

Integrating Food, Nutrition and Agricultural Policy in Zimbabwe

*Proceeding of the First National Consultative Workshop
Juliasdale - July 1990*



Co-Sponsored by

*Economic & Markets Branch, Ministry of Lands,
Agriculture & Rural Resettlement*

Nutrition Unit, Ministry of Health

*UZ/MSU Food Security Project
University of Zimbabwe*

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**UZ/MSU FOOD SECURITY PROJECT
UNIVERSITY OF ZIMBABWE**

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Executive Summary:

National Consultative Workshop On Food, Nutrition And Agricultural Policy

J.B. Wyckoff¹

A National Consultative Workshop on Food, Nutrition and Agricultural Policy was held July 15 to 18, 1990 at Nyanga, Zimbabwe. This workshop was jointly sponsored by the University of Zimbabwe (UZ)/Michigan State University (MSU) Food Security Project; The Economics and Markets Branch, Ministry of Lands, Agriculture and Rural Resettlement and the Nutrition Unit, Ministry of Health. In addition to representatives from these agencies, invited participants attended from the Ministry of Finance, Economic Planning and Development, The Ministry of Energy, Water Resources and Development, USAID, Agritex, SADCC, SADCC/ICRISAT, The Department of Research and Specialist Services, The Grain Marketing Board and The Department of Economics at the University of Zimbabwe (see Annex 1 for list of participants). The purpose of the Workshop was to discuss on-going research results and policy issues in a multidisciplinary forum towards the development of an integrated food and nutrition policy for Zimbabwe.

The opening session "Structural Adjustment and Agricultural Policy in the 1990's" provided a brief history of the major policies that influenced the present policy environment. A background paper prepared by the Economics and Markets Branch of the Ministry of Lands Agriculture and Rural Resettlement (MLARR) identified the macro-economic variables that would likely be affected by the new "Trade Liberalization" policy to be forthcoming. The potential effects upon the structure of agricultural production, agricultural marketing institutions and the general status of the rural poor were examined.

Session II, "The Nutrition Situation, Current Strategies and Plans: Implications for Agricultural Policy", highlighted Zimbabwe's current nutritional status, the

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consequences of malnutrition problems facing the nation and the causes of existing malnutrition. The extent and geographical distribution of malnutrition in Zimbabwe was documented in a paper prepared by the National Steering Committee on Food and Nutrition. Dramatic visual documentation brought the message home effectively. The interaction of the Ministry of Health with the Ministries of Education; Lands, Agriculture and Rural Resettlement; Trade and Commerce; Finance, Economic Planning and Development; Energy, Water Resources and Development; Community and Cooperative Development and Labour, Manpower Planning and Social Welfare on nutrition interventions was described. It was pointed out that the absence of implementation support for government policy on food and nutrition resulted in uncoordinated programmes and unilateral decisions that fail to effectively address the problem of malnutrition.

Session III, "Household Income Sources and Access to Food: Implication for Food Security Policy", reported many of the empirical findings of the UZ/MSU/SADCC Food Security Project's research on household food security. The characteristics of food insecure households, the failure of price policies to solve the food access problem, the lack of effective local grain markets in rural areas and the absence of longer term strategies to replace short term food relief programs were discussed. The lack of emphasis on livestock and small grain production as a longer term strategy was highlighted. The impact of current movement restriction policy, the absence of an explicit selling and/or distribution programme by the Grain Marketing Board, transport problems, inadequate local (non-GMB) grain storage, the impact of absentee ownership of livestock and the absence of appropriate productivity increasing technology for natural regions IV and V were discussed.

Interactive sessions produced the following recommendations:

1. That a comprehensive (Cabinet) paper be prepared on the problems of hunger and malnutrition, current programmes for alleviation of the problems and the impact of the uncoordinated nature of existing corrective measures.
2. That a "National Action Committee on Food and Nutrition" be formed comprised of members of the "Drought Relief" and "National Steering Committee on Food and Nutrition" to continually assess the current status of malnutrition and food security; map corrective strategies; coordinate and direct relevant research activities. To have impact, this action committee alternatively should be located in:
 - a) The Ministry of Lands, Agriculture and Rural Resettlement because of its role in developing Agricultural Policy and the role of Agritex in implementing food and nutrition programmes, or
 - b) The Ministry of Finance, Economic Planning and Development because it is in the best position to coordinate the multitude of other ministries and organisations involved with food and nutrition,

it is responsible for the National Development Plan, and it controls the budget, or,

- c) The Vice President's office, which would give it national recognition and effectiveness.

3. That information be developed to sensitize and inform Zimbabwean society on the issue of hunger and malnutrition, and targeted and delivered *via* appropriate communication channels.
4. That policies to address chronic versus transitory household food security deal with the causes, be based on health and socio-economic indicators, relevant experience within SADCC and specific analyses of policy impacts.
5. That needed structural adjustments be of sufficient magnitude to remove distortions caused by subsidies and market controls. However, any negative impacts on high risk households must be carefully monitored.
6. That bilateral, multilateral and donor aid through NGO's be directed into areas of need for sustainable projects identified by the local people and that food aid be targeted toward vulnerable groups, *e.g.*, children under five years of age, school children and lactating mothers.
7. That food distribution programmes be institutionalised by:
 - a) Identifying drought prone and chronically food insecure areas and households; routinizing relief food procurement and distribution and by forward budgeting for food and drought relief *via* a permanent budget allocation.
 - b) Making food for work and/or cash a permanent programme.
 - c) Reinstating the supplemental feeding programme through schools, clinics, *etc.*, for targeted, vulnerable groups.
 - d) Providing crop packs and cattle rescue schemes for accelerating recovery from drought.
 - e) Intervention *via* low wage public works and feeding through clinics for vulnerable urban groups.
 - f) Shifting public and private resources to generate employment for the poor *via* research for improved production; strengthening Agritex; irrigation development; improving rural infrastructure; improving input and output markets for agriculture; and development of agro-industries.

Introduction:

Zimbabwe's Food Insecurity Paradox

*M. Rukuni*¹

THE SILOS ARE FULL BUT MANY STOMACHS ARE EMPTY

Zimbabwe's food insecurity paradox was dramatized on June 14, 1990. On that day, The Herald, Zimbabwe's leading daily newspaper reported that the country was heading for another huge food surplus : 135 percent of total requirements (Zimbabwe Expects Surpluses in Total Food Requirements, :4). On the preceding page (:3) of the same paper, the Minister of Labour, Manpower Planning, and Social Welfare is quoted as expressing "shock and horror at recent reports that people are dying of starvation in some parts of Zimbabwe" ("Reports of Starvation Shock Labour Minister").

Zimbabwe has received international acclaim for pursuing a dynamic agricultural policy following independence in 1980. This follows the growth in smallholder production as communal farmers joined their large-scale counterparts in the production revolution. After ten years of independence, it now appears that only a small percentage of communal farmers are actually producing a marketable surplus. Research results are now showing that up to about 40 percent of the communal area families have to purchase extra staple grain on the market every year. Since such food production deficits are occurring following good seasons, this implies that some families are permanently hungry. Some of the most telling statistics on hunger in Zimbabwe include:

- o thirty percent of Zimbabwe's children under five are chronically malnourished (CSO, 1989);

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- o malnutrition is the biggest killer of children between the age of two to five (Mason, 1990);
- o during periods of drought, the government feeds as many as 800 000 people, about 8.5 percent of Zimbabwe's population (Rukuni *et al*, 1990).

THE NEED TO ADDRESS BOTH SIDES OF THE FOOD SECURITY EQUATION

Because the Grain Marketing Board (GMB) silos are full, Zimbabweans may fall into the trap of equating this to the elimination of hunger and malnutrition. Whilst Zimbabwe is food secure in terms of national requirements, it is certainly still experiencing unacceptable levels of household level hunger. Zimbabwe may well avoid this trap by examining two examples. In 1985, following the Great African Famine, India donated 100 000 tonnes of food aid to Ethiopia. Back home in India, an estimated 200 million people were hungry. Closer to home, Malawi, like Zimbabwe, received international acclaim in the early 1980s for the visible exportable surplus of grain. Unnoticed by the international community, hunger and malnutrition were reaching crisis proportions in various parts of Malawi.

Zimbabwe has therefore been successful in addressing one side of the food security equation : food availability through domestic production and storage. A lot more vision is now required to balance the other side of the equation: access to food through family production, purchasing in the market and through food transfer programmes. (Rukuni and Eicher, 1987). The key policy question is : What is the most cost-effective mix of food production, storage and food transfer policies that Zimbabwe needs to pursue in the short and long-run? The policy of food self-sufficiency alone has not answered this important question.

THE HISTORIC NYANGA MEETING

The question posed above cannot be answered by the Ministry of Lands, Agriculture and Rural Resettlement alone, nor through the traditional agricultural policy alone. Since poverty is central to the prevalence of hunger, health, education and other factors are important in addressing malnutrition, the Nyanga meeting was of interest to a wide range of institutions and disciplines. Those who attended included: Ministry of Lands, Agriculture and Rural Resettlement, Ministry of Health, Ministry of Finance, Economic Planning and Development, the Grain Marketing Board, Agritex, Department of Research and Specialist Services and the University of Zimbabwe.

On the first day of the meeting, participants agreed that a national workshop of this nature was long overdue and that it was indeed historic. On the same day, it was also clear that top level civil servants may not have been aware of the serious nature

of hunger and malnutrition in Zimbabwe. By the end of the second day of the meeting, participants had made wide ranging recommendations including:

- o the need to widely inform Zimbabweans of the food insecurity paradox;
- o the urgent need for a national policy on food and nutrition that is fully debated up to Cabinet level;
- o the need for a National Action Committee to implement such a national policy, and
- o the need for an annual multisectoral meeting on food and nutrition in Zimbabwe.

INTRODUCTION TO THE BACKGROUND PAPERS

These proceedings are a collection of papers presented at the Nyanga Workshop. The first paper by Julia Tagwireyi, Head of Nutrition Unit of the Ministry of Health, describes the activities of her unit and points at an attempt to put together National Nutrition Policy. Mason's paper, also from the Ministry of Health, follows with a synoptic analysis showing how Zimbabwean hospitals have to deal with malnutrition as the biggest killer of children aged two to five years. Thom Jayne *et al.*, presents some results out of the University of Zimbabwe/ Michigan State University Food Security Project at the University of Zimbabwe and shows how inefficient rural food markets tax those households who have to meet their food requirements by purchasing on the market. Sithole and Attwood present a two-pronged paper introducing recent changes in macro-economic policy which are likely to have a major impact on agricultural policy and food security: structural adjustment, trade liberalization and agricultural pricing policy. Summaries of the papers by Rohrbach and Stack give a flavour of the prospects of the mini-production revolution by communal farmers and showing the variability in the extent of this involvement by various categories of households. The last section of the proceedings holds the Workshop resolutions and recommendations for action.

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The Nutrition Situation: Current Strategies And Plans

*National Steering Committee on Food and Nutrition*¹

INTRODUCTION

Zimbabwe, since Independence, has made tremendous strides in producing enough food for its people and improving overall nutritional status. The fact that adequate nutrition for all people is a stated goal in both the *Transitional* and the *First Five Year Development Plan* has contributed towards the development of specific programmes to address malnutrition, mainly within the Health Sector. The Transitional Development Plan "mentioned" protein energy malnutrition, avitaminosis, endemic goitre, etc., as contributory factors to childhood morbidity and mortality.

Zimbabwe has much to be proud of with regards to national food production. We have in stock 30 to 35 percent more than our estimated domestic requirements. However, whilst she can boast of overflowing maize silos, many individual households, in both our rural and growing urban communities, cannot boast of adequate food security, even during a good harvest. Zimbabwe still has unacceptably high levels of under-five malnutrition for a country which is a net exporter of food. The communities most affected in order of magnitude are children of commercial farm workers, communal farmers, families in resettlement areas, and domestic workers. In Zimbabwe, these groups constitute more than half the malnourished population of this country.

The vivid consequences of food shortage and malnutrition are well known -- they include high prevalence of diseases and increased mortality, particularly among infants and children; impaired learning and working abilities and decreased productivity. This is a painful waste of human resources. Adequate nutrition should

¹Membership of the National Steering Committee Food and Nutrition consists of: Ministry of Lands, Agriculture and Rural Resettlement (Chair); Ministry of Health (Secretary); Ministry of Finance, Economic Planning and Development; Ministry of Energy, Water Resources and Development; Ministry of Education; Ministry of Local Government, Rural and Urban Planning; Ministry of Community and Cooperative Development.

therefore be viewed, not only as an objective, but also as a means of economic development.

The problem of malnutrition in Zimbabwe cannot be resolved by addressing the food production question only. The causes of the problem are multi-faceted and mainly centred around issues of inadequate and inappropriate food distribution, poor socio-economic status and poor biological utilisation of food due to poor health conditions.

Such multi-faceted causality cannot be addressed by one department, ministry or sector. It therefore calls for coordinated inter-sectoral planning and action to address the problem of malnutrition. The creation of multi-sectoral food and nutrition committees at national, provincial and district levels are a humble beginning towards this end. However, there has been a clear recognition that the effective functioning of these committees is hampered by the lack of a policy framework or guidelines.

The purpose of this paper is to discuss the issue of food and nutrition, highlight the main problems, their causality and consequences to the nation. The paper also discusses efforts to address the problem of malnutrition to date and their limitations.

It is our hope that this paper will initiate discussion on food and nutrition in general and will provide justification for the development of a National Food and Nutrition Policy.

Objectives of the Paper

- o To highlight the main nutritional problems in Zimbabwe.
- o To discuss the problems of malnutrition so that the intersectoral nature of the causal factors can be appreciated. This will assist the key cadres/policy makers to appreciate the intersectoral nature of the problems of malnutrition and facilitate the establishment of an appropriate mechanism to address the problem effectively.
- o To provide information which will stimulate discussion towards the formation of a Food and Nutrition Policy.
- o To recommend a workable mechanism for integrating food and nutrition into national development plans.

THE NUTRITION SITUATION: INTRODUCTION

Zimbabwe has unacceptably high levels of protein energy malnutrition in children under the age of 5 years. Nutritional status of this age group is an indicator of the overall nutrition and health situation of a population. This situation is tragic for a

country such as Zimbabwe, a net exporter of food. Surveys and routine data collected since independence indicate that the following communities are most affected by malnutrition in ascending order of severity: Families working on commercial farms, families in resettlement areas, communal areas, and low income urban dwellers (Appendix 1). The consequences of malnutrition are reflected in increased morbidity and mortality. Available data indicate that protein energy malnutrition is the third major cause of hospital admission and deaths in children under the age of five. Malnutrition also contributes to the onset and severity of many childhood diseases. Inadequate access to sufficient food is perhaps the major contributing factor to malnutrition.

General Overview of the Nutritional Status

There has been a general improvement in the nutritional status of Zimbabwe since 1980. The national and provincial data indicate a steady decline in levels of malnutrition using weight for age as an indicator.

However, when this data is disaggregated by province or ecological zone, those with high levels of malnutrition clearly emerge (Appendix II). There have been improvements in some provinces, whilst others have remained the same or even become worse.

The pattern of malnutrition confirms survey data which indicates that the problem starts from six months -- the period associated with introduction of other foods to the young infants, when breast milk is no longer sufficient to promote adequate growth and development of the child (Appendix III).

Breast feeding is universally practiced in Zimbabwe. Exclusive breast feeding is rather limited in the urban areas where salaried employment and inadequate maternity leave benefits often interfere with breastfeeding frequency and duration. In general however, the low levels of malnutrition during the first six months reflect this good start to the Zimbabwean child's life. The notable exception in recent years has been the Matabeleland Province where the percentage of malnutrition in children under six months has shown a significant increase indicating the severity of the current food insecurity which has perhaps interfered with the mother's milk supply.

