production and supply chain?
- Are there procedures currently in place for recognition and implementation of grades and standards?
- What is the role of international standards organizations in the current standards?
- What is the role of producer, processor, or trade associations and toward what role are they evolving?
- What is the role of dominant buyers in the market and what are the trends?

#### **9.2.4 Determine the institutional home of key grades and standards functions**

The information gathered from step three above will assist in determining which entity or entities will be responsible for four aspects of grades and standards:

- development, updating and assessment**-- beyond taking the leadership role in the initial development, this entity must also have the capacity and resources to fairly assess outdated standards and new proposals. It must have a reputable scientific capability, be politically independent, and should always have strong private sector participation.
- diffusion and promulgation** -- training is required for growers, inspectors, buyers, and technicians. Guidelines are not very useful and are certainly harder to enforce if most people are not aware of them. Therefore, a public information campaign with a limited time mandate (perhaps 6 to 12 months) to inform all relevant parties about new grades and standards can speed their broad acceptance.
- coordination with international standards** -- on both the international and national levels, different countries and different subsectors use different standards, but the 'game' of trade is much easier when everyone understands and plays by the same rules. Therefore, it is most useful to develop national grades and standards based on the most widely used international standards with modifications made as necessary. Coordination is best accomplished when the standards are first developed, working closely with the international bodies mentioned earlier.
- enforcement** -- although many grades and standards, especially international ones, are voluntary it is important that, its consistently applied, especially those related to safety that their integrity be protected, and that misrepresentations, fraud, and violations be exposed and

penalized. This entity ought to incorporate checks and balances in its work to ensure transparent and equitable application of G&S.

### **9.2.5 Ensure the basic criteria for institutional success**

It is critical to provide the entities that perform the above functions with:

- a clear funded mandate
- combined public and private sector support
- management ability or mechanisms to ensure the co-ordination and transparency necessary for fairness and long-term success.

### **9.2.6. Adopt an international model and sequencing**

Adopting a pre-developed model can save enormous time and resources since many issues are common ones and adaptations for specific needs can readily be made. Common international systems, even with minor local or national variations, greatly facilitate both import and export functions. Accepted international standards will also eliminate any efforts necessary to ensure compliance with regional bodies and the WTO. Of course, any evaluation of the standards must take into account their impact on the less dominant market participants and the ultimate costs that will be passed on to poor people. This is especially true of international standards where the level of compliance may be quite high in comparison to traditional domestic standards and can serve as a significant barrier to entry in the market, especially for smaller enterprises.

In practice, many developing countries have dual standards, one for export and one for domestic markets. While this can cause confusion and perhaps slow development of a country's ability to produce for international trade, it can be argued that the lower domestic standards are necessary for current economic well-being. Many countries would find it impossible to harmonize their standards without serious disruption to their established channels of production, distribution, and trade. It must therefore be remembered that the ideal of harmonizing domestic and export standards cannot be achieved without a gradual and well-planned cross-sectoral process. Indeed, sequencing is very important in order to facilitate the adoption of ever more stringent standards and to improve adaptability and incorporate lessons learned into the process.

## 10. Commodity selection process for G&S improvement

### Selection process and categories

This study selected a number of crops according to a set of pre-determined criteria in order to assess the likelihood that targeted G&S investments could be both effective and sustainable. The three categories for Zambia's agricultural and livestock production are:

1. those with **Limited Trade Potential** but with value for domestic productivity and social welfare improvements
2. those which could effectively **Substitute Imports**
3. those with **Export Potential** (global and regional)

We adopted the following coarse filters for each product in order to place these commodities into the three general categories above for the purpose of evaluation:

- a) Existing or emerging markets
- b) Not exclusively limited to large investments and producers; potential for smallholder participation as well
- c) Potential for in-country added value
- d) Feasible "logistics" for handling and transport
- e) Relative comparative advantage in production, processing, or commercialization
- f) Long-term trade or export potential

The study briefly analyzed the structure, function, and flows of the chain for each product from a practical G&S point of view, including the linkages, infrastructure and policy/regulatory environment. Work focused on what actually occurs, what could be improved, and the implications of a change or no change (cost/benefit, loss of informal markets, opportunities for poor as producers and consumers, value of new market opportunities). From this framework of analysis, recommendations are made for commodities where significant improvement in trade and well-being could be achieved by identifying the *critical G&S leverage points that will catalyze change*. Four of the most promising commodities are presented with a more in-depth cost-benefit analysis. Given that some costs and many benefits are not readily monetized, this analysis, in addition to economic considerations, also takes into account a number of equally valuable considerations e.g., social, political, and risk.

## 11. Commodities with Potential for Global Export

### 11.1 U.S. Opportunities

The African Growth and Opportunity Act (AGOA), approved in 2000 by the U.S. Congress, seeks to provide improved export opportunities for sub-Saharan African countries via new prospects in the U.S. market. Opportunities for market-led investment and economic growth would be created through the elimination of tariffs on a number of African exports to the U.S. and assure these benefits for eight years.

#### Box 11.1 AGOA Lessons

##### Doing business with the U.S.: one firm's saga

Agriflora, a reputable exporter to the EU and the largest fresh vegetable and flower producer in Zambia, has attempted to enter the U.S. market for several years. This is a brief synopsis of their unsuccessful 3 1/2 year saga.

**October 1997:** letter to the U.S. Embassy requesting guidelines for exporting horticultural products to the U.S. (unanswered); same letter to USDA APHIS office in Nairobi (unanswered until April 1998)

**April 1998:** receive letter from Nairobi saying that a form must be filled out in order to obtain the Guidelines for Plant Pest Risk Analysis (PRA) for Imported Commodities (required for first time exporters) via an automated fax. The form was completed but the Guidelines could not be obtained via the automated fax. Tried contacting APHIS to find other ways to obtain the Guidelines, with no result.

**September 1998:** A letter containing the above six-month synopsis and requesting assistance was sent to and received by the Business Center of the US Embassy but no assistance was provided even after numerous attempts to get to the right person.

**October 1998:** the guidelines were finally received but clarification was necessary regarding specific qualifications necessary for persons who fill out the Plant Pest Risk Analysis. No help available.

**December 1998:** informed that USDA APHIS office would be opened in South Africa by the end of January 1999 and that the head of the office would plan a trip to Zambia but it never happened.

**May 1999:** PQPS Technical Advisor informed exporter that according to the WTO-SPS agreement, developed countries should have in place a database on import regulations and specific pests and diseases that are of quarantine concern to their country. It was therefore confusing that the Guidelines asked for all the data for all the diseases and pests occurring in Zambia on each of the commodities, considering the U.S. should have it all on record. APHIS was asked for clarification.

**July 1999:** According to the APHIS, a full pest assessment for the PRA is required for new crop entries into the U.S. In contrast, New Zealand provides list of all the pests and diseases, found in the technical literature for the mentioned export crops, requiring only the confirmation of those that occur in Zambia and addition of any others that are not mentioned. This is the procedure stipulated by the WTO-SPS agreement.

**January 2000:** APHIS informs that the PRA on Zambian asparagus was starting and requested that all the information on the crop be sent to them. This was done immediately (to USDA) and it was confirmed that they received the information. Impossible to find out (no response) why asparagus and not one of the other crops previously submitted had been chosen for a PRA from Zambia.

**April 2000:** USDA informs that the assessment for asparagus should finish approximately in June but could not set a clear target date for acceptance / denial of the request for the asparagus.

**June 2000:** Requested update from USDA (unanswered). Requested update through APHIS (unanswered).

**February 2001:** No information ever received until the APHIS office was contacted again. This time the crop that they were working on for Zambia had now changed to baby carrots for reasons unknown. Contact USDA to find out about the status of the asparagus and their reply simply said that there had been no movement on the issue.

*USDA and APHIS and U.S. Embassy contact details available on request.*

## 11.2 EU Opportunities

Standards are Zambia's most important hurdle for entry into the EU market. The plethora of standards, both public and private, make it exceptionally difficult for any producer to comply, much less keep up-to-date. One notable effort to improve export potential is the COLEACP Harmonized Framework that is helping to harmonize standards for the benefit of both producer countries as well as EU importers (*See Box 7.1*). COLEACP is also involved in the attempts to help developing countries address the EU's Minimum Residue Levels for agrochemicals. Agrochemical manufacturers usually perform these tests but very few are available for older chemicals. Since these may now also be produced by competitors, most manufacturers will not invest in these safety tests. Most developing countries do not have the resources and capacity to conduct the necessary tests, and so standards for these chemicals are automatically set at zero tolerance. This prevents many poorer producers from utilizing less expensive and more readily available agrochemicals for their export crops, effectively barring them from the market (*See Box 6.2*).

## 11.3 Commodities whose global export potential would increase with G&S improvements

Commodities in this section: **peppers, coffee, essential oils, groundnuts, horticultural products, flowers, paprika, herbs and spices, organic crops, apiculture.**

### 11.3.1 Peppers

Until recently the production and trade of dried peppers has been limited primarily to paprika grown for the food coloring industry. There are considerable opportunities for growing a number of other varieties from the five major cultivated species of chili pepper such as Cayenne, Jalapeño, and Tabasco. The pungent, small Birdseye variety has recently been introduced and is quickly becoming popular. Two main varieties of milder fresh peppers are currently produced for export, Fresno and Serenade.

**Inputs.** Further diversification is not costly since high-quality seeds are available on the world markets, but not currently in Zambia. Most large producers import their own stocks for themselves and their outgrower partners.

**Production.** Production capabilities are already in place since chili production is similar to paprika, which is a widely grown. It can be easily grown by smallholders and presents a lucrative and relatively low-risk cash crop diversification.

**Storage, Handling, and Transport.** Storage and handling are key grades and standards points in the supply chain. These are at basic levels and could benefit from higher standards for simple infrastructure e.g. storage sheds, sorting tables. Proper handling, storage, and transportation are crucial to minimize the risk of microbial and aflatoxin contamination for dried products like Birdseye chilies.

**Processing.** Basic sorting and grading are currently conducted by several firms and this capability is widely available since the same drying racks used for paprika can be used for Birdseye chilies. Birdseye chilies are simply dried and there is possibility for further processing into sauces or foods or expansion into the drying of other types of chilies.

**Marketing.** The two major exporters of fresh chilies ship approximately 100 tons of mild peppers per year to the UK. The UK is a small user, compared to mainland EU and U.S. markets that offer much more potential. This potential comes at a cost: higher growing standards, more hygienic standards, basic sorting and storage, and prompt transportation to market. However, this is feasible since high UK standards for due diligence and traceability are currently being met.

The hotter Birdseye chilis are now being exported from the eastern province into Malawi where Nali, a large processor, utilizes these raw materials for its export grade sauces. Birdseye chili production represents an opportunity for smallholder farmers because the production and management skills needed are very similar to paprika. However, grading is necessary as well as proper handling and storage to avoid microbial contamination and aflatoxins.

**Demand for improved grades and standards.** The three main domestic buyers of Zambia's chilies are interested in diversification; therefore, a good first step would be to discuss this potential with them. A study of markets, including the regional ethnic markets and the South Asian markets will probably lead to the identification of some opportunities, especially in off-season supply.

The marketing or processing firms, along with the ZEGA Training Trust and interested NGOs, can assist in developing improved field and post-harvest standards, as well as ensure the supply of appropriate seeds through the Zambian seed companies. An accessible and high-quality testing lab will reduce the risk of shipping tainted products.

### 11.3.2 Coffee

The coffee market in Zambia is growing fast and exceeding the quality management capacity of the Zambian Coffee Board that tightly controls most aspects of this commodity's standards and its trade.

**Inputs.** Coffee seeds are not available through the commercial seed companies. The Coffee Board is in charge of registering coffee seed growers/sellers through the Coffee Act. The Coffee Growers Association, which is an operative arm of the Coffee Board, is helping farmers to access seed through the registered seed growers/sellers. In order to maintain a quality reputation, Robusta is prohibited and only Arabica varieties are planted.

**Production.** There are three categories of coffee producers in Zambia: small-scale farmers, large commercial family farms, and large estate corporate farms. Production is currently estimated at 4500 metric tons generating US\$10 million and it is likely to double within the next ten years due to a large investment that came about through a financing facility under the Export Development Fund. The financing facility enables the growers to source production inputs in the world market at competitive prices. The Coffee Growers Association's small secretariat provides coffee extension, and quality control to improve the quality of the crop and ensure premium prices. The dramatic recent expansion of coffee production has grown beyond the Association's ability to control standards and as a result, quality is at risk.

**Storage, Handling, and Transport.** Timely manual harvesting using trained labor has been used as part of the strategy to ensure optimal quality of the harvested coffee. Zambian coffee maintains reasonable quality, in part due to improved methods of storage and handling.

**Processing.** Proper processing, particularly washing, is necessary to produce a high quality bean. The Coffee Growers Association has its own warehouse and basic processing facilities as do some larger growers. The Association is opposed to independent processing facilities for smaller growers on the basis of their belief that this would sacrifice quality. There are plans for the Association to build a full dry processing plant to handle the recent increase in production.

**Marketing.** The Zambia Coffee Growers Association is responsible for all export market promotion. They also market coffee on behalf of members through an auction system. Coffee produced in Zambia is blended and sold mostly to Europe although the Association has also established a liaison office in the U.S. Ninety-five percent of Zambian coffee is sold in the traditional coffee market of Europe with 5 percent in the specialty market. Specialty coffee markets, particularly high-quality markets in the US and Japan, have been identified as a growth area. The association has developed a Zambica Estate Blend aimed at more sophisticated markets in the U.S., Japan, and Europe.

The Coffee Growers Association sets grades for coffee based on international market standards. They inspect all exports. Information on grading and quality standards is communicated to farmers through the extension staff and farmers are provided with grading charts. The Quality Control Department also offers basic "cupping" training for farmers, but only upon request.

**Demand for improved grades and standards.** There is considerable demand for improved grades and standards in coffee. Historically, Zambia has had a good reputation for quality products; however, price premiums have eroded over time. Given the expected increases in production in the coming years, it is an opportune time to begin to rebuild the quality reputation.

The Coffee Growers Association is the logical leader for improved grades and standards. They can work in partnership with the Export Board for overseas promotion. Also, NGOs, like ZATAC, who

are currently working to facilitate smallholder coffee production, can help create the partnership needed to link smallholders to this export market.

The improvement of quality, through an integrated scheme that incorporates all aspects of production and processing, is the subject of the following cost-benefit analysis. The analysis incorporates a recommendation to diversify into higher-value market niches where Zambian smallholder producers have an advantage and additional price premiums are available.

Since this analysis focuses on smallholder production, it takes into account costs of training and supporting 10 community associations for three years. For five years, until trees are fully productive, there are provisions for a loan fund to enable the upgrade to appropriate varieties. Small, ecologically-sound, handpulpers and washing/drying equipment for each of the community associations, as well as four regional cupping labs and processing plants are incorporated into the costs; these are expected to have a life of 10 years. Since calculations do not necessarily depend on organic certification, these economic costs are not included. Costs reflect anticipated totals over 10 years, given that growers will easily be able to bear their own maintenance and extension costs once trees are in full production after five years.

The annual income after the fifth year, plus the somewhat smaller annual income in years 3 and 4 will easily recoup the original costs. Years 6 through 10, when trees are at full production, are projected to be very profitable for participating growers. These figures take into account the social, but not the economic, costs of operating labor since smallholder coffee growing is usually a family operation. Sales values are estimated at \$1.10/lb., an average FOB price over the last 10 years for sustainable coffee, i.e., shade or organic and below current price for Fair Trade coffee (\$1.26/lb.).

### **Cost-Benefit Table 11.1 Coffee**

## *Coffee*

### **Leverage Point: improving quality in the field**

<b>Issue</b>	<b>Cost</b>	<b>Benefit</b>
<b>1. Economic:</b>	<b>\$1.35 million total for 10 yrs</b> 336,000 group formation, 96,000 training and extension 430,000 credit scheme 338,000 capital costs 150,000 R&D  10 communities participating = \$135,000 each total	<b>\$1.2 million/yr after 5 yrs (500 t)</b> <b>\$2.8 million/yr at 10 yrs (1000 t)</b>  Balance of \$400,000 loan fund Reduced input costs  10 communities participating = \$160,000 each /yr after 5 yrs and \$320,000/yr after 10 yrs
<b>- Transaction costs</b>	<ul style="list-style-type: none"> <li>▪ Organic coffee may require separate storage in ZCGA</li> <li>▪ Potentially more and smaller transactions</li> <li>▪ Certification costs if organic</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reduces information costs on standards and grades</li> <li>▪ Save on transport to processing plants</li> </ul>
<b>- Trade implications</b>	Costs to improve standards may require accepting credit	Access to higher-value specialty export markets
<b>2. Competitiveness and productivity:</b>	Production may be lower than conventional coffee	<ul style="list-style-type: none"> <li>• Increased economic yields</li> <li>• Increased competitiveness</li> </ul>
<b>- Logistics</b>		Improved access to processing
<b>- Information/Communication</b>	New extension and growing information needed	Increased information and communication
<b>3. Environmental Impacts</b>		<ul style="list-style-type: none"> <li>▪ Improved soil husbandry</li> <li>▪ reduced chemical use</li> <li>▪ maintain biodiversity (shade coffee only)</li> </ul>
<b>4. Risks</b>	<ul style="list-style-type: none"> <li>▪ Loss of necessary extension or credit support can slow process of upgrading</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reduced processor monopsony</li> </ul>
<b>5. Externalities</b>		Potential market for intercroops and NTFPs

<i>Coffee continued...</i>		
<b>Issue</b>	<b>Cost</b>	<b>Benefit</b>
<b>6. Social:</b>	Poorly managed program risks community disappointment and distrust of co-operative	Smallholder empowerment e.g., with Coffee Board. Increased social cohesion
<b>-Participation</b> ( <i>inclusion / exclusion, democratic associations, public access to benefits, barriers to entry</i> )	<ul style="list-style-type: none"> <li>• Must have access to land</li> <li>• Must be part of target communities</li> <li>• Will likely require accepting loans</li> </ul>	
<b>- Employment/business opportunities</b>	Opportunity costs	<ul style="list-style-type: none"> <li>▪ Labor intensive (260 days/year/hectare)</li> <li>▪ 10 small + 4 large processing plants</li> </ul>
<b>- Poverty/equity</b>	Considerable investment in time & resources	Increased community assets (plants leased to group)
<b>- Health and safety</b>		Chemical-free work/living environments
<b>- Capacity Building</b>	<ul style="list-style-type: none"> <li>▪ ZATAC and ZCGA coordinating growers, training and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen association learning for other market-oriented projects, e.g., complementary intercropping</li> <li>• Strengthen association governance</li> <li>• Improve sustainable management practices</li> </ul>
<b>7. Political implications</b>	Coffee Board must be willing to expand into new field	<ul style="list-style-type: none"> <li>• Improved smallholder incomes</li> <li>• Increased high-value exports</li> <li>• Diversified production</li> </ul>

### 11.3.3 Essential oils

Zambia produces a wide variety of oils. Lemon grass, rose, jasmine, chamomile, and geranium are the most popular. Limited production, recent entry, and limited market contacts slow further development of the industry. The international market is segmented into three categories: cosmetics, natural body care, and aromatherapy. The cosmetics segment is tightly controlled by a handful of large firms, penetrating into that market is extremely difficult. The more open and promising niche marketssuch as natural body care and aromatherapy should be explored. .

Because of the sophisticated growing and processing requirements that this subsector already possesses, a number of producers would be capable of venturing into related high-value markets such as herbs and nutraceuticals.

**Demand for improved grades and standards.** There is potential demand for development and improvement of grades and standards as this market develops. The world market is highly competitive. Thus Zambians will need to differentiate their products with respect to quality. Further investigation is needed to determine industry needs with respect to grades and standards. Key partners in this area include existing companies, interested investors, NGOs, OPPAZ, and the Export Board.

### 11.3.4 Groundnuts

Groundnuts are a low-cost and high-value protein crop that offer excellent possibilities for food security, as well as export. The Southern African markets are providing a significant price premium and represent regional growth possibilities. There is also potential to penetrate international markets like the UK and Europe, particularly with organic production.

**Inputs.** A number of varieties of groundnut seed have been developed in Zambia. However, these seed varieties are costly and not readily available to farmers. The farmers have been recycling seed for a long time. As a result of prolonged use, disease incidence has increased and subsequent yields have been reduced for most of the available varieties. Certain chemical inputs to prevent disease, as well as popping (Jupesome), are not available.

**Production.** The average production of groundnuts in the country is around 50,000 MT. The production of groundnuts is concentrated in Eastern and Southern Provinces. Groundnuts are mainly grown by small-scale farmers and the techniques are familiar to most. Nevertheless, for the formal export markets, improved practices will help to prevent the quality/safety issues that can plague this crop.

**Storage, Handling, and Transport.** The proper grading and handling of groundnuts will be a key factor in accessing the regional and export market. The key grades and standards issue at this stage in the supply chain is aflatoxin contamination. Proper conditions, i.e., moisture and temperature, must be maintained during storage and transport to avoid this. Moreover, good storage conditions, particularly moisture control, will improve quality of groundnuts for the local and regional market by reducing losses due to mold and damage. To supplement hand sorting, electronic color sorters can be effectively used to sort out damaged or diseased “off-color” nuts, thereby reducing the risk of aflatoxin contamination and facilitating production of an export quality product.

**Processing.** Currently, there is limited domestic processing of groundnuts. Peanut butter is manufactured by two facilities. Because of superior packaging, imports successfully compete with domestic brands even though consumers report that the domestic brands are of superior quality.

Cooking oil is produced from groundnuts at the local level and CLUSA is currently implementing a project for groundnut oil processing, but it is too early to determine the nature of the demand for improved grades and standards.

**Marketing.** Groundnuts sell for up to \$400 per ton on the local market, \$500 per ton to South Africa, \$800 per ton to UK and \$1000 per ton for export quality organics. Farmers not marketing their crops are currently paid approximately \$200-\$250 per ton by traders. The groundnut market is largely based on informal, “truck” trade. Truck drivers stop in small villages and on the roadside to buy groundnuts, which they then sell in their final destination in the Zambian cities or in neighboring countries.

**Demand for improved grades and standards.** There are significant export opportunities if grades and standards for groundnuts are improved. Investment in basic grading and handling equipment such as an electronic color sorter would allow Zambian exporters to penetrate high-quality regional and global markets. There is also potential for organic production, which requires certification. Key partners in this area include NGOs, like ZATAC and CLUSA, who are working with groundnut producers, and interested investors and traders

A cursory cost/benefit analysis (*See Table 11.2*) clearly demonstrates the considerable value that could be captured as a result of relatively low-cost investments to improve quality.