Routine data also gives us an indication of the percentage of children born with low birth weight which is less than 2.5kg (Appendix IV). Low birth weight is an indicator of the maternal nutrition status and often these children are more susceptible to malnutrition later on in life. Whilst the prevalence of low birth weight in Zimbabwe appears to be low given the limitations of the data (*i.e.*, only 50 percent of births are undertaken in health care facilities), there appears to be an increase in the percentage of low birth weight in the Matabeleland Province which has been plagued by drought in recent years. Even the city of Bulawayo has a high prevalence of low birth weight. This is perhaps a reflection of rural/urban migration to the city of Bulawayo as the drought in parts of Matabeleland continues.

The Nutrition status data indicates a seasonal pattern of malnutrition which corresponds to periods of low food stocks. The high peak period for malnutrition is November to February which is a period normally associated with low food stocks in households where the food security is not guaranteed throughout the year.

The measurement which indicates chronic malnutrition due to prolonged inadequate food intake is height for age, commonly referred to as *stunting*. Children who are stunted are shorter than expected for their age. The prevalence of stunting does not appear to have decreased appreciably since 1980 (Appendix V). The national average of stunting is 29 percent, according to the Demographic and Health Survey, 1988. However, in Matabeleland province, the figure is as high as 36,6 percent clearly indicating the severity of chronic food shortages.

A stunted child reflects an individual who did not manage to attain their full potential not only in physical terms, but mentally as well. This individual usually never "catches" up and studies elsewhere indicate that stunted children are also more susceptible to illness and infection.

Protein Energy Malnutrition (PEM) is the major nutritional problem facing Zimbabwe today. However, there are a number of micro-nutrient disorders which are a source of concern. The two which are of public health importance and have relevance to this paper are Iodine Deficiency Disorders and Pellagra.

Iodine Deficiency Disorders (IDD)

Iodine Deficiency is a public health problem of significant magnitude. A recent National survey (1988) indicated that virtually no province is without this problem and that a National Control Programme has to be developed.

Iodine is an essential nutrient required in small amounts by the body and controls metabolism growth and development. It is found in the soil and water and is absorbed into the plants and food we eat. High land areas or areas of serious erosion and leaching of the soil has a higher prevalence of the problem, *e.g.*, Nyanga, Murewa and Wedza.

Goitre is the physical manifestation of the deficiency and is used to assess the prevalence.

Iodine Deficiency is associated with mental retardation, simultaneous abortions, still births, etc. It is important to note that Iodine Deficiency is associated with similar manifestations in livestock, particularly the abortions which have significance on the national herd.

This disorder is easily preventable by the consumption of iodized salt. Yet often this salt is not available in the country, nor is it accessible to all who need it (it costs a few cents more and is a fine salt as opposed to the course salt most rural people prefer).

Pellagra

Pellagra is a deficiency in an essential vitamin called Niacin. This vitamin is found in legumes (beans, *etc.*)

The condition is found in areas where a predominantly *maize only* diet is consumed as in drought, or during periods of serious food shortages.

Alcoholics and the elderly have been shown to have these disorders which manifests itself in mental dementia and confusion.

Unfortunately the health information system does not cater for the data on pellagra. However, hospitals, particularly in drought stricken provinces, and central hospitals have indicated an increase in hospital admission and out-patient care for this disorder.

Consequences of Nutrition Problems Facing Zimbabwe

Malnutrition, especially among the infants, is not only a major cause of morbidity and mortality but it also exacerbates the effects of other diseases. Malnutrition plays a direct as well as indirect role in substantial numbers of deaths. Inadequate diets and related illness interfere with learning ability, the capacity to work, behaviour and well-being of a large segment of the population. Zimbabwe, therefore, cannot afford to ignore the consequences of malnutrition.

Increased Mortality

The 1988 and 1989 data indicate that malnutrition is the fourth major cause of death in infants 0 to 11 months. However, for children 1 to 4 years malnutrition was the first major cause of death in this age group. The cycle often begins with the undernourished pregnant woman who, in turn, gives birth to a small baby more susceptible to disease and malnutrition and often will not survive beyond the first year of life. In addition to the human tragedy involved, there is also extensive economic waste due to a reduction in the potential labour force and a consequent loss of productive effort.

Children who are undernourished are more likely to die when exposed to infectious diseases like diarrhoea, tuberculosis, measles, pertussis, and acute respiratory tract infections. To obtain a more complete picture of malnutrition related deaths it may be more accurate to add deaths due to infections such as diarrhoea, measles, *etc.*

Increased Morbidity

The relationship between malnutrition and infection is well documented. Malnourished individuals are more susceptible to childhood infections. The severity and duration of these infections tend to be much greater for malnourished children

and at times, fatal. If the malnourished individual survives the infection they may be more malnourished than before and the vicious cycle continues.

Infections may directly cause malnutrition by reducing appetite, vomiting, malabsorption, rapid transit of food through the gut, especially during diarrhoeal episodes of excessive utilisation of nutrients during a bout of fever. Chronic malnutrition could impair the immune system and thus increase both the severity and duration of the illness.

Recent studies have indicated that Vitamin A plays a vital role in the body's ability to fight infection. Vitamin A deficiency also causes night blindness, nutritional blindness in the young child and, if severe, may even kill the child. Most of the deaths due to measles are partly associated with Vitamin A deficiency. Victims of Vitamin A deficiency who escape death, but become blind, remain a national liability for the rest of their life.

Retarded Physical Growth

Persistent malnutrition during early childhood will result in individuals not realising their potential in physical growth even in races which are genetically tall. Short stature, particularly in women, has consequences on the development of the pelvis. Often the pelvis in these women is not fully developed and may result in high incidences of peri-natal deaths due to difficult labour.

Reduced Mental Development

Protein-energy malnutrition (PEM), during the first two years of life has been shown to affect the size of the brain leading to a reduced mental potential of the affected individual. Appropriate mental stimulation through play activities has been shown to minimise these mental defects.

Iodine deficiency is another nutritional disorder with severe effects on mental development with cretinism being the extreme form. School children in areas of high prevalence of iodine deficiency have been shown to be less alert and productive in school.

The impact of malnutrition on intellectual potential has serious implication for the education system, in which the government has rightly placed much emphasis and priority. Should the government continue to expand the school system, build more schools, particularly in the deprived areas, when a good proportion of the children may not derive maximum benefit from the education system due to the effects of early childhood malnutrition?

Even without the irreversible mental retardation in the malnourished child, a hungry child or individual is often lethargic and unable to concentrate and will perform badly in school and may often drop out of school and hence will not be employable, thus continuing the vicious cycle.

Reduced Socio-Economic Development

The development of Zimbabwe needs able bodied people who can contribute meaningfully. While the country's greatest resources are its people, this resource can become a liability if the people are mentally and physically underdeveloped as a result of malnutrition. The cost to the nation is high. A malnourished work force is not very productive. Studies in other developing countries have shown increased productivity when the work force was well fed. The rate of absenteeism is high in malnourished communities. The cost to the country in terms of drugs cannot be afforded. Unless direct effort is targeted to the at-risk groups who are often left out of the developmental process, their children will not achieve high educational standards and are therefore unemployable for skilled labour and higher wages. Whilst the country's GNP may be rising, the poor may still remain caught up in the vicious cycle of poverty and malnutrition unless developmental plans take the nutrition question into account.

CAUSES OF MALNUTRITION

Poverty

Poverty and the maldistribution of available resources appear to be the major causative factor of PEM in Zimbabwe. Zimbabwe is food surplus and has a *per capita* calorie availability of over 2 500 per day, which is more than adequate to cater for the food requirements of the population. These global figures unfortunately do not reveal the level of food insecurity in the country. Income and expenditure patterns of the social groups with high levels of malnutrition (*i.e.*, commercial farms, communal areas, low income urban groups, *etc.*) indicate an insufficient purchasing power to meet basic food needs. According to the 1985 survey on the Economy of Households in Zimbabwe, food has the biggest budget share of these same socio economic groups.

Over 40 percent of total income is being spent on food in the low income groups as compared to only 27 percent in the high income groups.

Wages for the low income groups have not kept pace with the cost of living and the minimum wage is below the poverty datum line in many instances. In 1983, for example, the poverty datum line was estimated to be Z\$202 per month and yet the minimum wage was only Z\$100.

A large section of the rural population subsist on land which is both inadequate in terms of holding size and its capacity to produce sufficient crop yield to meet basic food needs for the family throughout the year. It has been suggested that more than a quarter of rural families are without food stocks before the next harvest.

Inadequate Land Ownership and Persistent Drought

About 75 percent of the Zimbabwean population lives in the rural areas. According to the Transitional National Development Plan (1981-85), large-scale commercial farms cover about 15,7 million hectares. Over 40 percent of this is in Natural Regions I and II, which are the best agricultural regions in Zimbabwe.

Only 8.5 percent of the 16,3 million hectares of communal lands where 56 percent of the Zimbabwean population live is in Regions I and II. Private land ownership in Regions, I, II and III take up 44 percent of the total land area. Forty-two percent of the total land area is in communal land located primarily in Regions IV and V, which are poorly suited for crop production and for meeting the needs of the rural population.

A large section of the population, therefore, subsists on land which is both inadequate in holding size and incapable of producing sufficient food for the families. Nearly a quarter of rural families run out of food before the next harvest, even in good years. The plight of the landless who live in the rural areas is yet to be adequately addressed by government policy.

Inadequate Agricultural Policies to meet the Food Needs of the Whole Population

At national level, Zimbabwe is self-sufficient in staple maize. The global figures mask the true situation. Unfortunately, maize does not grow favourably in Regions IV and V where most of the communal population lives. Yet maize is grown. This has resulted in harvests which provide neither sufficient cash nor enough food for the family in these marginal rainfall areas. Given limited land, the earnings from cash crop production are not often sufficient to meet the food needs of the family in the rural areas. In some areas the infrastructure is such that the staple food items are not available at the local retail store. When available the rural farmer often pays more than the control price for the food.

Socio Cultural Factors

Food taboos are not a major problem in Zimbabwe. Excessive alcohol consumption and the migration of the head of the household for employment have some negative effects on the nutritional status in Zimbabwe.

About a third of clinically malnourished children admitted to hospitals are from families with problems due to alcohol. In addition to complications of health problems affecting alcoholics *per se*, home-made beer uses millet, sorghum and other cereals that could be used for food, thus reducing family food reserves further.

The families of low income wage earners in urban areas are particularly vulnerable to the effects of excessive alcohol consumption.

Many able bodied men migrate to mining compounds, commercial farms, cities and towns in search of employment. This, in some instances, results in broken homes. The women left behind to make a living on barren land often cannot produce enough to meet their needs. Children in these situations could either be left to fend for themselves or in the care of an elderly grandmother with little income earning capacity. Malnutrition is usually the end result of this vicious cycle. Migration has also altered the pattern of crop production in the rural areas. The women left on the land have rationalized their workload by focusing on crops which do not demand too much labour, thus the sorghum and millets have progressively lost favour in preference to maize production.

Poor Infant Feeding and Associated Factors

Lack of knowledge of the value of exclusive breast feeding for the first four months of life and when to introduce semi-solids to young children to supplement breast milk is prevalent. The Ministry of Health discourages the introduction of other foods before the age of four months.

Available data shows that 90 to 95 percent of mothers start breast feeding from birth and that as high as 90 percent of children are breast fed for at least 12 months. Exclusive breast feeding for the first four months is very low in Zimbabwe. Studies have shown that exclusive breast milk for the first four months of life provides the child with adequate nourishment and protection against infections. Surveys have also indicated that 39 percent of the children start receiving supplements between 0-3 months of age. About five percent stop breast feeding at three months, six percent at six months, 15 percent at 12 months and 43 percent at 15 months.

The introduction of other foods besides breast milk before the child is four months old usually leads to a high incidence of diarrhoea and may lead to increased mortality. Introduction of other foods well after the sixth month could lead to insufficient intake of nutrients leading to malnutrition and vulnerability to infectious diseases. Weaning problems could be due to bulky weaning foods deficient in both protein and energy that are fed infrequently to the growing child. The child at this stage needs to supplement the cereal-based food with food of high energy, such as oil and groundnuts, to provide maximum nutrients in small bulk.

Poor Infant Feeding Practices and Associated Factors

Nutritional status data indicate that the onset of malnutrition in young children starts during the weaning period from six months. Many factors contribute to this, including:

- o excessive workload of women, which does not allow adequate time for child care;
- o inadequate household food security;

- o lack of knowledge on the appropriate time to introduce solids;
- o the type of foods;
- o infrequency of feeding the growing infant.

However, energy-dense foods such as fats, oil and oilseeds, necessary to guarantee the young child's access to adequate calories are not often readily available to many households.

Price Policy that Does not Adequately Address Low Income Groups

The food price index in relation to wage rate indices indicates that many Zimbabweans are slowly losing the ability to purchase their basic needs, including food.

Excessive Womens' Workload

Heavy demands on womens' time, due to both income generating housework and home food production activities limit the time available for food preparation and child care.

Large Family Size

The average family size in Zimbabwe is 5.6 and the low income groups tend to have the largest size. The implications of this on limited food resources should be quite obvious. The population growth rate currently stands at 2.9 and needs to be reduced if the resources of the country are to keep pace with the size of the population.

Infections and Disease

Infections may directly cause malnutrition by reducing appetite, vomiting, malabsorption, rapid transit of food through the gut, especially during diarrhoeal episodes or excessive utilisation of nutrients due to fever. Chronic malnutrition impairs the immune system and thus increases both the severity and the duration of illness. Mortality is more likely among children who are undernourished than the well nourished when exposed to infectious diseases like diarrhoea, tuberculosis, measles, pertussis and acute respiratory tract infections.

EFFORTS TO ADDRESS THE PROBLEM OF MALNUTRITION AND THEIR LIMITATIONS

Government has gone some way towards recognizing the importance of nutrition improvement programmes. The transitional and first five-year development plan, have *adequate nutrition for the population* as a stated goal. The Government also took another positive step in creating a unit based in the Ministry of Health to

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address the problems of malnutrition. The terms of reference of the Nutrition Unit are as follows:

- o to determine the magnitude and extent of malnutrition in Zimbabwe;
- o to create a nutrition surveillance system so that the nutrition situation could be regularly monitored (since 1987, clinic based data on the nutritional status of children under-five has been collected, as well as the prevalence of low birth weights);
- o to develop nutrition programmes for implementation through the Primary Health Care Strategy;
- o coordinate the development and implementation of a National Food and Nutrition Policy in order to deal with problems of malnutrition through intersectoral cooperation;
- o establish norms and guidelines for institutional feeding and to ensure that nutritious meals are provided in government institutions;
- o train institutional food service supervisors to manage hospital food service to ensure that adequate food is available for hospital patients to aid recovery;
- o to provide technical expertise to other and non health workers.

There have been two distinct phases in the development of the Nutrition Programme in Zimbabwe since independence. The initial phase was the Emergency Relief Phase, which was initiated soon after Independence, when the country was faced with severe drought and a displaced population which had not yet returned to a fully productive life after the war.

This programme had, as its prime objective, to provide a daily supplementary meal to malnourished children under five in nutritionally vulnerable areas and prevent deaths due to malnutrition. At the height of the programme, over 200 000 children were receiving a daily supplementary meal consisting of maize meal, groundnuts, beans and oil. This programme was organised in such a way that the communities were responsible for its management and implementation at the village level. It was clear from the onset that the Child Supplementary Feeding Programme could not be the mainstay of the nutrition programme in Zimbabwe, therefore efforts were soon under way to assist communities to be conscious of their responsibilities towards the improvement of their own nutrition and health status.

The Supplementary Food Production Programme (SFPP) was initiated to develop self reliance in these communities in providing food for the malnourished children

and their families. This second phase of the programme was characterized by the development of infrastructure and an institutional framework to address the problem of food and nutrition comprehensively by involving other sectors in nutrition activities. Intersectoral committees were established to manage, plan and monitor this programme.

Activities developed under this programme have stimulated active participation of relevant sectors on food and nutrition and this augers well for the inclusion of nutrition on the development agenda at all levels. A recent evaluation of this programme indicates that progress has been made towards increasing awareness on food and nutrition amongst key sectors. This understanding has led to the development of new programme objectives, which attempt to address the problem more holistically.