## Cost-Benefit 11.2 Table Groundnuts

<i>Groundnuts</i>		
<b>Leverage Point: groundnut grading and handling for export</b>		
<b>Issue</b>	<b>Cost</b>	<b>Benefit</b>
<b>1. Economic:</b>	<p>\$50,000 capital cost (color sorter) Clean dry storage sheds</p> <p><u>Local production &amp; marketing costs</u> = US\$ 347/ton</p> <p><u>Export conventional (UK) =</u> \$540/ton (shipping &amp; handling costs)</p> <p><u>Export Organic =</u> \$600/ton (s/h plus certification costs)</p>	<p>Access to export markets</p> <p>Local Market returns = US\$ 400/ton</p> <p><u>Export Returns (UK) =</u> \$800/ton</p> <p style="text-align: right;"><i>Organic Returns =</i> \$1000/ton</p>
<b>- Transaction costs</b>	Requires considerable volume to be cost effective to transport	
<b>- Trade implications</b>	Processor/exporter must compete with informal “truck” trade	Linkage to export markets (e.g., EU and Regional)
<b>2. Competitiveness and productivity:</b>	Must purchase new seed but it is much more expensive than domestic varieties	MGV4 variety increases yields and labor time savings
<b>- Logistics</b>	Improved seed not readily available in market	NGOs filling gap in seed market
<b>- Information/Communication</b>	Expansion to new areas will require additional information and training	Common crop – requires little extension
<b>3. Environmental Impacts</b>		Legume – good for soil Good companion crop
<b>4. Risks</b>	<ul style="list-style-type: none"> <li>• Risk of rejection, particularly for aflatoxins</li> <li>• Grading may not be applied fairly</li> </ul>	Improved quality calories

<i>Groundnuts continued....</i>		
<b>Issue</b>	<b>Cost</b>	<b>Benefit</b>
<b>5. Social:</b>	Poorly managed program risks community disappointment and distrust of buyer and/or co-operative	Potential for improved social cohesion due to good neighbor principles, esp. with organic
<b>-Participation</b> ( <i>inclusion/exclusion, democratic associations, public access to benefits, barriers to entry</i> )		<ul style="list-style-type: none"> <li>• Open access to participate</li> <li>• Most farmers are familiar with the crop</li> </ul>
<b>- Employment/business opportunities</b>	<ul style="list-style-type: none"> <li>• Opportunity costs of time for farmers</li> <li>• Groundnuts are the most labor intensive oilseed</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunity for “jobbers/traders”</li> <li>• Opportunity for local processing, even for export</li> </ul>
<b>- Gender</b>	Potential for increased women’s work responsibilities	Women dominate the production and marketing of this crop
<b>- Poverty/equity</b>		Increased income/cash flow
<b>- Health and safety</b>		Good protein source → can be a food security crop as well as cash crop
<b>- Capacity Building</b>	Cost of support/credit from local NGOs	Strengthens exporters, traders, and farmers understanding of export markets
<b>6. Political implications</b>		Increase farmer incomes

### 11.3.5 Horticulture and Floriculture

Export horticulture is a growing market segment with 5100 tons of fresh horticultural products exported annually with a value of approximately US\$20 million. These fruits and vegetables are destined almost exclusively for the UK market. In addition, 3400 tons of fresh flowers (roses account for 90%) are exported annually (US\$43 million in 2000) mostly to the Dutch auctions. Total value of these high-value fresh exports in 2000 was approximately US\$63 million.

**Inputs.** Good quality seeds are necessary to produce export quality produce. Currently, the two large export horticulture firms work with local seed companies to source the required seeds on the international market.

**Production.** Production practices, including pesticide and hygiene records, must be documented in order for exporters to meet the due diligence and traceability requirements of their customers. The two large export firms produce and export high-value vegetables and roses on company farms as well as through outgrower schemes. These outgrower schemes for horticulture motivate improved production grades by paying a premium for better quality, i.e., top grade vegetables at \$.60/kg and low-grade and \$.20/kg.

There are also 20 to 30 additional small and medium-size family firms exporting roses as well as small quantities of summer flowers. A number of flower growers are struggling to meet the rigorous demands of the markets and the high capital requirements of this business. Many entered the market with little experience and lots of donor funds.

**Storage, Handling, and Transport.** Storage, handling, packaging, and transport are further key points in the supply chain that must be controlled in order to maintain product quality. The cold-storage chain must be maintained from harvest through shipping in order to preserve the freshness and appearance of the products. Large investment in local cold storage facilities, outgrower collection centers and grading sheds, refrigerated trucks, and quality management systems represent significant barriers to entry for new export firms. The Zambian Export Growers Association (ZEGA) operates a shipping and freight company, ZEGA, Ltd., which controls the cold storage facilities at the Lusaka airport.

Grading is critical for export vegetables as well as roses. Agriflora's outgrower schemes contribute to transparency and improved information flow by grading products at the collection points. Farmers are learning faster because they are able to observe the grading process directly. Farmers have an economic advantage from on site grading because they keep the rejects for consumption or sale on the local market, whereas previously they had to travel to the processing plants in order to claim rejects.

**Processing.** There is minimal processing since horticultural products are shipped, sold, and consumed as fresh product.

**Marketing.** The predominant market for export vegetables is to UK supermarkets with small quantities also going to continental Europe and Australia.

The export growers adhere to basic codes of practice that are modeled on European and international standards (COLEACP Harmonized Framework and EUREP) with minor adaptations. These are audited by an internal team since credible, independent auditors are prohibitively expensive. Additionally, exporters must sometimes meet more rigorous grades and standards in the export market that are dictated by the importing country and individual buyers. These G&S can include due diligence and traceability, pesticide residues, social welfare standards for workers, environmental standards, and the more common quality attributes of color, size, taste, and freshness.

**Demand for improved grades and standards.** The greatest demand for improved grades and standards is in the area of farmer/employee training, some of which is currently being satisfied by the NRDC/ZEGA Training Trust. Although the Trust does not address the needs of outgrower training, ZATAC is facilitating an outgrower program with Agriflora. Additional funding is necessary to expand this and similar programs, which would link more small-scale farmers to the lucrative, export market.

For horticulture, the EU's MRLs represent a potential threat as they may be unattainable standards. Exporters are therefore concerned. ZEGA is working to address this issue through the COLEACP pesticide initiative (*See Box 6.1*) and additional funding is necessary to complete the acceptance of this program.

### 11.3.6 Paprika

Sub-Saharan Africa produces approximately 25% to 30% (20,000 tons on average) of total global production (60 to 90,000 tons per year). Zambia is a competitive producer and has a 10-month production season as opposed to an average 4-month growing season in the EU.

**Inputs.** Using good quality seed is imperative to produce good quality paprika. Unreliable seed sources and recycling seed can lead to disease and pest problems and pungency buildup which is undesirable. Because good quality certified seed is not available in the market, exporters are providing seed to farmers to ensure the quality of the crop. The varieties used in Zambia have been imported from the US. Further varietal development for the climatic and agro-ecological conditions in Zambia could lead to higher yields and increased quality.

Most pests and diseases can be controlled through good agricultural practices. However, exporters claim that the use of fungicides and pesticides is necessary in some cases.

**Production.** The majority of paprika is produced by smallholder farmers but it is also produced by commercial farmers and estates. Using clean harvest practices and picking at the right time is critical for achieving optimal grades.

**Storage, Handling and Transport.** Post-harvest handling of paprika involves drying and grading the fruit, which is done on the farm. Proper post-harvest handling and drying procedures are a crucial element in producing good quality paprika. Washing, drying and grading are the key steps in post-harvest handling where quality can be affected. Proper drying is necessary to ensure the quality of the crop and farmers usually rely on simple drying racks laid out in the sun. Effective solar drying is low cost and reduces the risk of fungi and aflatoxin contamination. However, solar drying does affect coloration and somewhat reduces quality.

Moldy paprika is usually the result of poor storage. The most significant problem is aflatoxin contamination, which can build up during storage or transport. Microbial contamination can also occur at any time from harvest onward.

**Grading.** Grading, at the farm or at rural collection points, is performed primarily according to visible color intensity of the skin (ASTA standard) and is also affected by disease condition and presence of foreign matter. Zambia's largest paprika buyer, Cheetah Zambia Ltd., buys four grades of paprika paying a significant premium between the grades as an incentive to improvement.<sup>12</sup> Grades are communicated to farmers through plastic-sealed visual samples at the collection points. Other major paprika buyers, i.e. Bimzi and ZAHVAC, were reported to offer growers an overall average grade for their lots in the field and then supposedly further differentiate the grades later prior to processing or export. This procedure may somewhat reduce growers' incentives to produce higher quality.

**Processing.** Currently, most paprika is exported as a dried bulk commodity. Cheetah Zambia has recently begun grinding paprika for sale in the spice markets. Paprika also has potential for further value-added activities in the distillation of oleoresin, which has a market value of \$35 to \$50 per

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<sup>12</sup> Current prices per Kg. are \$1.00 grade A, \$0.80 grade B, \$0.60 grade C, and \$0.40 grade D .

kilogram. This is three to five times greater than the average market price for paprika assuming a conversion rate of one to four. Given that an extraction plant requires costly capital investment, significant volume, and technical capability, further work is needed to assess the economic feasibility of such a plant. One should take into consideration that there is probably enough global capacity for oleoresin extraction, the market for which is erratic, and a new, less expensive, method has been developed in India. Apparently, an extraction plant exists in the country (owned by Bimzi), but its functionality and potential are uncertain.

**Marketing.** The domestic marketing channel for paprika moves the product from the farmers to the exporters. All of the major paprika exporters, excluding Masstock, operate some form of an outgrower program providing seeds, extension advice, and in some cases other inputs. Side selling to the competition is a problem.

South Africa is the major destination for paprika exports where it is used in the colorant industry. A few companies have also penetrated the European market, which is dominated by about 10 Spanish companies. One company is also selling small quantities to the US.

Food safety standards in importing countries require certain tests to detect aflatoxin levels and microbial contaminants, including E-coli and Salmonella.

One group, ZAHVAC, registered \$14,000 in real losses last year because their grading differed from the buyers final grading<sup>13</sup>. Apparently, testing capability, which this firm has, is necessary but not sufficient to capture full value for their production. Significant discrepancies between the buyer's grade assessment and the seller's grade assessment could indicate either a sampling problem, distinct methodology, or quality degradation in transit. A solution, presented by one processor, could be standardized negotiation for a mutually agreed upon arbiter, in case of quality disputes. Accredited laboratory testing facilities can also help resolve these issues (*See Box 8.1*).

**Demand for improved grades and standards.** The grades and standards system for paprika is fairly well developed. However, there is still demand for farmer education, particularly on how to grade products and why grading is used. There is also demand for the development of improved varieties tailored to Zambian growing conditions.

Private firms and organizations, like Cheetah, Bimzi and ZAHVAC, can work together with the MAFF in the development of new paprika varieties. The private companies should also continue to partner with NGOs, such as ZATAC and CLUSA, for further development and expansion of smallholder producer groups.

The spice market, requiring different standards, can be a valuable diversification strategy. Improved testing facilities can reduce risk and save exporters money as well as easy entry into more sophisticated markets.

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<sup>13</sup> On average there is a 50-point difference in the ASTA rating scale between the buyer's grading and the seller's. This difference can be dramatic, considering a contract price of \$0.0069 per ASTA point per kilogram, an average 20% decrease in income. The disputed amounts have ranged up to 130 points of a possible 250 points.

### 11.3.7 Herbs and Spices

The world market for spices is growing. The increased popularity of ethnic foods, particularly Asian food, is likely to continue and the demand for spices will follow. This growth, especially for ginger, garlic, turmeric, and dried onion,<sup>14</sup> represents a significant opportunity for targeting high-value niche markets in Europe, the United States and Asia, as well as the SADC region, particularly South Africa. Spices are widely used in food seasoning and processing, cosmetics, perfumes, and even industrial uses. They can be sold fresh or dried.

The fresh spice market is a particularly high value niche market. However, dried spices, such as Birdseye chilies, are particularly attractive for Zambia because they can be dried on farm. These lighter dried products (water is most of the weight) reduce transportation costs. Also, dried products are not highly perishable like fresh horticultural products and therefore do not require a highly coordinated supply chain, including efficient transportation and cold storage. Moreover, many of the smallholder farmers with experience in paprika production can apply those skills to the production of these crops.

**Demand for improved grades and standards.** There is significant demand for development and improvement of grades and standards as this market develops. The world market is highly competitive and Zambians will need to differentiate their products with respect to quality. Further investigation is needed to determine specific industry needs with respect to grades and standards. Lessons can be drawn from the development of the paprika industry.

Private firms and organizations, like Cheetah, Bimzi and ZAHVAC, can work together with the Export Board to identify and develop potential new markets. NGOs, such as ZATAC and CLUSA, will be important partners in developing the production of crops among smallholder producer groups.

### 11.3.8 Organic crops

There is a considerable and upward trend demanding for organic products. The marketing manager of the Export Board of Zambia claims that although a number of potential markets have been identified, there is a dearth of organic production skills and technology across Zambia, limiting the more widespread adoption of organic production practices. This nascent industry is popular with growers and exporters alike, but growers, especially smaller ones, are heavily constrained by their lack of access to current information on standards and practices.

Information flow is critical for this industry. Its is heavily dependent on knowledge and strict certification criteria. Two certifiers operate in Zambia: The Soil Association of the UK and EcoCert of Germany. The lack of a local or regional certification agency means that the cost of international certification is prohibitively high for many producers. Pre-inspection and coordination services performed in-country significantly reduce the cost for growers and allow the substantial fixed costs of importing the certifiers to be divided among a group of growers. The pre-inspection and

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<sup>14</sup> The Export Board identified these spices as some that could be competitively produced in Zambia.

coordination is currently being done by a small local NGO. Although it intends to recoup its investment in farmers' certification, this can be slow in coming and it is incapable of bearing the financing costs. In organics there are also issues of segregation and subsequent liability if there is insufficient capacity to enforce clear production and certification standards to ensure that identity is preserved and organic criteria are actually met.

Developing critical mass will be vital to further progress. This can be achieved through the development of improved information, better processing facilities, increased post-harvest capabilities, quantities, and market development. In the year 2000, foreign buyers of organic products made a number of formal requests for products in Zambia including: fresh produce (vegetables and fruit), coffee, wheat, soya, groundnuts, navy Bean/Michigan pea bean, bambara nut, castor oil, annatto, birdseye and cayenne chilies, hibiscus, sunflower and sesame seed and oil, echinacea, lemon grass, lemon verbena, calendula, chamomile, coriander, dill and fennel seed, ginger, green and black tea, neem, dried fruit, and essential oils.

Several large commercial producers, after testing some organic principles successfully, are now integrating them into their full-scale commercial production. Apart from smallholder certification across a considerable area of national forest, nearly 4,000 hectares of agricultural land have already been certified for organic production

Organic sales for the year 2000 totaled in excess of US \$2 million and are expected to double in 2001.

**Table 11.3 2001 estimated organic crop production and value**

<b>CROP</b>	<b>QUANTITY (MT)</b>	<b>FINANCIAL VALUE</b>
Vegetables	800 Tons	US\$ 1,880,000
Dried Herbs	1.2 Tons dried	US\$ 6000 (\$ 2.50-8.0 /Kg)
Essential oils	2.5 Tons raw material	US\$ 50,000
Soya	420 Tons	US\$ 252,000 (\$550-\$650 ton)
Groundnuts	70 tons	US \$52,500 (\$750 ton)
Mushrooms	3 tons dried	US \$165,000 (\$55/Kg)
Sunflower	50 tons	US \$27,500 (\$550 per ton)
Sesame	20 tons	US \$9,000 (\$450 per ton)
Honey	800 tons	US\$ 1,600,000 (@\$1.80 - 2.20 kg)
Beeswax	7 tons	US\$ 16,800 (@\$2,400 ton)
<b>TOTAL</b>	<b>2177 tons</b>	<b>US\$ 4,058,800</b>

The critical leverage points for significant growth in organic products are improved production and export standards. Gathering and disseminating the information about up-to-date standards and technical production skills is a complex task that requires considerable experience. This is especially true in the business of organics where knowledge is a critical asset. One Zambian NGO, OPPAZ, appears to have this capability and, with relatively little seed capital, could have considerably more impact than it currently does. Following is a cursory cost-benefit analysis that conservatively measures trend increases among smallholders who might not be capable of achieving organic production standards or accessing organic export markets without substantial initial support.

**Cost-Benefit Table 11.4 Organics**

<i>Organic Crop Promotion</i>		
<b>Leverage Point: Improved production and export standards</b>		
<b>Issue</b>	<b>Cost</b>	<b>Benefit</b>
<b>1. Economic:</b>	<p><b>\$79,000 p/a</b> (OPPAZ Operation)</p> <p><b>\$30,000 p/a</b> (Nat'l certification agency)</p> <p><b>\$45,000 p/a</b> training and regional wkshp</p>	<p><b>\$126,600</b> (Cost recovered fees, export levies, Training)</p> <p><b>\$17,100</b> (Annual inspection fee savings)</p> <p>100% success rate of inspection due to appropriate standards.</p> <p><b>\$600,000 p/a</b> sales.....trending ~20% new capacity growth</p>
<b>- Transaction costs</b>	<ul style="list-style-type: none"> <li>• Transport to collection points risks spoilage and may not be cost effective for smaller producers</li> <li>• Commitments could incur un-remunerated expenses</li> </ul>	Reduced information costs on standards and grades
<b>- Trade implications</b>	<ul style="list-style-type: none"> <li>• For export sale the crop must be produced on certified land</li> <li>• Certification costs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Existing linkage to export markets.</li> <li>▪ Long-term trading relationships readily available for smallholder or fair-trade producer groups.</li> </ul>

<b>2. Competitiveness and productivity:</b>	<ul style="list-style-type: none"> <li>• Economy of scale must be adequate for market entry and for adequate profit margins</li> <li>• Insufficient organic production and market activity in Zambia due to the lack of access to technical advisory support, certification and market linkages</li> </ul>	<ul style="list-style-type: none"> <li>• Comparative production advantages.</li> <li>• Increased income premium market.</li> <li>• High price elasticity.</li> <li>• Perpetually under-supplied organic market is the fastest growing food and beverage market in the world.</li> </ul>
<b>- Logistics</b>	<ul style="list-style-type: none"> <li>• High cost of transport and storage</li> <li>• Access to appropriate technical advice and co-ordination.</li> </ul>	High value/weight ratio reduces transport costs relative to value
<b>- Information/ Communication</b>	<ul style="list-style-type: none"> <li>• \$25,000 p/a Organic WebSite</li> <li>• Timely production and market information critical to success</li> <li>• Adequate specialist advice is essential</li> </ul>	Increased information and communication, market linkage and, therefore, business opportunity.
<b>3. Environmental Impacts</b>		<ul style="list-style-type: none"> <li>▪ Improved soil husbandry</li> <li>▪ Erosion control</li> <li>▪ Reduced chemical use</li> </ul>

***Organic Crop Promotion continued...***

<b>Issue</b>	<b>Cost</b>	<b>Benefit</b>
<b>4. Risks</b>	<ul style="list-style-type: none"> <li>▪ Risk of rejection in the market due to quality issues</li> <li>▪ Risk of not achieving certification</li> </ul>	<ul style="list-style-type: none"> <li>▪ Local income generation potential</li> <li>▪ Export opportunity to premium markets</li> </ul>
<b>5. Externalities</b>	<ul style="list-style-type: none"> <li>▪ Additional support requirements to small producer groups and under-capitalized individual agro-enterprises.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Improved G&amp;S even for small-scale crops</li> <li>▪ Increased soil fertility</li> <li>▪ Improved income generation opportunity across genders and the socio-economic spectrum.</li> <li>▪ Ecological/environmental welfare</li> </ul>

<p><b>6. Social:</b></p>	<p>Poorly managed program leading to risks of community disappointment, ineffective operations, resulting in poor success rate in producing a marketable crop.</p>	<ul style="list-style-type: none"> <li>• Potential for improved social cohesion due to good neighbor principles and joint certifications.</li> <li>• Opportunity for sustainable socio-economic improvement for full spectrum of the rural population.</li> <li>• Fair trade organic market linkages</li> </ul>
<p><b>-Participation</b> (inclusion/exclusion, Democratic associations, public access to benefits, barriers to entry)</p>	<p>Must have access to land (either owned, leased, or tenanted)</p>	<p><b>Certified organic and producing for export:</b> 18 Individual farmers (3,600 ha); 590 members in 4 small scale producers groups, including women's groups (over 2000 ha of land).</p> <p><b>Certified organic, not yet exporting:</b> 5 Individual farmers 800 members in 2 Groups</p> <p><b>Due for Certification in 2001:</b> 16 Individual farmers 3 Smallholder growers groups/outgrower schemes</p>
<p><b>- Employment/ business opportunities</b></p>	<p>Opportunity costs (seed, buildings for processing and equipment – as required for the higher value crops)</p> <p>Examples: <b>\$18,000</b> Cost of essential oil steam distill (2000 liter, process up to 1000 kg/day) <b>\$6,500</b> Oil seed press</p>	<p>Current production of broad acre and irrigated crops such as soya, groundnuts, sunflower, sesame, herbs and spices, plus adding value to oil seed crops, essential oils, culinary herbs.</p> <p>Organic essential lemongrass oil: US\$7312.30/ha. (equals US\$19.5 /liter, @ 30 t/ hectare)</p> <p>US\$4,300 – \$6,000 /ha. Sales from existing vegetable oil production</p>

<i>Organic Crop Promotion continued...</i>		
<b>- Gender</b>	Potential for increased women's work opportunities and responsibilities	Organic farming and processing/value adding is oriented to women. All new projects have a high potential for gender inclusion
<b>- Poverty/equity</b>	Devote more time & resources	<ul style="list-style-type: none"> <li>• Increased assets and income generation, particularly in remote regions.</li> <li>• Increased land productivity and management capacity.</li> <li>• Price premium minimizes need for economies of scale, permitting otherwise unattractive crop options</li> </ul>
<b>- Health and safety</b>	Training and information dissemination	Improved consciousness of hygiene, chemical-free work environments
<b>- Capacity Building</b>	<ul style="list-style-type: none"> <li>▪ Interaction with other support NGOs e.g., CLUSA, ZATAC, LMCF, EEOA, CFU and support funds e.g., NORAD, SCCI, PSDP</li> <li>▪ Requires well structured and cohesive groups of dedicated individual farmers with adequate production capability</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen association learning for other market-oriented projects</li> <li>• Strengthen association governance</li> <li>• Improve production practices</li> <li>• Improved ability to meet rigorous market standards</li> </ul>
<b>7. Political implications</b>	<ul style="list-style-type: none"> <li>• Willingness of government to support the organic movement and growth of organic farming.</li> <li>• Products must be GMO free.</li> </ul>	<ul style="list-style-type: none"> <li>• Smallholder income generation</li> <li>• Gender inclusive</li> <li>• Improvement in national GDP</li> <li>• Positive Zambia reputation for its ecological/environmental stewardship.</li> <li>• Ministry of Agriculture openly supports organic farming (Minister is certified organic farmer)</li> </ul>

### 11.3.9 Apiculture

Several companies, primarily in the Northwest Province, are producing high quality honey. They recently expanded into other products i.e. beeswax, and were certified as organic (with OPPAZ support). As a result, they are successfully exporting a growing quantity of organic honey and honey products to the EU.