The adoption of the Primary Health Care Strategy by the Ministry of Health in 1980 has facilitated some improvements in the health and nutrition status of the population.

Primary health care (PHC) focuses on health promotion and prevention of disease whilst encouraging community participation. The following are the essential elements of PHC:

- o provision of adequate supply of food and nutrition;
- o health education and training;
- o maternal and child health and family planning;
- o control of communicable diseases;
- o provision of safe drinking water and sanitation;
- o treatment and prevention of disease;
- o expanded programme of immunization; and
- o provision of essential drugs.

Evaluation of the Primary Health Care Programme in 1984 and 1987 indicates that some progress has been made in terms of reducing infant mortality and improved access to health care services. The specific nutrition components of this PHC strategy have been:

- o growth monitoring and nutrition status;
- o nutrition education training and promotion;
- o strengthening institutional food service in hospital;
- o development of a code to protect breast feeding and weaning practices;
- o promotion of intersectoral planing of nutrition activities; and
- o revision of food laws and food standards act.

The impact of health oriented activities on nutrition is limited without the active participation of other key ministries.

The Ministry of Health has taken the initiative to foster intersectoral collaboration in programme planning and implementation. Nutrition activities and programmes have traditionally been placed within the health sector. However, there is a growing acknowledgement that the health sector alone cannot comprehensively address the problem of malnutrition. The long term solutions to the problem often lie in other sectors, such as Agriculture, Education, Economic Planning, *etc.* The Ministry of Health has tried to involve other sectors in nutrition through the formation of intersectoral Committees for Food and Nutrition at National, Provincial, District, Ward and Village levels. The committees draw their membership from the Ministries of: Health (Nutrition Unit); Lands, Agriculture and Rural Resettlement, (Agritex); Energy, Water Resources and Development; Education; Local Government; Community Development; Political Affairs and Finance, Economic Planning and Development.

The committees were initially formed to plan and implement a specific project -- the Supplementary Food Production Programme (SFPP). The recent evaluation indicated that a good infrastructure to effect intersectoral coordination has been developed. There is also evidence to suggest that the committee should address the problem of malnutrition much more fundamentally. To this end, new programme objectives have been developed. The new overall goal or objectives of the programme is to assist communities to identify their food and nutrition problems, seek solutions and take action to correct the problem through local community action.

Specific Objectives

1. To promote household food security by addressing the problem holistically; to review the Food System from production to consumption; to identify the factors which prevent household food security, consumption in that community and address them appropriately;
2. to encourage production of adequate food crops with a particular focus on groundnuts, beans, vegetables, *etc.*;
3. to promote improved methods of food production, storage processing preservation, preparation and consumption;
4. to promote communal food production activities for group feeding and to have an appropriate mix of production units to ensure food availability for group feeding throughout the year in a manner which ensures self-sustainability and promotes self-reliance;
5. to promote group feeding and child care of children under five in all villages;
6. to promote good feeding practices for communities with a particular focus on the vulnerable groups;

7. to promote community awareness of food and nutrition and health problems of the community and the identification of ways in which these could be solved;
8. to establish and strengthen mechanisms to promote intersectoral action for improved nutrition;
9. to promote the development of a mechanism to include nutrition issues in development plans and activities at all levels; and
10. to establish mechanisms and indicators to monitor and evaluate nutrition programmes.

A Management Handbook was also developed which spelt out the role of each sector in the committee, at the various levels. Extensive training programmes were undertaken to ensure that the functions and activities of the committee were clearly understood.

These committees have since become subcommittees of the Development Committees at District, Provincial and Ward levels. There is no national development committee, the National Steering Committee has no equivalent developmental sub-committee to report to and therein lies one of the major shortcomings of the National Steering Committee (NSC).

The impact of activities within the health sector alone cannot explain the limited improvements in nutrition status since independence. A number of key ministries have implemented programmes which have made their contribution to nutrition improvement. To illustrate this point this paper has outlined those of the following Ministries.

Ministry of Education

Universal Primary Education: Education has a direct and indirect effect on nutrition. In the long run, a better educated society today may provide better nutrition for their offspring.

Revision of Syllabi to Include Nutrition in the School Curriculum: Studies in many developing countries indicate that specific nutrition education as part of the school curriculum can serve to influence knowledge and beliefs which will result in improved behaviour to improve nutrition and health. The Ministry of Education has done a sterling job of incorporating food and nutrition in the primary and secondary school curriculum since independence.

Adult Literacy Programme: Maternal education and literacy are known to have a profound impact on the nutrition and health of children. Literate communities have access to information which can assist them in their daily living. The adult literacy

programme which now falls under the Ministry of Education has increased literacy among rural women in particular.

Promotion of Pre-Schools: This development has not only facilitated early development and stimulation of the young child in preparation for formal learning, but has provided day care for young children, thus freeing the parent from child care during the day to undertake other activities. Where these preschools are being properly implemented, the child is well fed and cared for during the day and nutritional status is adequate and has often improved.

Ministry of Lands, Agriculture and Rural Resettlement

This Ministry is primarily responsible for agricultural policy formulation and support services to agriculture. It is also responsible for general policy and control of parastatal organisations, including the Agricultural Marketing Authority (AMA), Agricultural Research Council (ARC), the Dairy Marketing Board, the Grain Marketing Board, *etc.*

The Ministry is responsible, therefore, for food production, distribution and marketing. Through its division of Agritex, the Ministry provides guidance with extension services to farmers to ensure high productivity. The Ministry has also improved extension services by reducing the ratio of extension workers to farmers from 1:1000 in 1980 to 1:800 in 1985.

The Ministry, through the Agricultural Finance Cooperation (AFC), has increased the beneficiaries of agricultural credit from 18 000 involving some Z\$4,18 million in 1980 to 64 000 beneficiaries involving some Z\$30 million in 1985 and a further Z\$10,2 million which benefitted another 19 900 people in resettlement areas.

Through its Agricultural and Rural Development division, the ministry has been able to settle 36 000 of the 162 000 landless families. The Ministry also facilitated the enactment by the Zimbabwe Parliament of their Land Acquisition Act of 1986 which makes it possible for the landless to acquire land.

The Ministry has 13 primary marketing depots capable of handling some 50 to 70 000 tons each and 50 tertiary depots.

Trade and Commerce

This Ministry has been responsible for regulating food prices and ensuring that adequate supplies are available at various parts of the country. The Ministry also recommends subsidies on basic food items such as maize meal, cooking oil, milk, *etc.*

Ministry of Finance, Economic Planning and Development

This Ministry has overall responsibility for economic policy implementation and integrated socio-economic development. In addition, the Ministry provides economic

instruments and measures for the achievement of stated objectives by the various sectors. The Ministry also selects options and avoids clashes of interests between Ministries/Sectors.

Ministry of Energy, Water Resources and Development

During the transition period, the Ministry constructed seven major dams, increased water supply stations from 362 to 425, drilled over 6 000 boreholes and above all, the National Irrigation fund was established to facilitate the financing of water development schemes.

Ministry of Community and Cooperative Development

Food production and income generation have been key components of community development programmes and adequate nutrition recognised as an essential factor of development of good quality of human resources. The Ministry has been involved in the training of some community based Home Economic Demonstrators (HEDs) who promote good housekeeping and hygiene in the communal areas and run womens' clubs to upgrade the standard of living among the rural families. The Ministry has recently absorbed the 7 to 8 000 Village Health Workers whose main responsibility is to advise people in child feeding and other PHC activities. It has also been responsible for integration of women in the development process.

Ministry of Labour, Manpower Planning and Social Welfare

The Department of Social Services, in collaboration with other sectors, established the Drought Relief Committee chaired by the Ministry of Labour, Manpower Planning and Social Welfare. This committee was responsible for the distribution of drought relief, and the food-for-work programme during the 1987 drought period. About 4.5 million benefitted from the drought relief programme. The Ministry also provides a small monthly allowance to some destitute members of society.

LIMITATIONS OF THE NUTRITION INTERVENTIONS

Although the government has realised the need to improve the nutritional status of the population, there is no clear government policy on food and nutrition. This results in uncoordinated programmes being implemented by the different Ministries and decisions which might have a bearing on nutrition being made unilaterally in the various sectors.

The lack of a National Food and Nutrition Policy and the absence of a National Food and Nutrition coordinating mechanism are some of the factors which contribute to under-five malnutrition especially among those in the low socio-economic groups.

The following are some of the factors which have caused limitations in successfully implementing the Nutrition programmes.

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- o The multi-faceted nature of the causes of malnutrition are not often fully appreciated. Policy makers have tended to view nutrition as a health problem. This view has tended to limit the scope of interventions which can be implemented through the Health Sector. Nutrition should not be the concern of the Health Sector alone.
- o Nutrition has mainly been considered as a consequence of development, yet improved nutrition often is a positive factor contributing to development itself. If the nutritional status of communities or certain groups is inadequate, then better nutrition may be a pre-requisite for increasing economic productivity in those communities.
- o There is a lack of coordination to facilitate an integrated approach to nutrition interventions. Whilst the Health Sector has been given the responsibility to develop nutrition interventions, there is no mechanism for monitoring the activities of other sectors which impact on nutrition.
- o There is also no forum to propose modification in the activities of other sectors which might have a negative effect on nutrition. For example, the promotion of non-food cash crops in remote areas with limited access to food has reaped economic benefits to the country in terms of increased exports of cotton but the nutritional status of the producers of the cotton has appeared to deteriorate in some cases. The health sector is not in a position to influence the agricultural sector in any fundamental way.

PROPOSALS FOR FUTURE STRATEGIES TO ADDRESS FOOD AND NUTRITION ISSUES COMPREHENSIVELY

There is no simple solution to the problem of malnutrition. The problem is so complex that many approaches have to be explored to meet the various requirements of communities, especially the very poor and the nutritionally at risk groups, e.g., young children, pregnant and lactating mothers, particularly those living in marginal rainfall areas and commercial farms.

The multi-faceted nature of the problem needs coordinated action by all relevant sectors. There is, therefore, need for a clearly defined National Food and Nutrition Policy. The accepted definition of a Food and Nutrition Policy is as follows:

"A coherent set of principles, objectives, priorities and decisions adopted by Government and implemented by its institutions as an integral part of the National Development Plan".

Once formulated, the Food and Nutrition Policy will provide Government with guidelines that will ensure that food will be available to provide an adequate diet at a reasonable cost to all segments of the population. The policy will provide guidelines to monitor the nutritional status of the population and to ensure adequate food supply, distribution, consumption and utilisation of food in order to assure good health and productivity.

To derive maximum benefit from intersectoral action on nutrition, there is a need to establish a mechanism for coordinating this effort. The existing Food and Nutrition Management Teams at the various levels could form the basis for such a mechanism.

The policy must allow effective community participation. It is essential that communities are involved in the identification of food and nutrition problems and the formulation of solutions to the problems. This ensures that the plans for intervention are relevant and appropriate. Programme implementation will also become easier since communities will identify with the activities planned and can, therefore, provide the necessary support, collaboration and active participation. This process can be facilitated by the food and nutrition teams which have been established at all levels.

The policy must allow for the continuous appraisal of nutritional implications of all development plans to ensure that desirable food consumption patterns are maintained. To ensure that options for intervention are multi-sectoral, multi-sectoral data is required periodically. Information derived from such data will assist to measure changes in the nutritional status of the population and also monitor changes in the determinants of nutrition.

Specific Issues which the Agricultural Sector Needs to Consider in Reviewing its Policies

We should be justly proud of the performance of the agricultural sector which has provided the backbone to Zimbabwe's economy. Perhaps the need to ensure food security to all segments of the populations has not been a specific objective with clearly defined strategies and plans. There seems to have been a basic assumption that improvements in national production levels of food will automatically benefit the population, ensuring an adequate food supply which meets nutritional needs throughout the year. Zimbabwe's case clearly demonstrates that this is not the case. The objective to feed the nation has to be clearly spelt out and translated into appropriate action and monitored regularly to ensure that progress is being made.

We are happy to note that Zimbabwe is a current member of the World Food Council and has committed itself to a review of its policies and programmes to:

- o provide food security for all its people;
- o to make efforts to eliminate starvation and reduce malnutrition in young children; and

- o eliminate nutritional deficiencies.

The agricultural sector clearly has the potential to influence human nutrition significantly through its impact on levels of income of the at-risk groups impact on food prices, women's labour demands (since most of the agricultural production in rural areas is done by women) and through the nutrient content of food produced.

Given this potential, it becomes important for the agricultural sectors concerned to go beyond food production levels, but rather extend to consumption and utilization issues. Nutrition in agriculture is more than simply aligning production targets to estimated nutritional needs based on food balance sheets.

Essentially nutrition objectives in agriculture should ensure the provision of a safe and nutritious food supply which is accessible to all segments of the population groups at all times.

In reviewing agricultural policies, it is important to assess the impact of these policies on the food security and nutritional status of the vulnerable groups. The re-identification of the vulnerable groups in terms of where they are located, why they are food insecure, and what nutritional problems affect them may help to better target those most in need by designing appropriate interventions. This targeting will achieve optimal nutrition benefits to the population most in need.

Plans Towards the Development of a Food and Nutrition Policy

Phase I: The National Steering Committee for Food and Nutrition has proposed a strategy towards the development of Food and Nutrition Policy with four distinct phases. The initial phase was the preparation of an Issues Paper whose aim was to highlight the nutrition problems in Zimbabwe, indicate some of the known causal factors and provide a basis for discussion on how the problem was to be addressed. The discussion of this paper within each sector was also intended to generate interest in nutrition and inform key sectors of their role in the solution of the problem.

The NSC has strived to receive mandate to proceed with its activities and, to date, the need for a Food and Nutrition Policy has been acknowledged by the Ministries of Finance, Economic Planning and Development; Education; Health; Energy, Water Resources and Development; Lands, Agriculture and Rural Resettlement; and Local Government.

Phase II: This phase was intended to provide a critical analysis of the Food and Nutrition situation and to increase the current data base. The following questions need to be answered much more clearly to guide policy review:

- o Who are the Food insecure and malnourished?
- o Where are they located?

- o Why are they malnourished?
- o What are the major determinants on food insecurity?

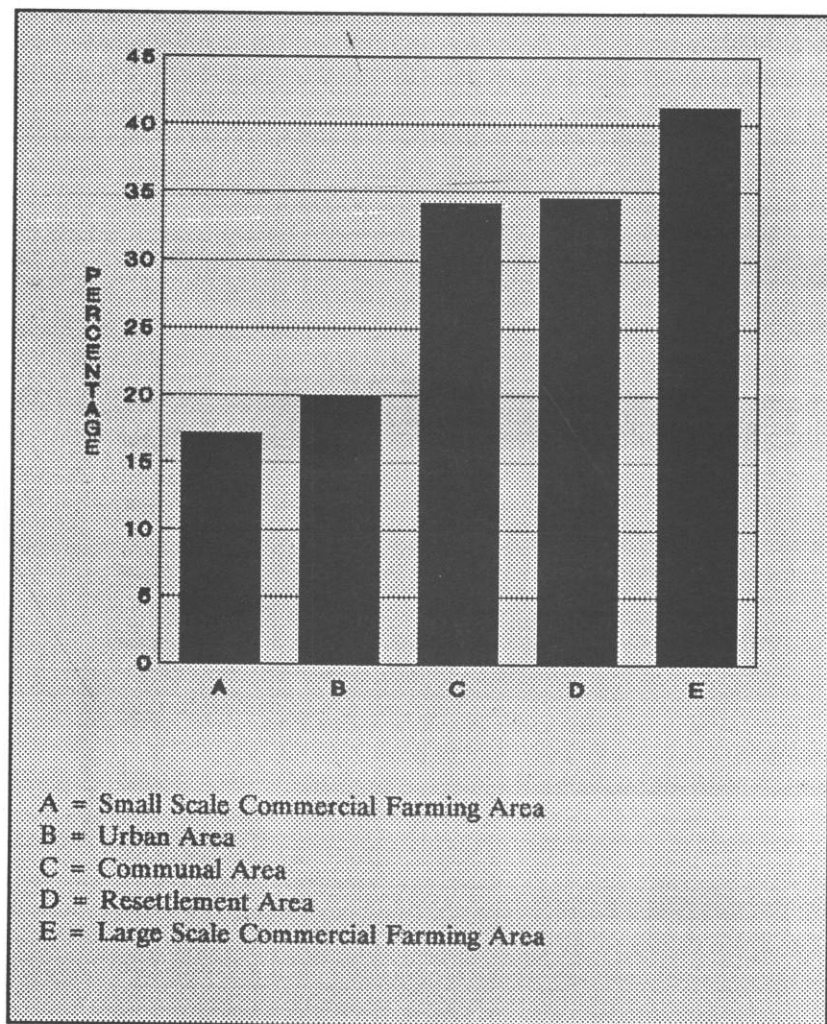
Phase III: The policy implications of the situation analysis undertaken during Phase II would need to be defined and discussed with a wide section of relevant sectors to facilitate the development of policies which are relevant and appropriate.