Lack of simple inputs such as glass jars make it difficult for these smallholders to capture any added value. As a result, most of their produce must be exported as a bulk raw material. Although this is a relatively limited niche market, it can be quite lucrative for smallholders in remote areas that have few remunerative options. Particularly near forests, beekeeping and sustainable honey collection practices are a productive economic activity that have minimal environmental consequences. There is some scope for improved standards, particularly around organic practices. Otherwise, this small subsector is reasonably healthy and growing.

## 12. Commodities with Potential For Regional Export

Commodities in this section: **maize, dry beans, cotton, soybeans.**

### 12.1 Maize

Maize is the staple crop for Zambia and has been the focal point of agricultural promotion for over a decade. While maize production varies considerably, Zambia usually meets its domestic consumption needs and exports the surplus to her neighbors. Thus, there is potential for continued or expanded regional trade.

**Inputs.** While hybrid seeds are available on the market and used by commercial farmers, it is estimated that only 30% of farmers use these seeds. Maize production in most cases also requires commercial fertilizer.

**Production and Handling.** Since all maize is harvested at the same time, the price of maize exhibits a predictable seasonal trend, i.e., the price at harvest is low and rises at times of shortage later in the year. New varieties could potentially extend the season.

**Storage and Transportation.** There is little storage capacity available for farmers to use in order to smooth out the seasonality of maize prices. On-farm storage is inadequate. ZACA is currently in the process of establishing a warehouse receipt system. As a part of this system, maize grades and standards are being developed. This improvement could increase availability for food security and significantly facilitate export trade.

**Processing.** The bulk of domestic maize processing is for breakfast meal and roller meal. The processors set the grades and standards for maize. There is little enforcement, other than reputational, of standards for processed products.

**Marketing.** Maize represents very limited export opportunities except to bordering neighbors primarily because transport costs are too high.<sup>15</sup> As a consequence maize only needs to meet eventual SADC/ COMESA standards.

Because maize is currently only graded based on moisture and extraneous material, farmers have lost significant contracts, through FRA, for failure to meet higher buyers' standards, particularly for food relief contracts with UNICEF and WFP.

Although there is occasional mention of the former national standards, these are currently not available for visual inspection in any of the visited firms. Most firms develop ad hoc standards of their own. This process is not transparent and benefits the millers while putting growers at a disadvantage since the accepted grades can shift at a moment's notice. Furthermore, since a high-grade today may not be a high-grade tomorrow, meeting this moving "grades" target diminishes the incentives for growers to achieve higher standards.

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<sup>15</sup> Typical transport costs from Lusaka are: \$70/ton Beira, \$100/ton to Nakala, and \$100/ton Dar es Salaam.

**Demand for improved grades and standards.** Current demand for grades and standards for maize is being met by the ZACA warehouse receipt project. Future demand for improved grades and standards will rely partly on the success of this program.

## 12.2 Dry Edible Beans

Dry beans have recently emerged as a potential high-value export crop in the formal market as well as the informal market.

**Inputs.** Pure, high yielding dry bean seed varieties are currently not available and could limit the potential growth of this crop.

**Production and Handling.** Zambia has a comparative advantage for agro-ecological and economic reasons with the added advantage of a different cropping window than most other producers. Moreover, dry beans serve a dual function of cash crop and food security crop. Traditionally, the production of dry beans in Zambia has been dominated by small-scale farmers growing a mixed variety of beans. However, new opportunities in processing have attracted the attention of commercial farmers as well. Grading and handling beans for processing, particularly keeping different varieties of beans separated, will be challenging for small-scale farmers who are accustomed to traditional practices of mixing beans.

**Storage and Transport.** Proper conditions during storage and transport are necessary to maintain the quality of the beans.

**Processing.** The canning industry in Zambia is almost non-existent. Sunripe Products Limited, the former Zam-hort parastatal company, has discontinued all production including some processed beans.

A new opportunity has recently emerged as Heinz, Zimbabwe announced it is searching for regional suppliers to replace North American imports<sup>16</sup> of the Michigan pea bean (navy bean). Their processing requirements are 20,000 tons, of which one-half is sourced in Zimbabwe and one-half imported from elsewhere in the region. This represents a potential to develop a high-value crop export for Zambia.

**Marketing.** Apart from Heinz, dry edible beans are also traded through informal markets.

**Demand for improved grades and standards.** Due to the shift in sourcing policy of the Heinz canning factory in Zimbabwe, there is a great deal of interest in dry bean production and a demand for the grades and standards necessary to access this market. Further study is needed to assess the economic feasibility of dry bean production both for commercial and small-scale farmers. The appropriate varieties to meet market demands will need to be imported and tested under Zambian conditions. A system of grading and handling the beans is also needed to take advantage of this emerging opportunity.

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<sup>16</sup> This is apparently due to a shift in corporate policy to favor regional sourcing practices.

Private traders and interested producers and producer groups can work in coordination with ICRISAT and Heinz as well as interested NGOs to identify the varieties appropriate for Zambia.

### 12.3 Cotton

The cotton sector is one of the most developed subsectors with respect to grades and standards. The cotton sector was originally developed by Lintco, a parastatal organization. From 1977 to 1994 Lintco, on behalf of the Zambian government, purchased seed cotton from farmers at fixed prices and provided seed, pesticides sprayers, bags and extension advice to farmers. In 1994 Lintco was sold to Lohnro and Clark Cotton as part of the Zambia Privatization program. Lohnro cotton is now operating as Dunavant Zambia Limited.

**Inputs.** The major inputs for cotton are seeds and pesticides, provided as in-kind credit mostly through the outgrower schemes. The quality of cotton is often lower for farmers who do not apply pesticides as well as for those who fail to use quality seed. The cotton varieties currently available to outgrowers were produced in the mid-1980s (Chureza) or early 1990s (F135). Many farmers not under the outgrower schemes grow older varieties that have been officially withdrawn by public agencies.

**Production and Handling.** Cotton has played an increasingly important role in Zambian agriculture. The sector employs approximately 50,000 farm families as outgrowers, making it one of the country's largest employers. Average supply of cotton is in the range of 100,000 Mt per year.

**Storage and Transport.** There is a lack of proper storage facilities, which can lead to lower quality lint. High transportation costs are a major factor in this market making regional markets the most likely customers.

**Processing.** There are five ginning facilities in Zambia, three of which three produce low-standard bales for the domestic market. These facilities are not fit for the international market.

**Marketing.** The two largest and most successful ginning companies purchase cotton based on clear and precise color and length grades. One of these companies, Dunavant, provides sample grades at the collection points so farmers can compare their cotton, learn the grading system, and begin to improve their quality.

Grades and standards enable the largest producers to differentiate their quality and succeed in the marketplace, but several other producers manage only low grades that negatively impact the reputation of country's cotton products.

Due to high transportation costs, Zambian cotton companies sell most of their production to low quality domestic spinners or in the regional market.

**Demand for improved grades and standards.** Improved standards could help stimulate domestic processing and value-added activities that could enter at least the regional export markets. The overall improvement of standards would also contribute to elevating Zambia's reputation as a cotton

producer. The grading system in cotton is well developed and there does not appear to be a demand for improvements.

## 12.4 Soybeans

Although it is unlikely that Zambia could compete on the world market, there are some regional opportunities that merit further investigation. It is currently a viable option for South African buyers wishing to procure less than a shipload of soy. One promising market niche, already being developed in South Africa, is for food grade soy. Zambia's high-quality production of this crop could position it strongly in this market. Food grade soy can also play a role in Zambia's food security strategy since it provides high protein at very low-cost.

**Inputs.** In Zambia, soybeans are grown as a cash crop and thus require commercial inputs. Therefore, soybeans are primarily grown by commercial farmers.

**Production.** Soy presents an advantage to the farmer, especially a wheat or maize farmer, as a nitrogen fixing rotation crop. Current domestic production averages 30,000 tons per year.

**Storage, Handling, and Transport.** Transportation costs greatly affect the competitiveness of Zambian soybeans. Proper conditions must be maintained during storage, handling, and transport in order to maintain quality.

**Processing.** In the domestic market, soybeans are processed into soy meal for the poultry feed industry. Currently, feed production is heavily dependent on the SPS based import ban on poultry from Zimbabwe and South Africa.

**Marketing.** South Africa currently takes approximately 1/3 of annual production (10,000 tons) primarily for their poultry feed sector. However, its use for human food is growing and represents a potential growth market. The competitive advantage of Zambia, compared to the other major producers in that market is that buyers can purchase smaller quantities more frequently rather than the 40,000 ton boatloads from Brazil and Argentina, the major producers.

One company currently dominates the domestic market, purchasing more than 80 percent of total production. Soybeans sell for \$230/ton; the primary value of this product is in the meal (\$250/ton) rather than the oil. Although Zambian soybeans reportedly receive a premium over the dominant supplier (Argentina) in South African markets, transportation costs make it somewhat less viable. Soy from Argentina to South Africa is \$20 per ton and to Johannesburg another \$15 per ton. Soy from Zambia to Johannesburg costs \$50 to \$60 per ton. Its value in the South African market is as a food grade product for soy milk, tofu and other soy products.

**Demand for improved grades and standards.** Further investigation is needed to assess the economic viability of soybeans as an export crop. Anecdotal evidence from the interviews suggests that Zambian soybeans receive a price premium for quality. Confirmation of this assertion as well as an assessment of the quality standards required for food grade soy and its potential growth are needed. Key partners in this area include interested farmers and farmer groups, traders, NGOs like OPPAZ, and MAFF.

## 13. Commodities with Potential for Import Substitution

Commodities in this section: **local fruits and vegetables, cashew nuts, dairy products, sunflower seeds, wheat.**

### 13.1 Local Fruits and Vegetables

Production of locally consumed vegetables and, on a more limited scale, fruit has increased greatly over the past five years. Local vegetable and fruit production is attractive for smallholder farmers because it serves a dual function as both a cash and food security crop. While some local production, such as cabbage, exhibits little potential for development through improved grades and standards, many locally grown and traded fruits and vegetables have significant potential for import substitution. These include tomatoes, onions, Irish potatoes, mushrooms, bananas, and citrus. Zambia currently imports a large quantity of these horticultural products from its neighbors, Zimbabwe and South Africa. A strategy of import substitution can be accomplished through grades and standards initiatives that address the quality and quantity of the products produced as well as issue of seasonality.

One of the areas of greatest perceived growth in demand is tree crops, especially tropicals. However, these fruits, including mango, banana, lychee, and papaya, require considerable capital investment and the lag-time for commercial production can be several years as the trees mature. Furthermore, packaging materials, i.e., wax boxes and padded sleeves, are not readily available in the local market.

Key grades and standards issues in the supply chain are generally similar for both fruits and vegetables.

**Inputs.** The major constraint to expanding production is lack of the seed and/or planting material that will produce the quality suitable for Zambian supermarkets. Currently, not enough seeds, planting material, and production technologies are readily available in Zambia.

**Production and Handling.** Pests and diseases can be particularly problematic in the rainy season. Thus, the bulk of fruit and vegetable production occurs during the dry winter months. This causes surplus conditions during certain times of the year, and shortages during other times. During the surplus times there are extremely high levels of waste. This seasonality is the greatest production weakness and contributes to the large influx of imports.

Currently grading is basically nonexistent. Where grading is done, it is mainly by size and often poorly performed or inadequate.

**Storage and Transport.** Poor storage and transport, along with large volumes of seasonal production, lead to high levels of post-harvest loss. Lack of proper packaging and handling procedures as well as cold storage facilities dramatically decrease the shelf life of these perishable

products. Virtually all packaging material must be imported, significantly increasing the cost of production and making domestic produce uncompetitive with imported produce.

Poor road conditions make timely and efficient product delivery difficult. It also contributes to high vehicle maintenance costs, which increases the cost of transport services.

**Processing.** Processing capacity, e.g., canning, drying, etc., for vegetables and fruit is very limited in Zambia. There is little incentive for investing in processing capacity because of the seasonality of fruit and vegetable production as well as unfavorable production costs. Quality improvements will be necessary in order to supply any processing venture.

**Marketing.** One company sources from export growers, taking their seconds at a somewhat better price, thereby creating an alternative market for export growers and establishing export quality in the local marketplace. This practice contributes to the increased demand for quality standards, particularly among urban buyers.

The marketing system for local fruits and vegetables consists of two channels, supermarket wholesaler or local markets. One fresh produce wholesaler, Freshmark, supplies the dominant supermarket chain. Freshmark imports produce, mainly from Zimbabwe and South Africa, as well as buying locally. Local production accounts for 30% to 40% of their purchases. They are interested in increasing their local purchases as long as producers can provide the quality and quantity required on a consistent basis. However, it is difficult for locally produced goods to compete with imports because the imports are usually well packaged and of superior quality in terms of size and uniform ripening. The dominance of imports in supermarkets reveals the consumer demand for improved quality, which can be met through improved grades and standards, particularly improved grading and packaging.

Local markets are governed by spot market transactions. Customers are low to middle income households. Thus, the range of products is narrow and the premium on quality produce is lower than that in supermarkets. Often, the only quality factor used to grade and sort produce is size. In some markets, standard weights and measures are used for certain products such as potatoes and tomatoes. However, they are often priced by the pile.

One successful example of farmer collective action is a company named Buyabamba, established by a group of potato farmers. The company sourced good quality seed potatoes from South Africa in order for its growers to improve the quality of their production. Through an investment of \$50,000, the company purchased a simple washing, grading, and sorting machine and then packaged the potatoes into standard size bags. This innovation allowed Buyabamba to gain access to the supermarket shelves and displace imported potatoes. This is a successful model that could potentially be replicated for other vegetables like onions and tomatoes, as well as fruit.

**Demand for improved grades and standards.** Significant demand exists for improved packaging and handling of local vegetables and fruit. Freshmark expressed an interest and willingness to source products locally; however, they are not willing to assist producers in meeting their standards. Thus, there is an opportunity for NGOs, like ZATAC, to work with private companies and investors, like Buyabamba, to address the critical issues of seasonality, grading, packaging, storage and transport. Another critical issue that must be addressed is input quality. ICRISAT and NGOs

involved in seed multiplication will play an important role in producing and distributing good quality seeds, particularly as the seed industry develops. However, for the local fruit and vegetable industry to be viable, the seed companies must begin to fill this market void. One opportunity to kick-start this demand could be the MAFF program to distribute "seed packets". If this program goes forward and includes some technical extension support for growing newer varieties, it could begin to create the necessary demand to stimulate domestic seed companies' entry into the business. This could certainly be supported by initial tax incentives and perhaps fast track seed approval when essentially similar crops are grown in neighboring countries. Some NGOs, like CLUSA, ZATAC, and ACDI/VOCA, have access to very modern production technology that could be used to train local growers and growers associations to improve their success and Freshmark is one large domestic firm that can help provide some market entries.

## 13.2 Cashew nuts

Ideal agronomic conditions for growing cashew exist in Zambia, particularly in western regions. However, the crop has not been promoted extensively by the government or private sector extension systems. One exception to this is a ZATAC initiative to encourage smallholder farmers to reclaim abandoned production and market the produce locally. The superior standards of local cashews can readily compete with considerable imports of substandard and broken nuts.

**Inputs.** The cashew seed is not available through the seed companies in Zambia and farmers could not access the seed other than from existing trees.

**Production and Handling.** The existing trees were promoted by a defunct Cashew Company of Zambia and are not well managed. However, the ZATAC initiative is promoting the reclamation of the estimated one million abandoned trees for local processing.

**Storage and Transport.** The distances from the production area to Lusaka represent a potential constraint to the renewed efforts to promote cashew production in the western province since the high cost of transportation may discourage some producers and traders from entering the market.

**Processing.** Processing is the critical link in producing good quality cashew nuts. Mechanized processing often leads to a very low quality finished product with many broken nuts. Hand processing, i.e., hand shelling, produces a very good quality final product.

A few local processors, through assistance from ZATAC, have invested in manual processing equipment to produce a superior cashew. The manual processing equipment has helped both to add value and create markets for local cashew.

**Marketing.** There is significant potential for import substitution in cashew nuts. The city of Lusaka alone consumes one ton per month and all current consumption is from imports. Current retail prices range from \$15 to \$18 per kilogram, while wholesale prices range from \$8 to \$10 per kilogram. Currently, farmers are receiving approximately \$1 per kilogram for raw cashew nuts.

**Demand for improved grades and standards.** According to ZATAC, local standardization is currently taking place between buyer and sellers. Thus, there is demand for improved grades and

standards. Any initiative in this area should take into account the progress made by these actors and work with them on improvements. Facilitation and support of ZATAC's efforts to increase the adoption of hand shelling equipment will improve the quality and marketability of local production.

### 13.3 Milk

Zambia currently produces between 6-8 million liters of milk per year, down from a peak of approximately 10 million liters per year in the early 1990s. There is considerable potential for growth in the domestic market. Zambia imports approximately 6500 liters per day of dry milk equivalent because of a distinct shortage of fresh milk production. There is also medium and long-term potential as an export product. Zimbabwe, with a slightly population level (18%) than in Zambia produces approximately 36 million liters per year, of which approximately 25 million are for domestic consumption.

**Inputs.** Several key inputs are critical to increase the production of safe, high-quality milk. First, adoption of more commercial dairy mixed-breeds could increase production. Currently local breeds (Zebu based) produce 2-4 liters per day whereas more commercial dairy breeds (including those with Holstein or Freisian genestock) can produce up to 20 liters per day.

**Production and Handling.** Production and handling are critical grades and standards points in the supply chain. Improved management practices, hygiene, and milking standards would increase the safety and quality of the milk produced. Also improved veterinary services, particularly dipping, vaccination, pasture management and improved feeding practices, increase the quality and quantity of milk production. Many farmers have increased production significantly and, with reasonable extension advice, have been able to produce a higher grade of milk.

**Storage and Transportation.** Storage and handling are vital steps where safety standards must be met. In addition to farmer training on hygienic handling practices, there is a lack of storage tanks and collection points, thereby making purchasing milk from rural smallholder farmers impossible for processors.

**Processing.** The market is increasingly quality conscious. Processors set standards that comply with international codes and are monitored by the Ministry of Health. No official Zambian standards exist for dairy products. Companies set their own standards and government bodies recommend following Codex standards.

**Marketing.** Parmalat, the country's largest processor, uses a three-grade system in its milk purchasing and pays a substantial price premium for higher grades. The two most important grading factors are bacteria count and fat content. Finta, the second-largest processor, has such limited milk production available that they pay the top price (30 percent more than Parmalat) and do not use a grading system, accepting all milk that meets their minimum standards.

Parmalat accepts even small quantities of milk from local producers but does not actively encourage this. Finta, a processor that focuses on long-life UHT milk, is pursuing increased production through outgrower schemes. Finta is confident that they can be competitive on the export market with milk to nearby countries but they need to increase production first. In 1999, Tanzania alone purchased approximately 2 million liters from Zambia's competitor, Zimbabwe.

Parmalat has approximately 20 different milk products on the market and notes that consumers are demanding consistently higher qualities of products and added value products e.g., yogurt-fruit drinks and exotic cheese. As these differentiated products enter the market, the demand for quality milk increases.

**Demand for improved grades and standards.** There is significant demand for improved grades and standards for milk production, particularly for farmer training in production and handling. Finta is currently working with ZATAC and Care International to establish and manage a rural milk collection center. However, this project is in the early stages and significant support will be necessary to achieve the production and quality goals. Finta is actively searching for additional funding support and partners to establish more collection centers.

The following analysis calculates the annual costs and benefits of creating a rural milk collection point and training farmers to improve standards such as productive breeding, herd feeding, veterinary care, and hygiene. This includes a new refrigerated milk collection center and most upgrading costs for the first year. After the first year, cost would diminish as the stock feed business becomes a private local enterprise and farmers are able to purchase veterinary services and inputs with their increased incomes.

**Cost-Benefit Table 13 Dairy**

<i>Milk</i>		
<b>Leverage Point: milk collection and handling</b>		
<b>Issue</b>	<b>Cost</b>	<b>Benefit</b>
<b>1. Economic:</b>	<p style="text-align: center;"><b>US\$222,000 p.a. costs</b></p> <ul style="list-style-type: none"> <li>• \$168,000 feed, \$30,000 veterinary expenses, \$12,000 extension, \$12,000 maintenance of collection center.</li> <li>• \$50,000 start-up capital costs</li> <li>• 500 farmers participating = \$444 each</li> </ul>	<p style="text-align: center;"><b>US\$840,000 p.a. revenue</b></p> <ul style="list-style-type: none"> <li>• 10,000 liters/day @ \$0.24</li> <li>• refrigerated milk collection center</li> <li>• 500 farmers participating = \$1680 each</li> </ul>
<b>- Transaction costs</b>	<ul style="list-style-type: none"> <li>• Transport to collection points risks spoilage and may not be cost effective for smaller producers</li> <li>• Commitments could incur unremunerated expenses</li> </ul>	Reduces information costs on standards and grades
<b>- Trade implications</b>		Linkage to export markets (e.g., Botswana, Tanzania, Congo)
<b>2. Competitiveness and productivity:</b>	Breed improvement costs	<ul style="list-style-type: none"> <li>• Increased yields</li> <li>• Increased reproduction</li> </ul>
<b>- Logistics</b>	Outlying farmers provide transport (\$3/milk can)	
<b>- Information/Communication</b>		Increased information and communication
<b>3. Environmental Impacts</b>	<ul style="list-style-type: none"> <li>• Tetrapaks are neither recyclable, nor biodegradable</li> <li>• Overgrazing</li> </ul>	
<b>4. Risks</b>	<ul style="list-style-type: none"> <li>• Committing resources to other than food crops</li> <li>• Risk of rejection</li> <li>• Loss of necessary support e.g., CARE</li> <li>• Processor monopsony</li> </ul>	<ul style="list-style-type: none"> <li>• Improved quality calories</li> <li>• Healthier herds = fewer losses</li> </ul>
<b>5. Externalities</b>		<ul style="list-style-type: none"> <li>• Increased manure production and corollary crop yields</li> <li>• Improved draft capability</li> <li>• Improved hides and skins</li> </ul>

<i>Milk continued...</i>		
<b>6. Social:</b>	poorly managed program risks community disappointment and distrust of co-operative	Increased social cohesion
<b>- Participation</b> (inclusion/exclusion, democratic associations, public access to benefits, barriers to entry)	must own cows	open access to participate
<b>-Employment/business opportunities</b>	Opportunity costs	Creates stockfeed market (200 kg/month/cow)
<b>- Gender</b>	Potential for increased women's work responsibilities	Potential for gender inclusion
<b>-Poverty/equity</b>	Devote more time & resources	Increased assets (healthy cows)
<b>-Health and safety</b>		<ul style="list-style-type: none"> <li>• Improved consciousness of hygiene and cleaner work &amp; living environments</li> <li>• reduced incidence of disease</li> </ul>
<b>-Capacity Building</b>		<ul style="list-style-type: none"> <li>• Strengthen association learning for other market-oriented projects e.g., vegetables and abattoir</li> <li>• Strengthen association governance</li> <li>• Improve cow management practices</li> </ul>
<b>7. Political implications</b>		Increased smallholder incomes Reduced imports of milk

## 13.4 Sunflower

According to estimates by the Zambia National Farmers Union, the average supply of sunflower in Zambia is in the range of 5000 Metric tons (Mt) with 3,500 Mt going for sunflower cake (feed). The local demand for sunflower is in the range of 50, 000 Mt leaving a shortfall of 45,000 Mt. A considerable amount of raw, unprocessed oil is imported, primarily by one dominant processor (Amanita).