Phase IV: A Draft Policy documentation for wide circulation and discussion would be formulated. The NSC stresses the need for consultation during each phase to ensure that the outcome of this process is acceptable to the majority of the relevant sectors.

Concluding Remarks

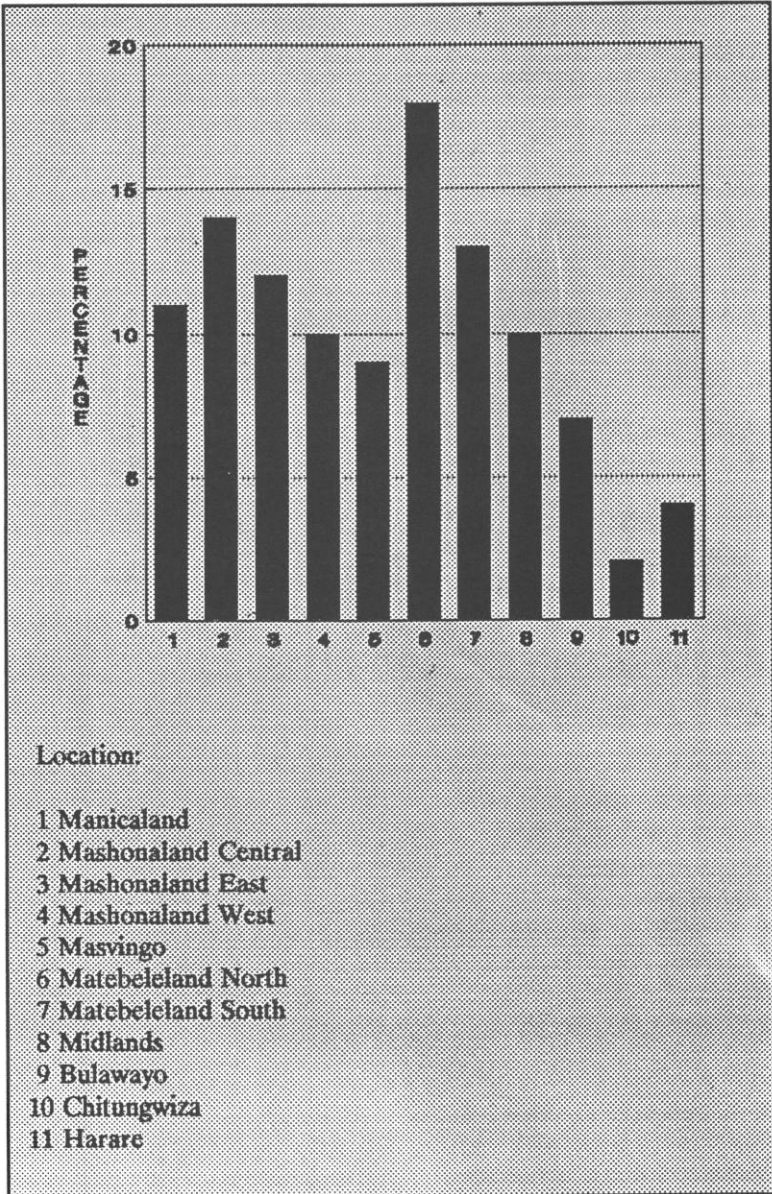
The NSC welcomes this consultative meeting with the Agriculture Sector since it affords us the opportunity to discuss the nutrition issue and obtain feedback and suggestions on how best nutrition can be integrated into Agricultural Policy and overall development planning.

APPENDIX I
Prevalence of stunting by residential area (1985)

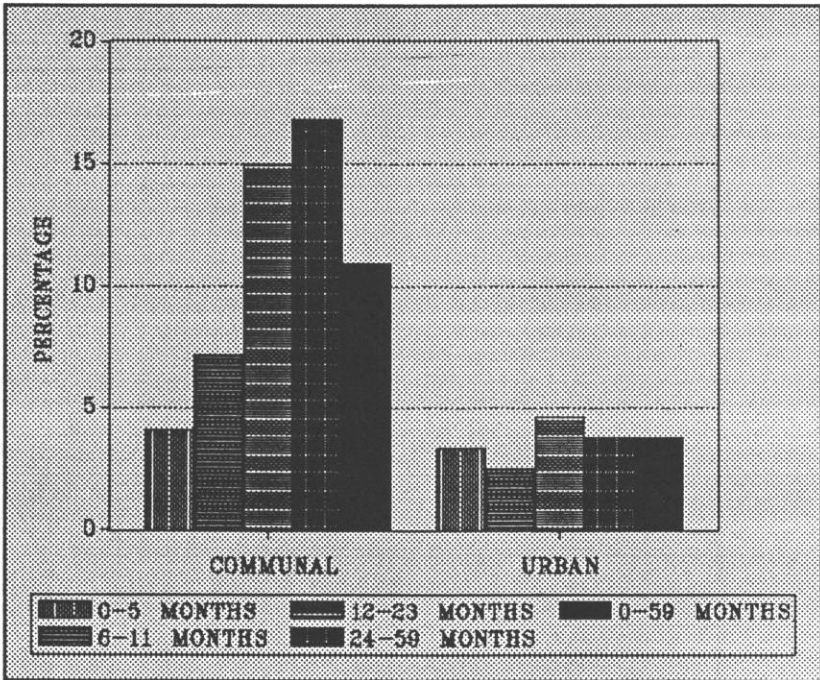


Source: Ministry of Health

APPENDIX II
Provincial Distribution of Weight-for Age Malnutrition, 1989.

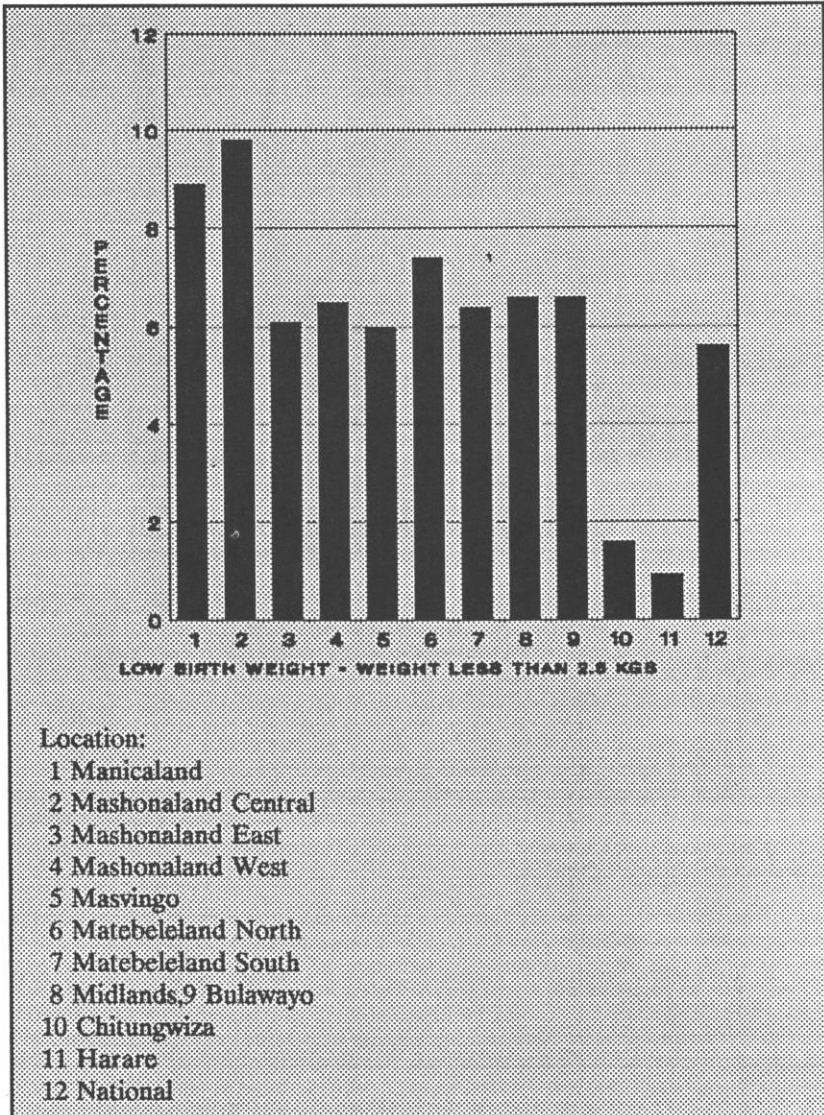


APPENDIX III
Communal and Urban Weight-for-Age Malnutrition
by Age Group, 1988



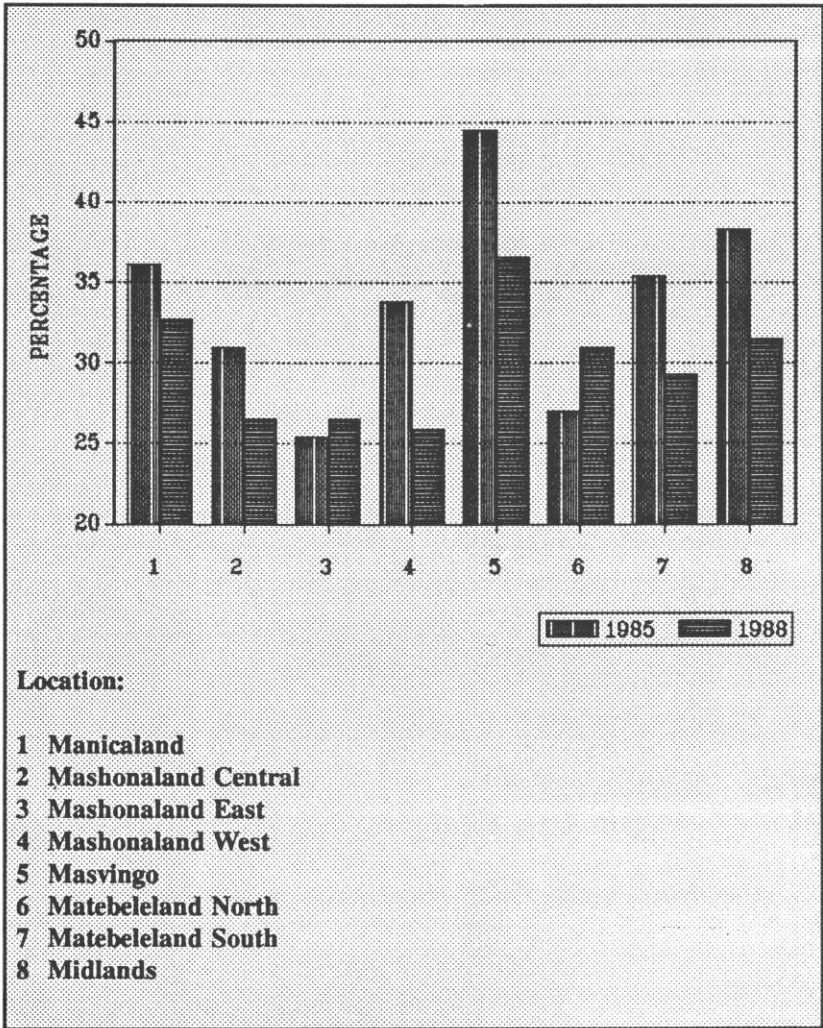
Source: Ministry of Health

APPENDIX IV
Provincial Distribution of Low Birth Weights, 1989



Source: Ministry of Health

APPENDIX V
Provincial Distribution of Height-for-Age Malnutrition,
1985 and 1988



Source: Ministry of Health

The Nutrition Situation Current Strategies And Plans. Consequences of Malnutrition.

*E. Mason*¹

INTRODUCTION

In the Zimbabwe context, malnutrition is synonymous with under nutrition.

The manifestation of malnutrition covers a very broad spectrum from the child who is short or thin with overt signs of kwashiorkor, with sparse hair and a swollen body or marasmus with wasting of the muscles and an 'old man' appearance. Malnutrition in women of child-bearing age may lead to an increased number of Low Birth Weight (LBW) babies born (*i.e.*, <2 500g) which themselves have a higher risk of dying before the age of one year.

Measurement of Nutrition Status

The nutritional status of children (and adults) can be measured in different ways:

Weight for Age: This is the main form of measurement used in Zimbabwe. It is a sensitive measure in young children less than two years age, but the sensitivity of this measurement falls off with age and is much less useful in children over five years, *i.e.*, the school age child.

Height for Age: This is a particularly useful measure in older children and gives a measure of chronic undernutrition, -- a child who is chronically undernourished will be small or 'stunted'.

Weight for Height: This is not so often used on a routine basis but is a good measure of acute malnutrition as it readily gives an estimation of how 'thin' a child is for his height.

¹E. Mason is the Acting Head, Maternal and Child Health Department, Ministry of Health.

CAUSES OF DEATH IN CHILDREN UNDER 5 YEAR OLD

The following tables show the main causes of death in babies 0 - 11 months and children one to four years in 1988 and 1989.

Table 1
Main causes of death in babies 0-11 months in
1988 and 1989 (excluding central hospitals)

Cause of Death	1988	1989
1. Respiratory infection	218	408
2. Perinatal complications	106	658
3. Diarrhoea	91	110
4. Malnutrition	73	76
5. Meningitis	26	56

Table 2
Main causes of death in children 1-4 years in
1988 and 1989 (excluding central hospitals)

Cause of Death	1988	1989
1. Malnutrition	329	360
2. Respiratory infection	129	135
3. Diarrhoea	83	97
4. Malaria	51	44
5. Measles	22	44

Direct malnutrition deaths are underestimated because of associated indirect deaths or those whose consequences are worsened by malnutrition, *e.g.*, diarrhoea and measles.

In 1988 and 1989, over 400 children died each year directly from malnutrition and a further 200 from diarrhoea.

Table 3
Central hospital deaths, 1989

	% of deaths	HARARE	
		% of admissions	% Case fatality
Malnutrition	2.6	7	12
Diarroea	7.3	4.7	4.6
Acute Respiratory Infection	25	-	-
Measles	-	0.7	9
TOTAL DEATHS	80		

**In-patient and Out-patient Attendances in
 Under 5 Year Olds**

The deaths from malnutrition are however just the tip of the iceberg below which lies a much larger pool of ill-health or morbidity. Outpatient statistics show that attendances at clinics for problems directly related to malnutrition have not decreased over the past three years.

Out-Patient Attendances Due to Malnutrition

1987	-	79 560
1988	-	105 513
1989	-	83 745

Malnutrition continues to rate number seven in the ranking of reasons for out-patient attendances, and accounts for approximately three percent of all attendances.

The more serious cases of malnutrition are admitted to the hospital, -- the numbers per province are shown in Table 4. Comparisons with other related diseases, *e.g.*, intestinal infections/diarrhoea are also given.

Table 4
Cases/Deaths and case fatality rates by province:
0-11 months

	Manica- land	Mash. C.	Mash E.	Mash. W.	Masvingo	Mat. N.	Mat. S.	Midlands	Total
DIARRHOEA									
Intestinal Infection									
Cases	381	387	122	576	355	195	91	413	2520
Deaths	12	29	1	29	20	8	0	11	110
Case fatality	3.1%	7.5%	0.8%	5.0%	5.6%	4.1%	0	2.7%	4.4%
Malnutrition									
Cases	193	129	69	105	122	126	87	168	999
Deaths	17	9	5	4	20	7	4	10	76
Case fatality	8.8%	6.9%	7.2%	3.8%	16.3%	5.5%	4.6%	5.9%	7.6%
Measles									
Cases	166	252	39	208	60	106	122	120	1 073
Deaths	1	2	0	3	2	0	0	5	16
Case fatality	0.6%	0.79%	0	1.4%	3.3%	0	0	4.1%	1.5%
Acute Respiratory Infections									
Cases	1 026	1 023	430	360	961	353	473	739	5 545
Deaths	59	64	48	47	57	14	20	35	344
Case fatality	5.8%	6.2%	11.2%	13.0%	5.9%	3.9%	4.27%	4.7%	6.2%

Table 5
Cases/Deaths and case fatality rates by province:
1-4 years

	Manica-land	Mash. C.	Mash E.	Mash. W.	Masvingo	Mat. N.	Mat. S.	Midlands	Total
DIARRHOEA									
Intestinal Infection									
Cases	351	375	129	566	386	238	77	392	2 514
Deaths	12	15	7	32	13	3	0	15	97
Case fatality	3.4%	4%	5.4%	5.6%	3.4%	1.3%	0	3.8%	3.8%
Malnutrition									
Cases	894	555	253	418	376	340	250	522	3 608
Deaths	62	77	29	38	97	10	10	37	360
Case fatality	6.9%	13.9%	11.5%	9.0%	25.8%	2.9%	4%	7.1%	10.0%
Measles									
Cases	309	471	78	312	109	161	213	338	1 991
Deaths	1	1	1	4	16	3	0	3	41
Case fatality	0.32%	0.21%	1.2%	1.2%	14.6%	1.9%	0	0.88%	2.1%
Acute Respiratory Infections									
Cases	1 050	942	389	789	816	418	443	856	5 703
Deaths	24	36	18	1	21	3	0	13	116
Case fatality	2.3%	3.8%	4.6%	0.12%	2.6%	0.7%	0	1.5%	2.0%

It can be seen that those children who are admitted with malnutrition are more likely to die than others. Also, they stay in hospital far longer than with another acute illness, *e.g.*, pneumonia. Thus, the economic burden in terms of caring for the child in hospital and lost productivity by the mother while the child is in hospital is immense.

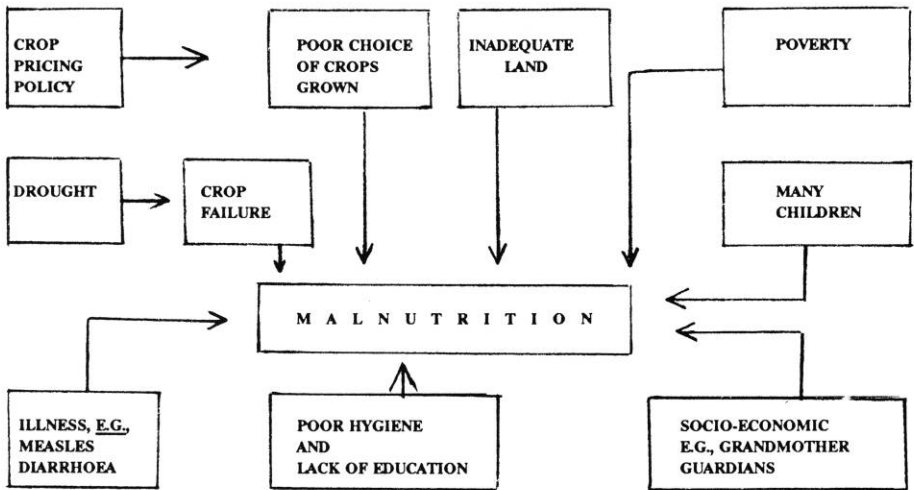
LONG TERM EFFECTS (MORBIDITY) FROM MALNUTRITION

What of the long term effects of malnutrition? As mentioned earlier, the child who is chronically malnourished remains stunted in height or is smaller than he would have been. Brain development is also affected. The development of the brain is most rapid in the first and second year of life, malnutrition during this period (as this is the most common time for malnutrition) will affect brain development so that the child will not attain his full potential, he will not perform as well at school and the resultant effect on the economy of the country is only too obvious.

CAUSES AND CONSEQUENCES OF MALNUTRITION

Causes

Malnutrition specifically undernutrition has many causes, some of which are being addressed in this forum:



Some of the causes can be addressed directly by the Ministry of Health, e.g., immunization to prevent measles and case management of diarrhoea to prevent death from diarrhoea, however it can be seen that many measures are beyond the direct remit of Health, which thus emphasizes the need for a multisectoral approach as is being considered here.

Unravelling Zimbabwe's Food Insecurity Paradox: Implications For Grain Marketing Reform¹

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and S.Chigume³*

INTRODUCTION

On June 14, 1990, The Herald, Zimbabwe's major newspaper, reported that the country was headed for another huge food surplus: 135 percent of total requirements ("Zimbabwe Expects Surplus in Total Food Requirements, :4). On the preceding page, the Minister of Labour, Manpower Planning, and Social Welfare is quoted as expressing "shock and horror at recent reports that people are dying of starvation in some parts of Zimbabwe" ("Reports of Starvation Shock Labour Minister," :3). Earlier in the week, the Herald carried reports of starvation and massive supplemental feeding programs in three of Zimbabwe's eight provinces ("Child Starves to Death," :1; "Child Malnutrition Hits Matabeleland," :2).

Zimbabwe has a food insecurity paradox: tremendous production growth among smallholders and full grain silos existing concomitantly with considerable periodic and chronic hunger. Given the international acclaim that Zimbabwe has received on its agricultural development, Zimbabweans have generally come to equate this with the elimination of hunger. The country is obviously food secure at the national

¹Revised version of paper presented at the National Consultative Workshop on Food and Nutrition Policy, Montclair Hotel, Nyanga, Zimbabwe, July 16-17, 1990. The authors would like to thank M. Rukuni, M. Weber, J.B. Wyckoff, A. Jiriengwa, J. Chipeka and, C. Eicher for comments on an earlier draft.

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level. Yet 30 percent of Zimbabwean children under 5 are still chronically malnourished (Central Statistics Office, 1989).

The importance of distinguishing *national* from *household* food security has been demonstrated in a number of cases that are useful examples for Zimbabwe. In 1985, following the Great African Famine, India joined the food donor community and gave 100 000 tons of food aid to Ethiopia. Meanwhile, 200 million Indians were hungry in India itself. Closer to home, Malawi received international acclaim in the early 1980s for pursuing sound agricultural policies and being food secure. This praise was largely based on the visible marketed grain surplus stored over the years in Malawi. Meanwhile, and unnoticed by the rest of the world, hunger and malnutrition were reaching crisis proportions in various hunger-prone areas of the country (Msukwa, 1990).

This paper examines how Zimbabwe's food insecurity paradox -- burgeoning government stockpiles existing simultaneously with chronic food insecurity -- is related to the grain marketing system. The paper then presents implications for market decontrol. We conclude that:

- o There is an important void in Zimbabwe's grain distribution system -- the distribution of grain from surplus areas into grain deficit communal areas - - that has not been adequately filled by either the public or private sector. This void causes localized shortages and artificially high staple grain prices in semi-arid rural areas. We estimate that the absence of a viable rural grain marketing system may reduce real incomes among poor grain-deficit households by as much as 30 percent.
- o Market development that successfully stimulates investment and new entry into rural marketing systems may greatly promote real incomes and nutrition among the rural poor, as well as reduce government budget outlays to grain marketing, storage, and drought relief. However, this will require the government to play a facilitative role by removing several major barriers to entry into informal grain distribution and processing. **We stress that policy discussions about market reform must distinguish between (a) market decontrol that simply legalizes certain activities with the hope that they will spontaneously develop and meet the needs of rural smallholders, and (b) market development that includes facilitative actions on the part of the government to induce new entrants and investments into marketing activities that have been identified as crucial to smallholder needs.** Such activities include transport, better rural road infrastructure, reliable markets to procure grain at tolerable prices, especially later in the season when households commonly deplete their own grain stocks, local storage, and rural grain processing.
- o Such reforms would not require the government to relinquish control of maize pricing and distribution tasks that it currently performs, but would

rather facilitate the private or cooperative sectors to perform useful functions that are currently not being performed at all.

- o Targetted nutrition and food transfer programmes will continue to play a crucial role in alleviating malnutrition. However, improved grain availability in rural areas through the development of reliable informal trade would reduce the number of hunger-prone households and thus the size and costs of drought relief and supplemental feeding programs.

A BRIEF ASSESSMENT OF FOOD INSECURITY IN ZIMBABWE

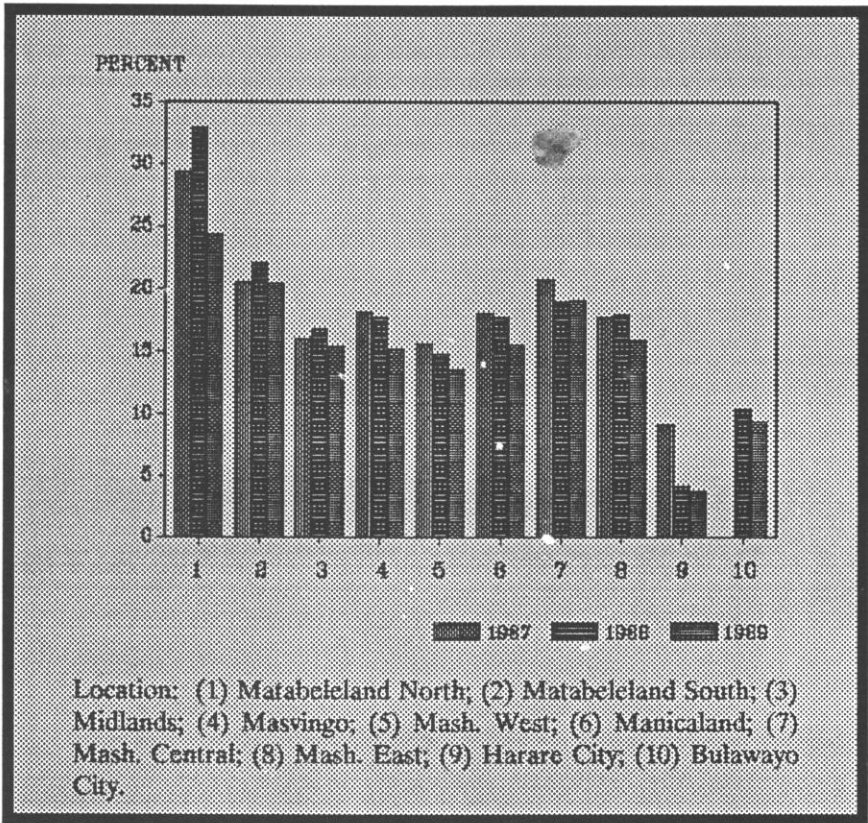
The status of malnutrition and food insecurity in Zimbabwe may be characterized as follows:

Prevalence: Weight-for-age malnutrition⁵ affects approximately one in six Zimbabwean children between 2-5 years old nationally, and is as high as 25-30 percent in the drier southern portions of the country (Figure 1; Ministry of Health, 1987, 1988, 1989).

Incidence: The social groups most prone to malnutrition are, in order of severity: families working seasonally on commercial farms, families in resettlement areas, households in semi-arid communal areas, and low-income urban dwellers (Central Statistics Office, 1989). By far, the largest number of malnourished are in the low-rainfall communal lands subject to recurrent drought.

Chronic Food Insecurity: Stunting, or height-for-age malnutrition, indicates chronically inadequate food intake. Stunting afflicts about 30 percent of Zimbabwe's children between 2-5 years old, and is as high as 37 percent in Matabeleland North (Ministry of Health, 1990). The high degree of stunting, especially in the drier communal lands, strongly indicates a chronic problem of food availability and access problem apart from or in addition to transitory food insecurity caused by drought.

⁵This data was collected by the Nutrition Unit of the Ministry of Health, under the National Health Information Survey. The nutritional status of children in this survey is compared against an international reference population accepted by the World Health Organization. "The use of the international reference population is based on the finding that well-nourished children of all population groups for which data exist follow very similar growth patterns before puberty. In any large population, there is obviously a natural variation in height and weight. This variation approximates a normal distribution around the median for the reference population. In this study, attention is focused on the percentage of Zimbabwean children who fall into the category 2 or more standard deviations below the median of the reference population" (Demographic Health Survey, 1989; :94). In the reference population, this occurs with a frequency of about 2.3 out of 100 children.



Source: Ministry of Health (1987, 1988, 1989).

Fig 1: Percentages of 2-5 Year Olds Below Threshold Weight-for-Age Ratios by Province, 1987-89

Seasonal Pattern of Malnutrition: There appears to be a seasonal pattern of weight-for-age malnutrition that corresponds to periods of low food stocks. The incidence of malnutrition peaked during the months prior to harvest (December to March) and usually declined during the months after harvest (Figure 2). This trend parallels evidence collected from several communal areas concerning the month in which households ran out of grain from their own production and stocks. Thirty-eight percent of households randomly surveyed in April 1990 in Mberengwa, Runde, and Shurugwe communal areas (Natural Regions III, IV, and V) indicated that their grain stocks from production and carryover stocks were depleted by December 1989. Thereafter, they depended primarily on urban-manufactured maize meal purchases and drought relief due to the unavailability of grain to buy locally.

The increase in weight-for-age malnutrition during the months preceding harvest may also be attributable to (1) a decline in water quality during the rainy season, thus contributing to diarrhoea, and (2) the increased demands on mothers' time in the fields, which may result in less attention to the child.