**Inputs.** Hybrid sunflower seeds are available from the local commercial seed companies. However, most small-scale farmers have generally been using local seed varieties as opposed to hybrid seed.

**Production and Handling.** Sunflower seeds are easily produced by the small-scale farmer and represent a potential cash crop. CLUSA is currently encouraging smallholder farmers to produce and process sunflower seeds.

**Storage and Transportation.** High transportation costs could limit the commercial viability of expanding beyond local trade of sunflower seeds and processed products.

**Processing.** For commercial oil production, sunflower has to compete against other vegetable oils, particularly low-cost imports of palm oil, and is not price competitive. However, there is considerable scope for its production at the smallholder level for local processing, e.g., ram press. Local soft-shell varieties are ideal for the ram press but not for industrial processing.

A local company, Amanita Premium Oils, has been processing local sunflower for edible vegetable oil. The low oil content from the local sunflower has discouraged the company from pursuing local purchases. The company claims that they often transport chaff when they buy sunflower seeds from local farmers without testing the oil content. Therefore, Amanita relies on imported crude oil for the bulk of their processing.

**Marketing.** NGOs, including Africare and CLUSA, have been promoting local processing of soft-shell sunflower seeds using the ram press. The local processing program has increased the production of soft-shell type of sunflower seed which has relatively low levels of oil content as compared to the hard shell hybrid seeds.

**Demand for improved grades and standards.** For the commercial market, there is potential demand for improved, high yielding varieties that produce seeds with a higher oil content. However, further investigation is required to determine if high yielding varieties could compete with considerable quantities of imported oil.

## 13.5 Wheat

Zambia uses 120,000 metric tons of wheat annually and produces approximately 40,000 tons. There is potential to produce a considerable amount of this shortfall domestically although approximately 20% (24,000 tons) must be hard winter wheat, a product that Zambia cannot yet produce.

**Inputs.** The recent introduction of new varieties e.g., Scarlett or Sceptre, could allow Zambia to produce hard wheat for domestic consumption. However these have not proven successful in early field tests. Zimbabwe's production tends to be more competitive at the moment due to less expensive inputs (40 percent less for a bag of fertilizer) and an export rebate from the government.

**Production.** Wheat is predominately grown by commercial farmers who have difficulty meeting the competition from subsidized imported wheat (mostly from Zimbabwe). For the baking trade, harvest timing is critical to maintain the proper range for falling numbers<sup>17</sup> ..

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<sup>17</sup> The falling number test is an internationally accepted evaluation of wheat to determine if it will likely have a negative effect on the flour's bread-baking qualities due to high alpha-amylase activity that develops as a result of wet harvesting conditions. Acceptable falling number values range from the low 200's to mid-300's and farmers cannot know whether they meet the standard when millers change these at random.

**Storage, Handling, and Transport.** Proper conditions must be maintained during storage, handling, and transport in order to maintain quality. Standards for these are not available in the domestic market and each farmer is left to his own resources.

**Processing.** There is overcapacity in the wheat milling sector with mills currently running at 50% capacity. Processed flour must adhere to standards outlined by the Ministry of Health.

Although a law was passed to permit the addition of vitamin A to sugar, vitamin enrichment is still not permitted for the grains industry, i.e., wheat and breakfast “mealy meal” (porridge or grits), despite long-standing requests from the millers association. Besides the obvious nutritional advantages for consumers, such additives could also provide a competitive advantage for producers.

**Marketing.** Mills source most of their wheat from commercial farmers. They also buy wheat from grain traders who purchase wheat from smaller, emerging farmers. The most important quality factors for wheat are falling number, moisture, and foreign material. Standards are set by the mills and outlined in production contracts. These standards are applied by the mill with no recourse for farmers if there is a quality dispute. Depending on supply needs, the price may be discounted for wheat that is close to meeting the standards, e.g., wheat that is just over the moisture allowance.

**Demand for improved grades and standards.** Formal G&S could be most helpful to farmers who are currently at the mercy of millers. Permitting vitamin enrichment with new additives standards would enable differentiation and competition as well as improved nutrition.

## 14. Commodities with Potential for Increased Domestic Productivity and Social Welfare Improvements

Commodities in this section: **millet, sorghum, poultry, livestock.**

In addition to the obvious social welfare benefits, there are other reasons to invest in improved domestic productivity. The ability of farmers to produce better quality and develop economies of scale are necessary precursors of export capabilities. Improved G&S in domestic markets helps to sensitize producers to ever improving standards.

Commodities with potential for increased domestic productivity and social welfare through improved grades and standards include livestock and poultry. There are, however, some important crops whose trade is informal and mostly local. Markets for these commodities are not yet developed enough to benefit substantially from improved G&S. They include millet, sorghum, cabbages, sweet potatoes and cassava.

### 14.1 Poultry

**Inputs.** Recent improvements in inputs standards, e.g., day-old chicks, and the entry of more competitive processors indicate that, once established, this industry could hold its own against imports.

**Production and Handling.** The Zambia poultry industry produces approximately 12 million broilers per year; in contrast, South Africa produces 12 million broilers per month. A phytosanitary ban is currently in place for South African and Zimbabwean poultry due to Newcastle disease. There is indication that the domestic industry would not yet be competitive without this import barrier.

**Processing.** This sector depends heavily on smallholder production that is processed by five to seven large firms who provide most inputs and some extension services, but typically only to cooperatives. No public information or support is available for this subsector. Small producers are dependent on larger processors for training and information. It seems that the smallholders typically have lower costs of production and reduced need for large capital investment.

The high cost of fuel and energy force these processing plants to rely on charcoal with the attendant negative consequences for environmental standards i.e. forest clearing and charcoal fire pollution.

**Demand for improved grades and standards.** There are no clear government safety standards for processed poultry, e.g., for microbial contamination. This represents a food safety risk and potential public health concern that would benefit from improved G&S.

## 14.2 Livestock

**Inputs.** Before liberalization, livestock inputs and services were provided by the MAFF but are now only offered on a fee basis this has encouraged segmentation toward smaller traditional herds on the one hand and a more commercial orientation on the other. Lack of access to veterinary services and inputs has greatly affected herd health leading to a high condemnation rate for internal organs.

**Production and Handling.** Current estimates place the number of cattle in Zambia at 2.9 million head. This number is increasing in part due to increased demand for draught animals in agricultural production. There is also increased interest in smaller ruminants (goats and sheep). Livestock production can be broken into two categories, traditional small herds (less than ten cows) and commercial herds accounting for 70% and 30% of production respectively. Due to limited resources for veterinary extension staff, grades and standards dissemination only occurs on an ad hoc basis.

**Processing.** Zambeef, Zambia's largest processor and the sole supplier of the largest supermarket, buys standard quality livestock from smallholders, and produces choice cuts on its own feedlots. Little grading happens beyond this due to lack of market demand. Retail sales are predominantly for the standard grade. These two grades are somewhat subjective and meats that do not meet these are used for processed meat products or sold off to feed processors. The health inspectors condemn a considerable amount of meat, particularly internal organs. Liver parasites and TB are the most common reasons for condemnation.

**Marketing.** Zambeef does not export any products. They do not anticipate great potential for exports regionally due to political instability in Angola and the DRC. Cross-border trade in meat products appears to be more informal, particularly to Zambia's poorer neighbors i.e. Namibia and DRC. Costs of production are relatively similar between Zambia and its southern neighbors thereby making trade undesirable, especially given the high transport costs. Trade with Zimbabwe and South Africa is further hampered by SPS barriers due to the incidence of disease.

Reports on consumer demand for quality were conflicting. Several sources noted that consumers prefer imports because they think that Zambia does not enforce standards and has inferior quality. However, other sources stated that price is the determining factor and demand for quality has actually decreased over the last several years.

**Demand for improved grades and standards.** Improved enforcement of food safety and hygiene standards will improve public health. Moreover, improvements in the extension system and farmer access to veterinary inputs will improve herd health and increase overall productivity. Key partners in this area include MAFF, the Ministry of Health, and interested NGOs.

## 14.3 Millet

Millet is predominately a smallholder crop and currently represents little potential beyond rural subsistence. The Program Against Malnutrition (PAM) has been promoting millet for household food security to 1500 community-based organizations, 60 resettlement schemes, and 400 women's

groups from outlying areas through the Drought Rehabilitation Programme (DRP) funded by SIDA and NORAD.

Millet production is attractive because of it is drought resistant and requires few inputs beyond seeds. A number of NGOs are involved in the multiplication and distribution of millet seed to vulnerable groups to enable them to meet their food security needs. The production levels are minimal. According to ZNFU, the average supply of millet is in the range of 48 Mt with the local demand about 53 Mt. This gives a shortfall of about 5 Mt in a year, most of it during the months from December to April.

Although millet is known to be used for the local brewing of opaque beer, the Zambian brewing industry has not yet taken up the processing of millet on a commercial scale. There is no formal marketing of millet. Further investigation is needed to assess if grades and standards improvements are a necessary part of a wider market formalization initiative.

## **14.4 Sorghum**

Sorghum is a subsistence crop with potential for further development perhaps as an informal export. Like millet, PAM is promoting sorghum in its DRP and NGOs are involved in seed multiplication and distribution of sorghum seed. However, few varieties have been developed to meet the specific needs of Zambia. According to ZNFU, the average supply of sorghum in Zambia is in the range of 31 Mt with the local demand of about 30 Mt.

As with millet, sorghum is known to be used for the local brewing of opaque beer, but the brewing industry has not taken up the processing of sorghum. Further investigation into this potential niche market is needed to assess if grades and standards improvements are a necessary part of a wider market formalization initiative. Moreover, there is anecdotal evidence of potential export markets in Botswana and Namibia. Further investigation is needed to confirm this assertion and determine the feasibility.

## 15. Strategic Recommendations

The following recommendations, selected among many, represent areas where G&S investments could be productively leveraged for broad cross-sectoral impact. These recommendations strive to be:

- practical and concrete
- readily achievable
- reasonably low-cost

### **Recommendation 1: Laboratory Needs Assessment**

New market growth opportunities in the EU, US, and regional markets are only available to Zambian exporters if they can meet the standards set by the importing country as well as the buyer. Testing capabilities and the timeliness of tests were often cited as an obstacle to increased trade. The validity of results from tests conducted in Zambia is often questioned by importers leading to quality disputes where the Zambian exporter usually loses. Interviews repeatedly turned up anecdotal evidence about such misunderstandings where Zambian exporters were forced to suffer losses as a result of G&S disputes. Several areas were consistently identified as capacity deficits in the current laboratory testing system including training, equipment, and poor G&S information flows between Zambia and importing countries.