Geographic Concentration: Stunting and weight-for-age malnutrition are highest in the areas of lowest agricultural productivity (Figure 3). Simple OLS regressions of the form:

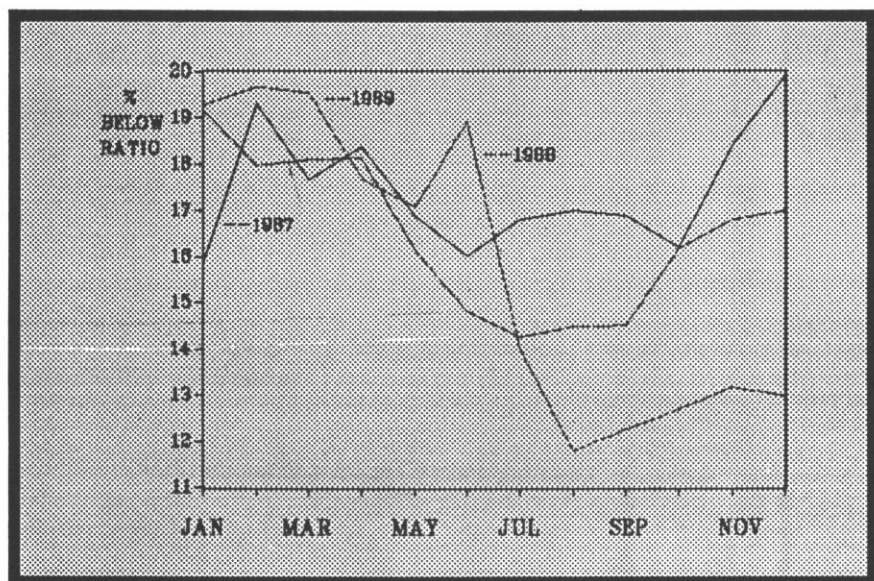
$$Y_i = a + b \cdot (X_i)$$

where Y_i is the percentage of weight-for-age malnourished children in Province i , and X_i is *per capita* smallholder grain production in Province i , produced the following results (t-statistics in parentheses):

1987: $Y_i = 21.68 - 0.014 \cdot (X_i)$ (1.84)	$R^2 = .42$ DW = 1.29	F = 1.02
1988: $Y_i = 27.27 - 0.017 \cdot (X_i)$ (2.34)	$R_2 = .47$ DW = 1.69	F = 5.38
1989: $Y_i = 19.40 - 0.006 \cdot (X_i)$ (1.12)	$R_2 = .23$ DW = 1.60	F = 1.79

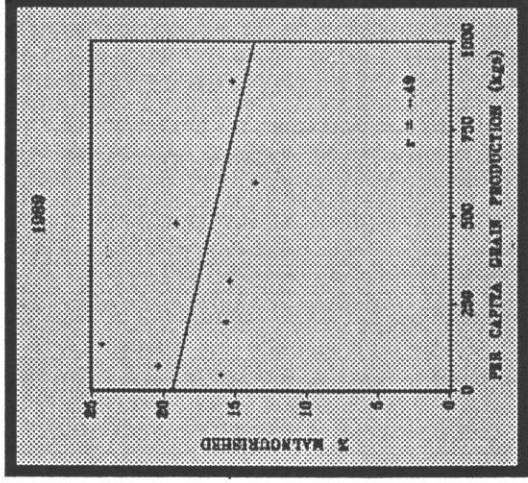
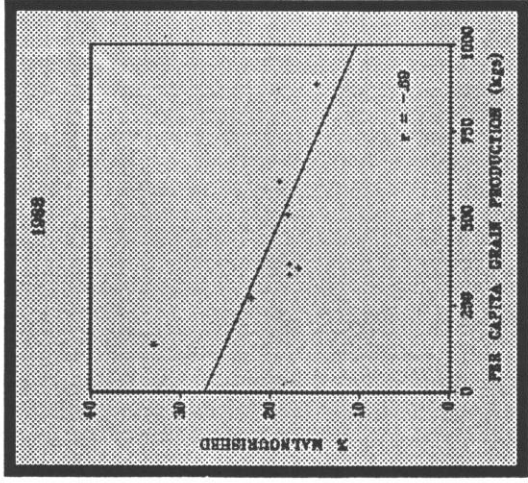
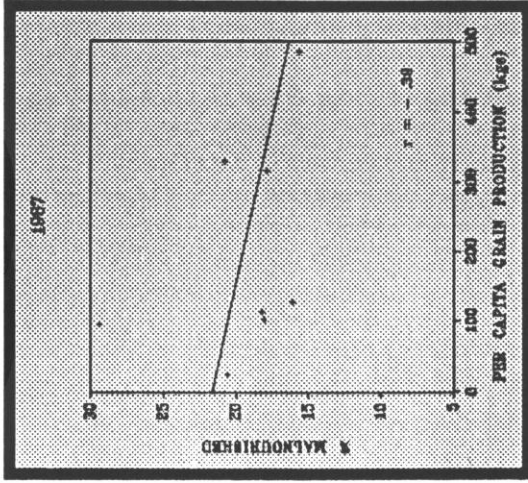
The coefficients on production were statistically significant at the .10 level in two of the three years.⁶

⁶The major "outlier" to this relationship is Mashonaland Central, a province of high agricultural productivity and yet high child malnutrition. Much of the population in this province is only seasonally employed on commercial farms, and thus lacks a steady income. Moreover, it has been reported that some commercial farmers make grain available to their workers by buying urban-milled meal in towns and transporting it back to their farms; the transport costs are then added to the maize meal price, resulting in very high staple grain costs for these farm laborers. Demographic Health Survey data indicate that children of these wage laborers suffer from among the highest rates of malnutrition in the country (Central Statistics Office, 1989). This highlights the importance of a steady income and the access side of the food security equation.



Source: National Health Information Survey, 1988, 1989.

Fig 2: Seasonal Trends in Weight-for-Age Malnutrition Among 2-5 Year-olds: Zimbabwe, 1987-89



Note: Child malnutrition estimates are from the National Health Information Survey (Ministry of Health, 1988, 1989, 1990) among 2-5 year olds. Per capita smallholder grain production is derived from Agritex Crop Production estimates.

Fig 3: Correlation between Per Capita Smallholder Grain Production and Child Malnutrition by Province: 1987-1989

The limitation of such a model is that it does not hold constant the effects of other relevant variables such as sanitary conditions, education of parents, income levels, *etc.* While this model is purely *ad hoc* and causality cannot be inferred, the results raise the important question as to why malnutrition appears somewhat inversely correlated with localized grain availability in a country where national supplies are more than adequate and the internal distribution system could presumably move grain into deficit areas.

Inadequate purchasing power among the poor is commonly cited as the reason why food insecurity can persist amidst food abundance. This explanation masks the structural determinants of income maldistribution that give rise to poverty and hunger.

THE MARKETING SYSTEM, GRAIN AVAILABILITY, AND RURAL FOOD INSECURITY

The premise of this section is that the structure of the marketing system is intimately connected with localized grain shortages, unnecessarily high grain prices and malnutrition in the low-productivity deficit areas. Selected changes in grain marketing policy, coupled with government support for the development of informal trade, may significantly improve household food security among the three million people living in Zimbabwe's drier communal areas and concomitantly reduce government budget costs associated with stockpiling and drought relief aid.

This conclusion flows from the following set of facts:

- o Many communal areas in Natural Regions IV and V (where 60 percent of the communal population lives) are, in the aggregate, moderately or severely grain deficit. This means that, within a given communal area, grain sales by surplus households are insufficient to satisfy the demand for grain by deficit households. Therefore, grain must flow into these areas in order to supply the food needs of deficit households.
- o The Grain Marketing Board does not view its mandate as including the distribution of grain from surplus areas to deficit rural areas. Yet the private sector has also proven unable to distribute appreciable volumes of grain into these deficit areas because of limited resources and official restrictions on the movement and resale of grain.
- o Barriers to investment in rural grain storage, transport, and milling further restrict the private sector from developing a reliable and competitive marketing system in which grain is redistributed from surplus communal areas and GMB depots to deficit rural areas, or between surplus and deficit areas within a particular communal area.
- o As a result of the preceding points, substantial volumes of urban-manufactured mealie meal must be distributed into these communal areas

to fill residual demand for grain. This urban-milled meal is less preferred and less nutritious than the maize meal produced by the informal sector. Most importantly, the urban-milled meal is from 10 to 80 percent more expensive than maize prices plus milling charges observed in 27 wards in Zimbabwe's communal areas where informal grain prices were monitored. Therefore, the restriction of informal grain trade, which causes localized shortages of maize grown on the informal market and forces deficit households to buy urban-milled meal, amounts to a tax on rural consumers.

- o The resulting higher acquisition price of grain meal in these deficit areas effectively reduces real household incomes and access to staple grain, while simultaneously keeping government maize stocks and associated costs much higher than they would otherwise be. We estimate that real incomes among the poor in low-rainfall areas would effectively increase by 10 to 30 percent if improved grain distribution systems in these areas could be developed.

Agricultural Policy and Rural Farm Households: The Myth of the Homogenous Surplus Grain Producer

Government agricultural policy, historically and currently, has been largely focused on surplus grain producers: more GMB depots and collection points to provide outlets for smallholder surpluses, producer prices typically above export parity, occasional pre-planting prices to reduce uncertainty, and AFC credit tied to/recouped from crop sales. This focus of agricultural policy on the output and sale side implicitly assumes an image of rural surplus producers. Yet throughout Zimbabwe's semi-arid regions, it is now clear that this image of "urban consumers" and "rural sellers" of food is an oversimplification. A large proportion of smallholders in the drier communal lands sell no grain, and must often rely on the market to meet their families' staple food needs (Rohrbach, 1989; Stanning, 1989; Chigume, 1989; Chisvo *et al*, forthcoming; Hedden-Dunkhorst, 1990). For these grain deficit households, the GMB producer price is largely irrelevant; the consumer price of commercial maize meal affects them much more directly. These smallholders appear unable to respond significantly to producer price incentives because of limited productive assets such as land, draft animals, non-farm income to finance investments in improved technology, access to or willingness to accept credit,⁷ poor rural transport infrastructure, poor soil and erratic rainfall.⁸

⁷In the Mutoko and Buhera surveys, only six of 300 households in the sample reported receiving credit for crop production during the 1987-88 crop season (Govereh, forthcoming).

⁸The relationship between net household grain sales and household income has sometimes been questioned. Some farmers, for example, may be purchasers of grain because they are devoting their land to higher-valued cash crops such as sunflower, cotton, and groundnut, and using this income to buy grain. According to this school of thought, there is no necessary relationship between household grain deficits and food insecurity.

The proportion of rural farm households that are net buyers of grain ranges from about 15 percent in Natural Region II (Rohrbach, 1989; Stanning, 1989) to almost 100 percent in Natural Region V (Hedden-Dunkhorst, 1990). The net grain transactions (monetary and barter grain sales plus gifts minus monetary and barter purchases, drought relief and gifts received) of households chosen randomly within six communal areas in Natural Regions IV and V are presented in Table 1. Most of these communal areas are grain deficit in the aggregate, *i.e.*, the total volume of grain purchased by deficit households exceeds sales (both to the GMB and informally) by surplus households.

Table 1
Grain Marketing Profile of Survey Villages

COMMUNAL AREA	NATURAL REGION	COMMUNAL AREA GRAIN SALES TO THE GMB (tons)	MEAN HOUSEHOLD NET GRAIN SALES (TOTAL SALES - TOTAL PURCHASES) (kg)	% OF HOUSEHOLDS IN SAMPLE THAT ARE NET GRAIN PURCHASERS (%)
Mutoko	IV	7,651	291	38
Buhera	IV, V	24,302	87	65
Mazvihwa	IV, V	699	-13	48
Nata	IV	101	-275	94
Ramakwebana	V	0	-353	96
Semukwe	V	169	-344	98

Source: Hedden-Dunkhorst (1990), and Chigume (forthcoming).

However, empirical results from Mutoko and Buhera communal areas do not support this theory. First, it is well established throughout mixed subsistence and cash agricultural systems that households' primary reason for cropping is to grow enough food to feed themselves (Stanning, 1989). Especially where food markets are underdeveloped and unreliable, cash-cropping is risky unless enough land has been devoted for household food requirements. According to this counter-theory, one should expect to find households with relatively little land and other productive resources growing primarily food crops. Diversification into higher-valued non-edible crops would be limited primarily to the grain surplus households who have enough land and resources to meet their food requirements under a normal harvest. In fact, there is a highly significant positive correlation between, household grain sales, household oilseed sales and *per capita* household income in Buhera and Mutoko (Chigume and Jayne, forthcoming). A second problem with the logic of producing higher-valued cash crops to buy grain involves the actual opportunity cost of grain. There is a 110 percent difference between the official producer price of maize and the consumer price of roller meal. In chronically deficit areas, therefore, oilseed crops may no longer be "higher-valued" when maize is valued at its consumer price rather than its producer price.

Furthermore, the surveys in both high- and low-rainfall areas found that the distribution of grain sales is highly skewed. Ten percent of the households typically accounted for over half of the total grain sales (Rohrbach, 1989; Stanning, 1989; Chigume, forthcoming). This high concentration of sales among a small segment of well-equipped producers explains why many communal areas may be grain surplus in the aggregate despite the fact that the majority of households are grain deficit.

Pockets of surplus and deficit households may be in close proximity, distinguished from one another by variations in productive assets and technology. Therefore, grain "surpluses" delivered to the GMB are not necessarily an indicator of self-sufficiency in low-resource communal areas. In fact, such deliveries may mask, and even contribute to, considerable grain deficits in these areas as will be shown below.

In light of these findings, one of the most direct ways to augment the real incomes and food security of the poor in low-rainfall areas is to increase the local availability of grain and reduce its acquisition price in the market. However, it appears that consumer grain prices are significantly higher in many low-rainfall rural areas than they might otherwise be, owing to a critical void in the grain marketing system: the delivery of grain as opposed to urban-manufactured maize meal into deficit communal areas.

The Structure and Policy Environment of Grain Marketing

While food self-sufficient on the national level, six of Zimbabwe's eight provinces are food deficit (Regional Early Warning Unit, 1990). This highlights the critical logistical problem of moving grain that is amassed at GMB depots in the north (delivered by commercial and communal farmers primarily in Natural Regions II and III) to the deficit south. The prevailing single channel GMB system appears to perform well in redistributing supplies from areas of geographically concentrated surpluses in the north to urban centers in the south such as Bulawayo and Masvingo. The government rail links between these areas have resulted in low per-unit transport costs. This has precluded the development of any significant long-distance informal trade in grain.

The major shortcoming of the current system is its inability to make grain available to numerous, geographically dispersed consuming units in the semi-arid communal areas where 60 percent of the communal population lives. There may be large stocks of grain available at stable prices at GMB depots dotted throughout the country, but this does not translate into availability in the communal areas. The GMB's single-channel, one-directional distribution system from rural to urban centers, assumes rural self-sufficiency in grain (Blackie, 1984). Once grain is sold to the GMB, it is usually transported onward to central silos and milled in urban centers (Table 2).⁹

⁹An exception to this is grain taken from GMB depots for use in drought relief programs. Less than 3 percent of GMB intake is bought by private agents to redistribute in deficit rural areas.

Table 2
Composition of Maize Purchases from the GMB:
1980-81 to 1988-89

Year	Millers; Stockfeed Manufacturers	Stockfeeders	Poultry Farmers	Brewers	Social Welfare	Other	Total GMB Sales
	----- '000 metric tons -----						
1980-81	593	36	22	50	-	22	723
1981-82	596	8	13	48	-	-	665
1982-83	841	41	20	59	46	39	1 046
1983-84	828	95	36	55	224	34	1 273
1984-85	649	32	34	45	78	22	860
1985-86	444	18	19	47	10	22	560
1986-87	547	48	29	45	33	16	718
1987-88	777	72	50	51	127	31	1 108
1988-89	554	45	29	51	10	7	694
Proportion of Total Sales From Each Category, 1980-81 to 1988-89	77	5	3	6	7	2	

Source: GMB data files

The Grain Marketing Act, which specifies the functions and duties of the GMB, contains no specific mandate to deliver and sell grain in deficit rural areas.¹⁰ This is probably justified considering the daunting logistical and financial burden that the GMB would incur in distributing grain to numerous, geographically dispersed areas with poor roads and trading facilities.¹¹ However, the underlying problem still remains.

Unfortunately, the private and cooperative sectors have failed to fill the void left by the official marketing system. This is because of numerous barriers to private investment in the grain marketing system. Despite clear evidence of grain deficits in the drier communal lands, government regulations encourage grain outflows and restrict grain inflows, thereby inflating informal prices in these areas. For example:

1. Grain is prohibited from crossing from Zone A areas (commercial farming and urban areas) into Zone B (communal areas). Furthermore, grain may not legally pass from surplus communal areas into deficit communal areas if it requires passing through a Zone A area. While some illicit trade has been detected in recent surveys (Chisvo *et al.*, forthcoming), it is undoubtedly of lower volume and higher cost than if government were to remove such restrictions and actively encourage such trade.
2. Numerous GMB collection points have been built in communal areas since 1986 to improve market outlets for smallholders with a marketable grain surplus. Grain sold to the collection points is transported eventually to the nearest GMB depot in the region. Grain cannot be bought at the collection point. This effectively syphons supplies out of the local market, tightens supply-demand conditions in the area, and exerts upward pressure on local prices. Therefore, the collection point system, while helping to meet the needs of surplus households, may actually make staple grain more expensive for food insecure households.

¹⁰For the general interest of the reader, Part III of the Grain Marketing Act reads: "The functions and duties of the Board shall be (a) to do all things necessary and consistent with the provisions of the Act, to ensure the orderly marketing of controlled products within any prescribed area; (b) to buy and sell any controlled product which is delivered to or acquired by it under the provisions of this Act; (c) to provide storage, handling and processing facilities for controlled products; (d) to maintain stocks of controlled products as it may consider necessary; (e) to import or export controlled products as it may consider necessary; (f) to do such other things, whether in relation to a controlled product or not, not inconsistent with the provisions of this Act, as may be required by the Minister."