*Thus, a laboratory needs assessment is recommended.* This assessment will take inventory of the current capabilities and deficits of the existing laboratories. To be successful it must work hand-in-hand with the private-sector to determine and prioritize targeted areas where capacity strengthening is needed. This information will be useful in developing facilities with the direct involvement of private sector investment and input (*See Box 8.1*). Attention should be given to the following areas:

1. Equipment and reference samples
2. Staff training
3. Training internships and exchanges with other laboratories in the region, possibly coordinated through COMESA and/or SADC
4. Information management and dissemination system
5. Assess the feasibility of at least one laboratory obtaining international accreditation and develop an action plan to obtain it

Additionally, to sustain the necessary quality levels, the laboratories will need a feasibility study (hopefully leading to a business plan) in order to determine what type of fee structure and funding system can be used while maintaining easy access for exporters. In other words, the labs must determine how operating expenses will be met, including continual training for staff, adequate pay, and upkeep of equipment.

COMESA and SADC are interested in improving laboratory capacity and any initiative in this area should be coordinated with existing activities and institutions.

## **Recommendation 2: Consideration Should Be Given to Funding Organic Initiative**

Organic production has been identified as a potential high-value niche market for Zambian products and there is strong interest in it in many subsectors. Given Zambia's abundance of unspoiled natural resources and favorable agro-ecological conditions, substantial expansion of the organic market represents a viable opportunity to increase Zambian exports. Since organics are a niche category that requires considerable attention to standards and the establishment of market linkages, only a few exporters are able to initiate this on their own.

The Organic Producers and Processors Association of Zambia (OPPAZ) is a very new private-sector led initiative affiliated with the National Farmers Union. However, the future of the organization is at risk due to a lack of sufficient funding. OPPAZ is currently spearheaded by a core group of two people with market knowledge and contacts who are well-regarded in the agricultural community. Single-handedly, they have managed to facilitate both the certification of thousands of hectares and the market linkages to sell these certified products. OPPAZ currently provides the following services:

- Organized certification rounds to save on costs
- Training and information on production practices
- Market information and contacts

Although it has the vision and the technical skills, in order for it to survive and thrive, *OPPAZ needs funding to develop information and programs*. Consideration should be given to the following:

- A study looking more in-depth at organic production capabilities, certification options, market opportunities, price premiums, etc.
- The structure of funding available to OPPAZ, i.e., cost sharing needs to be matched with the services it provides.
- Potential linkages with experienced NGOs, like ZATAC, CLUSA, Care International, as well as donor organizations such as GTZ, who can help to guide and foment organic development.

## **Recommendation 3: First Steps Toward an Enabling Environment: Processing Subsector Competitiveness Assessment**

Rather than encouraging private sector development, policies and regulations appear to be stifling it. *A rigorous study could illuminate the costs and hindrances imposed on the private sector and the subsequent losses to the economy*. Such a study would be a useful policy tool with which to initiate

improvements. In addition to economy-wide benefits, this study would have direct relevance to the agricultural processing subsector. One issue that repeatedly arose from the interviews is the uncompetitiveness of Zambia's processing subsector. Several factors were identified as potential constraints:

- Unfavorable policy environment
  - Fuel costs / tax
  - Import duties for packaging material
  - Pricing system for electricity
- Poor infrastructure increases costs
  - Roads
  - Telecommunications
- Inconsistent and inadequate support from public institutions
- Inability to source the necessary quantity and quality of inputs on a consistent basis
- Particularly volatile agricultural raw material supply

Many of these are much broader issues that impact the ability of firms to implement improved grades and standards and thus, improve the quality of their products.

Thus, it is recommended that an organization, perhaps FANR-PAN, spearhead an investigation of the factors affecting the competitiveness of Zambia's processing sector. It is crucial for the Zambian agricultural sector to be able to capture some of the added value of processing products within the country, increasing income as well as creating employment opportunities.

#### **Recommendation 4: Standards Implementation and Certification Cost-Sharing Initiative**

Process standards and traceability have become just as important, if not more important, than traditional, testable final product standards. In order to meet and document process standards, Quality Management Systems must eventually be adopted and implemented. These systems can range from formal international standards like ISO 9000, ISO 14000, and HACCP, to industry-led codes of conduct, like EUREP or GAP 2000, to firm-specific codes of conduct. Meeting such standards is often difficult for agricultural producers and processors from developing countries, particularly for small to medium-sized agribusinesses.

*Consideration should be given to establishing a Quality Systems Initiative to provide technical assistance to implement international standards and to further develop industry-led codes of practice. Issues to consider:*

- Since significant dedication and some costs are necessary to benefit from the adoption and implementation of Quality Systems, this should be structured on a cost-sharing basis in order to avoid firms that are not committed to improving quality.
- This problem is not unique to Zambia and thus, could be administered regionally through SADC or COMESA. This ought to link directly with their nascent initiatives in this arena.

### **Recommendation 5: Support G&S Fact-Finding Missions**

*Hands-on agribusiness visits that incorporate training for entrepreneurs interested in a particular commodity and/or processing method could be integrated into several existing institutions. For example, spices have been identified as a potential growth area, particularly for targeting the US market. Possible actions could include:*

- Linking interested exporters and their producer groups to industry groups in the EU, Asia, or the US (i.e. The American Spice Trade Association).
- Zambian visits to spice importers, processors, and retailers in the target markets for on-site training and perhaps work exchange.
- Cost sharing approach for bringing industry experts to Zambia and other countries in the region.
- Cost sharing approach for Zambian industry groups to travel overseas to tradeshows, exhibitions, and industry meetings/conventions.

### **Recommendation 6: Establish an AGOA Information Contact Point for FDA and USDA**

There is significant interest in the agricultural sector about the potential opportunities for US market penetration under the AGOA legislation. However, meeting the requirements of the US market can be a difficult task for most Zambian exporters. One of Zambia's largest exporters, Agriflora, has had difficulty meeting US requirements and this has discouraged other exporters with less experience and resources. *See Box 11.1.* Thus, it is recommended that a *central AGOA contact point be established in the FDA and USDA to assist African exporters in meeting the market requirements.*

### **Recommendation 7: Improved Information Flows**

Information bottlenecks exist in assessing and acting on export opportunities and often prevent interested entrepreneurs from being able to adequately evaluate or take advantage of export possibilities. Thus, consideration should be given to *developing entrepreneurially-oriented information systems* that take into account the essential G&S requirements of different markets.

This information could be made available as a hardcopy database and also on the Internet and via regular in person or fax/e-mail dissemination at trade association meetings, NRDC/ZEGA Training Trust classes, and ZATAC, CLUSA & CARE projects. A number of NGOs, private enterprise, and commodity trade associations would be helpful in shaping the form that this information takes while the Export Board could take the lead as a central point for information gathering and filtering. While the Export Board could be an appropriate institutional home or conduit for this information, it requires further strengthening in order to improve its outreach capabilities.

### **Recommendation 8: Collaborative agri-food industry group**

Zambia's agri-food industry, with few exceptions, does not work together toward common goals. Most commodities or subsectors act independently of each other and miss opportunities to address their mutual challenges. ACF is probably the institution that is best suited to launch such a group and it would be useful to explore whether some of the sectoral leaders have an interest in working together. Ideally, this could be a public-private initiative with the following functions or characteristics:

- private sector led with government participation
- mandated to coalesce and mobilize resources (information flows from relevant institutions, funds from different sources)
- facilitate private sector-led standards (best practices, international contacts)
- spearhead internationally accredited laboratory facilities
- develop and promulgate Brand Zambia

### **Recommendation 9: Support the Refinement of Rules for Outgrower Schemes**

Outgrower schemes are fulfilling a vital role in the development of agriculture and agribusiness. However, there is scope for abuse of these schemes from both producers and contractors. *Developing a set of good practice guidelines* will be important to their continued flourishing. Guidelines can be based on some of the comments outlined in Chapter 5 and in Box 5.1. Most importantly, they should be a fully participatory process and one that is informed by international experience with similar models.

### **Recommendation 10: Pilot Plant and Fresh Processing Center**

This recommendation is a more long-term investment in two sets of infrastructure/technology that are designed to dramatically lower costs of developing and testing G&S improvements as well as reducing the entry costs for developing higher-value or added-value products. This would be a useful early step to help Zambian producers and processors, capture more value and begins to change Zambia's existing reputation as merely a raw material supplier.

- Pilot Plants are multi-product food processing, testing, and packaging facilities for market tests or small-scale incursions into value-added products at reasonable costs (i.e. no capital investments). These are usually associated with universities or food laboratories.
- One or more Fresh Processing Centers, or several, possibly based on South African models can serve to provide the necessary infrastructure to receive, store, grade, clean and even process fresh horticultural products. The absence of such function-specific infrastructure makes it difficult for this subsector to appropriately develop.





**Make sure the critical G&S points at each point in the supply chain are discussed:**  
**Inputs**

**Production**

**Post-harvest**

**Storage, Handling, and Transportation**

**Processing**

**Marketing**

## Appendix 2. Synthesis of SPS obligations in WTO, COMESA, SADC

### 1. WTO

The World Trade Organization (WTO) sanitary and phytosanitary (SPS) agreement's objective is to minimize the negative effects of sanitary and phytosanitary measures on international trade. The Agreement establishes rules and disciplines to guide the development and enforcement of SPS measures.

The key obligations of the agreement are that SPS measures must:

- be scientifically justified
- not be arbitrary or discriminate in their application to WTO members
- be based on international standards or guidelines<sup>18</sup>, otherwise must be based on standard risk assessment methodologies

WTO members shall promptly publish their SPS measures, have a national notification authority and an enquiry point for provision of information on their measures, and have a notification procedure. (Zambia has a notification authority and an enquiry point.)

### 2. COMESA

COMESA members have a number of responsibilities in the standards areas. (For details please see Appendix C, Chapter Fifteen of the COMESA Treaty, "Standardization and Quality Assurance".)

A few of the relevant responsibilities are:

- Evolve and apply a common policy with regard to the standardization and quality assurance of goods produced and traded within the Common Market
- Apply African regional standards and where these do not apply, adopt international standards
- Facilitate the harmonization of technical regulations
- Harmonize documentation for evaluation of quality of goods

Article 49 of the COMESA treaty requires that Member States immediately remove non-tariff barriers and refrain from imposing any further restrictions or prohibitions<sup>19</sup>. To achieve this

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<sup>18</sup> SPS Agreement recognizes three international standards-setting organizations: Codex (FAO/WHO) for food safety, the Office Internationale des Epizooties (OIE) for animal health, and the FAO's International Plant Protection Convention (IPPC) for plant protection.

<sup>19</sup> The exact wording is: "each of the Member States undertakes to remove immediately upon the entry into force of this Treaty, all the then existing non-tariff barriers to the import into the Member States and thereafter refrain from imposing any further restrictions or prohibitions."

mission, COMESA is pursuing the harmonization of standards of Member States through the Standards Quality Metrology and Testing Project (SQMT). The African Regional Organization for Standardization (AROS) facilitates the technical aspects of these responsibilities.

### **3. SADC**

Under the SADC Trade Protocol, member States are required to base their SPS measures on international standards and guidelines so as to harmonize SPS measures for agricultural and livestock production and trade. SADC recognizes the WTO SPS Measures. (Please see Annex D for the actual text of Article 16, Phytosanitary Measures.)

### Appendix 3.

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