¹¹The GMB depots in deficit areas have usually failed to cover depot-running costs, even in good seasons (Makone, 1983). Not surprisingly, the GMB has closed down numerous collection points in the south that had been constructed in 1985 and 1986.

3. Approved buyers, agents under contract with the GMB to buy grain from smallholders, account for the largest volume of grain delivered to the GMB in the semi-arid areas (Mazvimavi, 1990). As with collection points, any grain sold to approved buyers must be resold to the nearest GMB depot. This means that the grain of surplus households, once it is sold to approved buyers, can no longer be directly acquired by local consumers needing grain. Interviews with GMB officials confirm that the Board's Inspectorate Division monitors approved buyers' activities and abrogates the contracts of those not complying with this rule.

Figure 4 depicts the flows of grain into and out of a typical communal area in the semi-arid areas. The double lines represent official grain marketing channels, while the single lines depict informal channels. Under the assumption that communal areas are self-sufficient in grain, this one-way flow of grain through the official marketing system would present few problems. Yet in deficit areas, such a system may seriously restrict grain availability and inflate local prices. Moreover, grain delivered to GMB depots from collection points and approved buyers involves considerable expense to farmers and the GMB.¹²

Ironically, this grain is often redistributed back into the communal areas through drought relief and Food-for-Work programmes. For example, the annual volume of drought relief maize distributed to communal areas in Masvingo Province was 86 and 58 percent of total GMB maize intake from all communal areas in the province during the 1986-87 and 1987-88 marketing years, respectively.

Once delivered to the depot, grain may be repurchased for distribution and sale back in the communal areas. Yet the incentives to do so are largely eliminated. Individuals requiring only a bag or two would be deterred from buying grain at the depots because of high per-unit transport costs associated with small volumes. Approved buyers with a vehicle could buy in bulk and thus exploit scale economies in distribution. Yet rather than procuring grain from farmers at the producer price and reselling at a mark-up -- which is illegal -- the approved buyer must deliver the grain to the depot and then repurchase it at the higher GMB sale price, for which, ultimately, the consumer will pay. In addition, the trader must incur the added costs of getting grain from the depot back to her shop for resale. These additional costs depress incentives to redistribute grain back into the deficit communal areas and, thus, restrict supplies.

¹²Approved buyers are allowed to deduct their transport and handling costs from the amount they pay producers. The transport costs involved in moving grain from the GMB collection points to the main depots are borne by the GMB up to a limit of Z\$1.00 per bag; all remaining costs are deducted from the farmers' GMB checks. Therefore, the movement of grain out of deficit communal areas imposes additional costs on surplus producers as well as grain consumers.

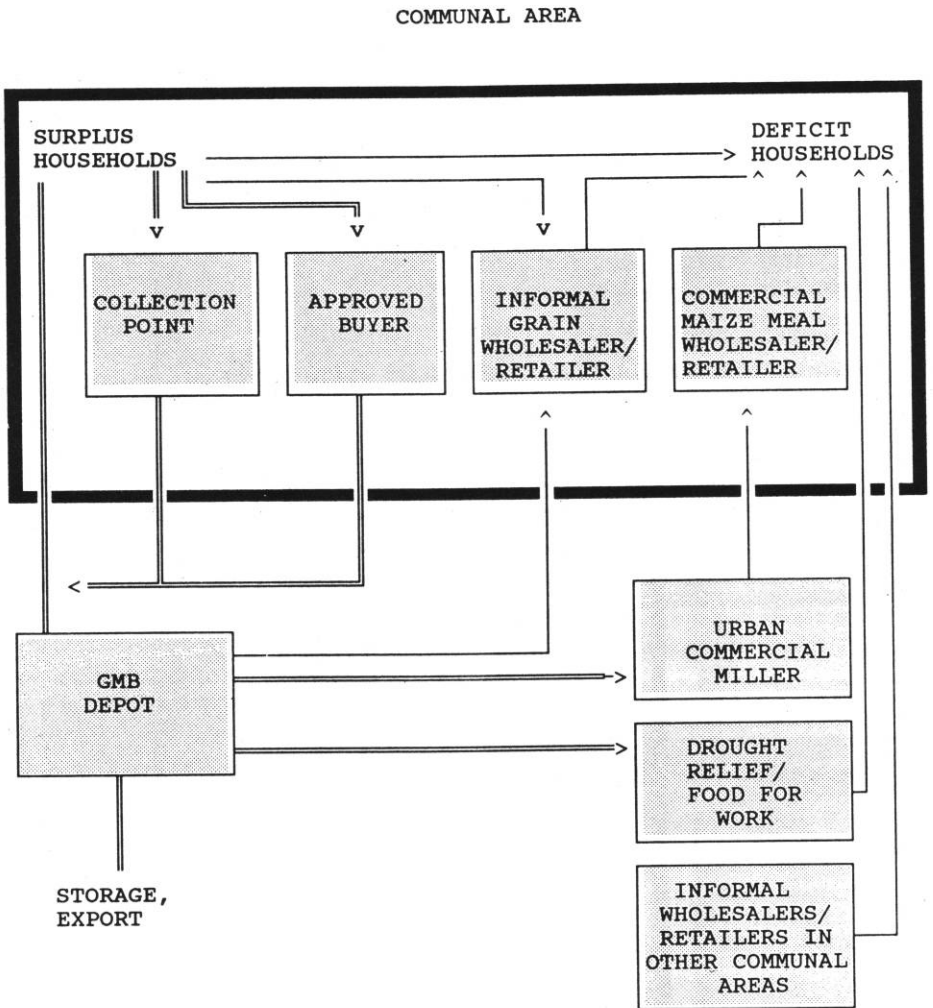


Fig 4: Grain and Grain Meal Marketing Channels in Typical Semi-Arid Communal Area

As a result, in many semi-arid communal lands, grain is simply not available during the pre-harvest months, because the demand of deficit households simply outstrips the supply of surplus households (Hedden-Dunkhorst, 1990).

Consequently, commercial urban-based millers have been able to develop a market by distributing their maize meal from urban centers back out to rural areas. Ironically, the commercial millers fill this rural demand by buying from the GMB, which, to some extent, procures the grain from the same rural areas in which the commercial meal is sold. This meal is often the only form of staple grain available to buy in the deficit communal areas. For example, in four communal areas in Natural Regions IV and V from December 1988 to November 1989, households' purchases of commercial maize meal accounted for up to 92 percent of total grain purchases (Table 3). With the exception of Mazvihwa, an area that received over 170 kgs of maize grain per household through food for work programmes, mealie meal purchases dwarfed coarse grain purchases of all type, and constituted 24 to 37 percent of households' total grain consumption.

Econometric evidence presented in Appendix 1 indicates that the volume of urban-milled mealie meal consumed in rural areas over the past five years has averaged about 130 000 tonnes during a normal rainfall year, but may rise to 275 000 tonnes or more during a drought year, as in 1987-88 (Figure 5). This represents about 29 and 44 percent of total commercial maize meal sales during a normal and drought year, respectively. The results also show a strong seasonal component to national mealie meal sales. Demand peaks, not suprisingly, in January and February, just before the availability of green maize from the new crop. While urban demand can be assumed to be roughly constant throughout the year, the seasonality of total demand is attributable to rising grain needs in rural deficit areas before the harvest. This period corresponds to the time when a large proportion of rural households in the low-rainfall areas run out of grain stocks. Thirty-eight percent of all households recently surveyed in the Shurugwe, Runde, and Mberengwa communal areas (Natural Regions III, IV, and IV/V, respectively) depleted their grain stocks from own production by December 1989 (Figure 6).

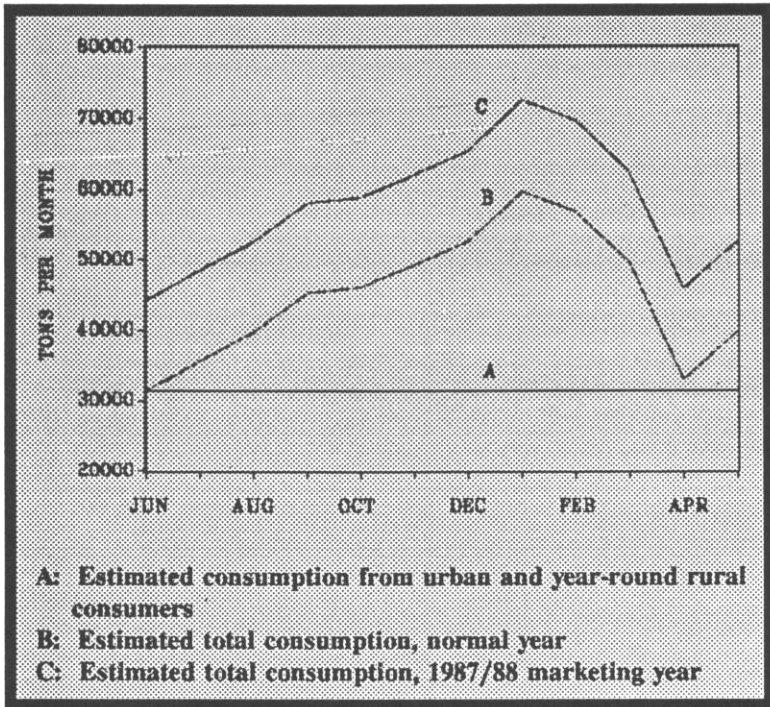
Table 3
Importance of Commercial Maize Meal Purchases in Households' Residual Grain Requirements
in Four Communal Areas: Natural Regions IV and V, 1988-89*

	HOUSEHOLD GRAIN CONSUMPTION** (1)	HOUSEHOLD GRAIN PRODUCTION (2)	GRAIN CONSUMPTION NOT FROM OWN PRODUCTION (3) = (2)-(1)	HOUSEHOLD GRAIN PURCHASES (4)	HOUSEHOLD MAIZE MEAL PURCHASES (5)	MAIZE MEAL PURCHASES AS % OF: TOTAL GRAIN PURCHASES (6) = (5)/(4+5)	TOTAL GRAIN CONSUMPTION (7) = (5)/(2)
COMMUNAL AREA	----- kgs ----- ----- % -----						
RAMAKWEBANA	1073	608	465	58	394	87	37
MAZVIHWA	1128	684	444	166	19	10	2
NATA	1275	908	367	25	300	92	24
SEMUKWE	1089	500	589	93	353	79	32

* Consumption is not equal to grain production plus grain and mealie meal purchases because of food aid, food for work, gifts, and carryover stocks.

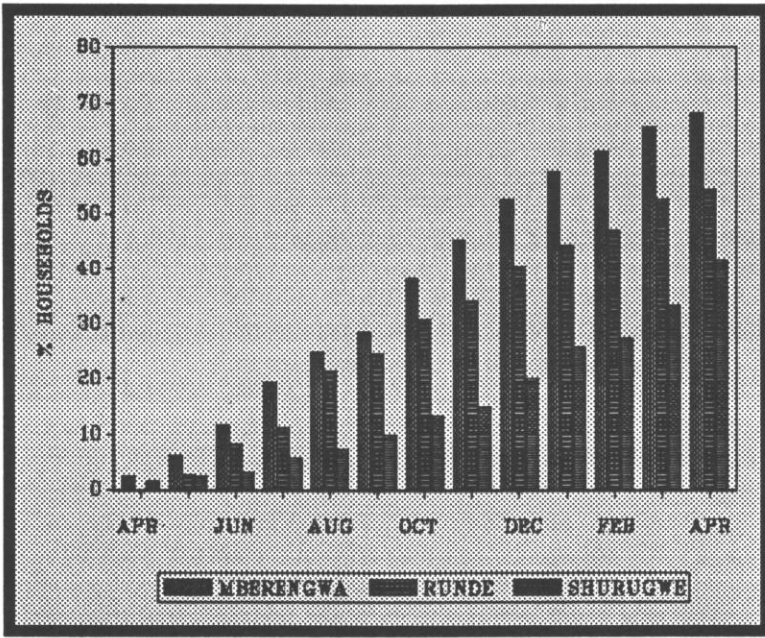
** Refers to human food and beer consumption; does not include grain fed to animals.

Source: Hedden-Dunakhorst (1990).



Source: Computed from results in Appendix 1.

Fig 5: Estimated Seasonal Variation in Mealie Meal Consumption and the Incidence of Consumption between Urban and Rural Areas



Note: Harvest in these areas of the country are normally in April or May.
 Source: UZ/SADCC/ICRISAT Grain Marketing Surveys, 1990.

Fig 6: Cumulative Proportion of Households Depleting Grain Supplies from Own Production and Storage, by Month: Mberengwa, Runde, and Shurugwe Communal Areas, 1989-90 Marketing Year

Effects of Current Market Organization on Household Food Security

It is clear that the underdeveloped nature of informal grain marketing channels, resulting in localised shortages in rural areas, has greatly promoted commercial mealie meal purchases at the expense of grain trade within communal areas and between surplus and deficit communal areas. This is unfortunate for six reasons:

1. The acquisition price of urban-milled meal is from 10 to 70 percent higher than local maize prices plus milling costs observed in eight semi-arid communal areas over the 1989/90 marketing year. This effectively reduces the real incomes of the rural poor.
2. Refined urban-milled meal is less nutritious than straight-run maize meal (*i.e.*, "mugayiwa") ground by a local hammer mill.
3. Most rural people prefer the taste of mugayiwa over more refined commercially-milled meal, although the commercial mills do not produce mugayiwa. In a survey of 474 households in Mberengwa, Runde, Gokwe, Kana, Nkayi, Shurugwe, and Buhera communal areas, 69 percent said they would prefer a bag of mugayiwa, if given the choice, over an equal sized bag of roller meal (16 percent) or parlenta (15 percent). When the question was asked in terms of taste for making sadza (the staple maize dish), 88 percent said they preferred the taste when made from mugayiwa.
4. The extraction of grain out of deficit communal areas and into the GMB/urban milling system reduces demand for and investment in rural grain storage and milling. The potential employment and multiplier effects of rural grain processing, stockfeed manufacturing, and other agro-industries are thus lost to rural communities and are captured in the urban areas.
5. Substantial amounts of scarce transport are tied up in the circuitous movement of grain from deficit areas to the GMB, onward to urban mills, and back out to the rural areas. This redundant movement also increases transport costs, reduces effective producer prices, increases consumer prices, and raises the transport requirements of government drought relief programmes.
6. The higher acquisition price of staple maize in the form of commercial meal reduces consumption commensurate with the price elasticity of demand of rural consumers, increasing the volume and costs of government stockpiling and drought relief programmes. The shortage of maize grain in many communal lands later in the season is particularly ironic considering the mountains of maize currently held by the government, some of which was purchased in the deficit areas. This irony is at least a partial side effect of the current organization of the market.

Points (5) and (6) are important to the government because of their direct effects on the treasury. Estimates of these costs are contained in Jayne *et al.* (forthcoming).

Point (4) is symptomatic of a broader set of rural industrialization problems which are beyond the scope of this paper (Reynolds, 1987).

Points (1) and (2) deserve elaboration here because of their direct impact on food security. It is important to examine why the controlled price of commercial roller meal is 10 to 70 percent higher than local market prices for mugayiwa. Price monitoring surveys were conducted bi-weekly by Agritex Extension Workers for the UZ/MSU Food Security Project and SADCC/ICRISAT in 27 wards within eight communal areas in Natural Regions III, IV, and V (Buhera, Gokwe, Kana, Nkayi, Shurugwe, Mazvihwa, Runde, and Mberengwa). In the pre-harvest months of January, February, and March, 1990, informal maize selling prices ranged from \$15 to \$40 per bag, with the lowest prices in the surplus areas (Kana, Gokwe, North Buhera) and the highest prices in the deficit areas (Mberengwa, Runde, South Buhera). In 25 of the 27 wards, local maize prices during the pre-harvest months never exceeded \$32. Household surveys indicate that maize milling costs at local hammer mills range from \$3.00 to \$3.60 per bag. Consequently, when maize was available locally, the maize meal acquisition price was rarely above \$35.00 (*i.e.*, 70 percent higher than the GMB producer price).

By contrast, the price of commercially-milled roller meal has ranged from 100 to 120 percent higher than the GMB producer price over the 1987-1990 period (Table 4). Moreover, this price is subsidized because the GMB has not been able to operate profitably within the official producer and sale prices prescribed by the government (column 5). This has cost taxpayers Z\$30 million in 1988-89 and an estimated Z\$56 million in 1990-91. If the new policies contained in the 1990 Budget Statement are implemented (Chidzero, 1990), they would mandate the GMB to fully cover its costs, and would require an 18 percent increase in the 1990-91 GMB sale price, pushing the commercial roller meal price to Z\$47.50 per 91 kgs, or 132 percent higher than the GMB producer price.

There are two main reasons why the cost of obtaining staple maize meal is much higher through the GMB/commercial miller system than through informal markets:

- (1) The GMB is not a commercial enterprise; it incurs additional costs by performing important social, political, and food security functions on behalf of the government. These include the operation of GMB depots and collection points in areas of low grain intake for equity reasons, inter-year stockpiling to assure adequate supplies in event of drought, and pan-territorial and pan-seasonal price policies which shift considerable transport and storage costs from the private to the public sector;
- (2) The operating margins of commercial millers over the past three years have been four to six times higher than those of informal hammer millers in communal areas (Table 4, Columns 7 and 9).

Table 4
Official Maize and Roller Meal Prices, Margins and Operating Losses
in the Official Maize Marketing System: 1988/89 - 1990/91

YEAR	GMB PRODUCER PRICE (1)	GMB SALE PRICE (2)	GMB MARGIN (3)-(2)-(1)	ACTUAL GMB OPERATING COSTS (4)	GMB OPERATING LOSS (5)-(4)-(3)	COMMERCIALLY- MILLED ROLLER MEAL PRICE (6)	OPERATING MARGIN OF COMMERCIAL MILLS (7)=(6)-(2)	TOTAL MARGIN, OFFICIAL MAIZE MARKETING SYSTEM (8) = (7) + (3)
1988/89	17.70	22.30	4.60	7.34	2.74	33.64	11.34	15.94
1989/90	19.55	25.90	6.36	na	na	42.36	16.46	22.82
1990/91	20.45	27.72	7.28	12.45	5.17	42.36	14.64	21.92

..... Z\$ per 91 kilograms

Source: Agricultural Marketing Authority (1988, 1989, 1990).

This, of course, reflects a wider range of functions performed by commercial millers (transport of the meal from the urban mills to rural shops, greater capital investments, administrative costs, cost of bags, etc.).

A major policy issue is whether the grain market can be restructured in such a way that the GMB maintains its positive functions such as holding buffer stocks to guard against drought and providing a floor price for surplus producers, without extracting grain out of deficit areas and raising acquisition prices to the detriment of food security in these areas.

An estimate of the effect on real household income of filling residual grain needs by purchasing commercial roller meal rather than grain through the informal market is presented in Table 5. Dietary patterns among food secure households show daily grain consumption to be about 0.5 kilograms per adult equivalent. Stack and Chopak (1990) and Hedden-Dunkhorst (forthcoming) report that average household size in survey villages in Natural Regions IV and V is about 8.5 in terms of adult equivalents. This indicates that about 1 550 kilograms of grain is required by an average household per year. Figure 6 suggests that in 1989-90 (a moderate but not unusual drought year), 25 percent of households surveyed in Runde and Mberengwa (Natural Regions IV and IV/V) ran out of own grain supplies by September (about 165 days before green maize is available from the next harvest); 50 percent ran out by January (about 45 days before the green maize). Under these two scenarios, Table 5 illustrates the reduction in real household income from purchasing roller meal at prescribed prices instead of maize in the market, assuming an informal price of \$32 per 91kg bag plus a \$5 per bag milling charge.¹³ Reference incomes used were the mean cash incomes in Buhera and Mutoko communal areas (Natural Regions IV and V) for households in the lowest income quartile (Row 9), and for those in the second lowest income quartile (Row 10).

This simulation suggests that households in the lowest income quartile that ran out of grain in September and had to buy roller meal instead of grain at \$32 per bag would have incurred a 34 percent loss in real annual household income. Since this is a non-marginal change in income, it is more likely that such households would reduce their intake of grain, with potentially adverse effects on food security. Even for households in the second income quartile, 10 percent of annual cash income would be absorbed in the higher acquisition price of roller meal. Fourteen and four percent, respectively, of annual cash income would be lost if the household depleted its grain reserves by January.

¹³The maize price of Z\$32 per bag was chosen as a high-end estimate; informal maize prices observed by Agritex agents in the UZ/MSU/SADCC/ICRISAT study did not exceed this price in 25 of 27 wards surveyed during the pre-harvest months of 1990. These wards were all in Natural Regions III, IV and V, most of which were affected by moderate drought during the previous harvest.

Table 5
Estimates of Loss in Real Income of Meeting Residual
Grain Requirements with Roller Meal as Opposed to Grain

	Household runs out of own grain stocks in:	
	SEPTEMBER	JANUARY
1) Annual Household Grain requirements, normal diet (kgs)	1,460	1,460
2) Number of days between household stockout and green maize availability	165	45
3) Grain requirement to be met from purchases (kgs)	$165/365 \times 1460 = 606$	$45/365 \times 1460 = 180$
4) Cost of residual grain requirements from roller meal (Z\$ per household) ^a	$660 \text{ kgs} \times \$0.48/\text{kg} = \317	$180 \text{ kgs} \times \$0.48/\text{kg} = \86
5) Cost of residual mugayiwa requirements from grain purchase on local market (Z\$32/bag) and milling charge (Z\$5/bag) ^b	$180 \text{ kgs} \times \$0.39/\text{kg} = \257	$180 \text{ Kgs} \times \$0.39/\text{kg} = \70
6) Difference in residual procurement costs between roller meal and grain (Z\$ per household)	\$60	\$16
7) Mean household cash income, lowest income quartile, Mutoko and Buhera (1988-89 marketing year) (Z\$ per household)	\$184	\$184
8) Mean household cash income, 2nd lowest income quartile, Mutoko and Buhera (1988-89 marketing year) (Z\$ per household)	452	452
9) (6) as proportion of (7)	33%	9%
10) (6) as proportion of (8)	13%	2%

^aThe official roller meal price of \$23.50 per 50kg bag was chosen as a low-end estimate. Actual roller meal prices in many remote areas during 1990 were somewhat higher than this.

^bThe informal maize market price of Z\$32 per 95kg bag was chosen as a high-end estimate; informal maize prices observed in the UZ/MSU/SADCC/ICRISAT study never exceeded this price in 25 of 27 wards surveyed during the pre-harvest months of 1990. These wards are all in Natural Regions III, IV and V, most of which were affected by moderate drought during the harvest. The \$5.00 milling charge is 20% higher than the average charge observed in a related survey of informal millers during 1990.

Source: Data from UZ/MSU/ICRISAT Grain Marketing Surveys, 1990.

The food insecurity paradox, therefore, may be strongly related to the organization of the grain marketing system. The problem is not availability of commercial meal, but rather availability and cost of maize grain. Official grain marketing policy has amounted to a tax on consumers to the extent that it has encouraged grain outflows from semi-arid communal areas and restricted inflows, thus forcing deficit households to buy more expensive commercial maize meal. This has adversely affected household food security in the drier portions of the country.

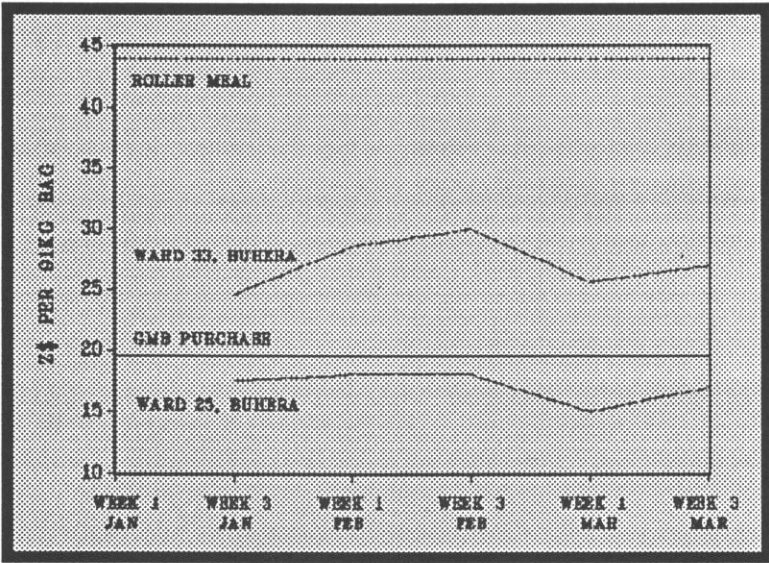
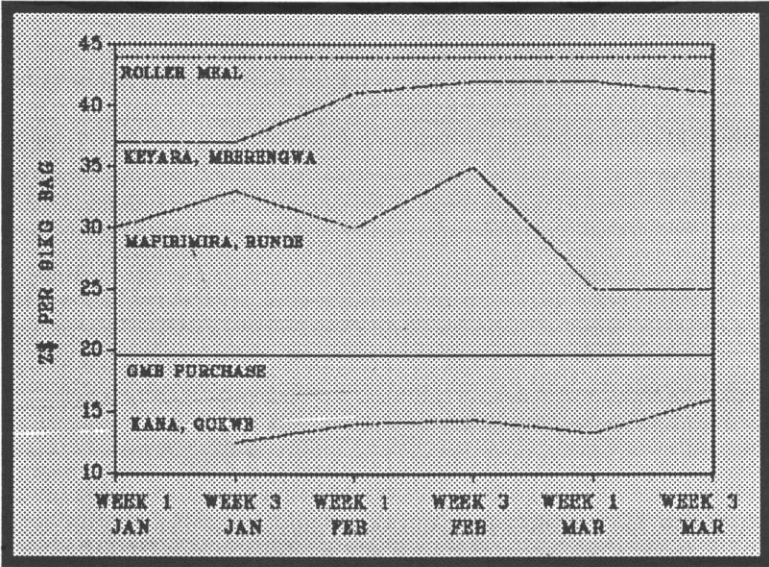
It is now clear that grain assumes widely divergent values in communal areas depending on the production status of the household. For surplus households, the opportunity cost of growing another bag of maize to sell is roughly the GMB purchase price (\$19 during the 1989-90 marketing year) minus several dollars for transport costs. Occasional sales on the local market may fetch between \$15 to \$35, depending on the supply/demand situation of the communal area in question (Figures 7a and b).¹⁴ However, the opportunity cost of grain for deficit households, which cannot buy grain later in the season because it is no longer available locally, is between \$42 to \$50 for the equivalent of a 91kg bag of commercial roller meal (depending on the remoteness of the area and the degree to which official prices are enforced). This huge gap between producer and consumer prices presents potential opportunities to improve the welfare of both surplus and deficit households if a more reliable and efficient informal grain trade could be developed.

Constraints to the Development of Informal Grain Markets

Competitive, open markets, in the sense of many buyers and sellers interacting within close proximity, are conspicuously absent in Zimbabwe's communal areas. Most informal grain trade is between surplus and deficit households in close proximity, exchanging small quantities. This system suffers from (1) inability to achieve economies of scale in bulking and distribution; (2) inability to operate over longer distances; (3) inability to increase the overall supply of grain in communal areas that suffer from severe food shortages; and (4) reluctance of households to store grain for purposes of resale later because of uncertain demand, poor local storage, and high cash needs after harvest.

The reliance on sporadic household-to-household trade is a manifestation of the underdeveloped and unspecialised nature of informal grain marketing systems (a) within communal areas, (b) between surplus and deficit communal areas, and (c) from GMB depots to deficit communal areas. This is because of government

¹⁴Prices did not normally exceed \$32 per bag, although Keyara Ward in Mberengwa Communal Area was an exception (Figure 7a). It is unclear why maize prices in other areas, where households reported that they had to buy commercial maize meal since no grain was available to buy locally, did not increase to the commercial roller meal price, since this would have been the opportunity cost of acquiring grain under such conditions. Local officials have suggested that there are perceived cultural or social reasons why informal grain prices do not exceed certain limits, irrespective of supply and demand conditions.



Source: UZ/SADCC/ICRISAT Food Security Project Database.

Fig 7a & b: Observed Informal and Official Maize Prices, Various Locations in Midlands Province: January - March, 1990

restrictions on the private movement and resale of grain, and because of numerous constraints unrelated to grain marketing policy that limit investment and new entry into private wholesaling, retailing, storage, and transport of grain.

Proponents of market liberalization have often assumed that the simple decontrol of grain movement and trade would be sufficient to induce a vibrant, competitive market in which traders immediately fill the void left by state withdrawal from the market. This "vacuum theory of privatization" is not supported by research findings elsewhere in Africa (Weber *et al.*, 1988; Dione and Staatz, 1988; Goetz *et al.*, 1989).

Market reform that assigns a greater role to private entrepreneurs must be accompanied by policies that alleviate major barriers to entry and investment in grain trading, transport and rural processing and thereby promote competition.

Several hypotheses are advanced as to why a competitive private grain trade has not emerged between surplus areas and GMB depots to deficit rural areas.¹⁵ Current research will shed more light on the accuracy and validity of these and other hypotheses.

- o **Underdeveloped Rural Credit Markets:** Shopkeepers and transporters have little access to credit from formal or informal lending institutions, due to perceived high risks and lack of collateral. Traders appear to finance most or all of their product procurement with their own capital. They appear to devote most of this capital to commodities with high turnover -- paraffin oil, matches, cooking oil, bread. In an environment of constrained capital, this strategy provides the greatest returns and flexibility. However rational this strategy may be from the viewpoint of traders, it does not meet the needs of numerous grain deficit households in rural areas. Better-lubricated rural credit markets and availability of working capital to traders would induce private investment in other activities after the demand for the high-turnover commodities is saturated. At such a point, entry into grain trading may become profitable, especially in areas near GMB depots and/or where local grain selling prices are high.
- o **Underdeveloped road infrastructure:** A quick look at a road map of Zimbabwe reveals a "centralized" network, in which rural areas are often well connected to urban centers by tarred roads, but are poorly connected to adjacent communal areas. Rural commerce must often follow a "V"-shaped pattern requiring transport into towns in order to go back out to nearby rural areas. This impedes intra-rural trade and promotes economic links with urban centers (Reynolds, 1987). This centralized road network promotes bulk grain sales to GMB depots in towns rather than movement between surplus and deficit communal areas; it promotes grain and oilseed

¹⁵The UZ/MSU Food Security Project is currently conducting surveys of over 100 shopkeepers, grain traders (there is some but not a large overlap between these two groups), rural transporters, and lending institutions to identify entry barriers to grain trading in rural Zimbabwe.

processing and related agro-industrial activity in the town centers, transferring employment opportunities and money circulation out of the rural areas.

- o **Shortage of vehicles and spare parts:** The cost of vehicles and spare parts in Zimbabwe is inflated over world prices due to import restrictions and insufficient domestic production. This limits the quantity and quality of transport services (both public and private) and undoubtedly increases customer costs.

- o **Poor storage technology and seed characteristics:** Some analysts have pointed to the government's pan-seasonal price policy as the major impediment to local storage. We feel that this argument is somewhat overstated. Even in the absence of pan-seasonal pricing, such as in the informal markets, storage is risky and of low return for several reasons. First, many rural households incur a great deal of debt and forestall needed expenditures during the production season due to cash shortages. Consequently, they have a high need for cash at harvest time. This, coupled with underdeveloped local credit markets, encourages crop sales early in the season. Second, commonly used storage facilities suffer high losses due to insects, rodents and rain. For maize, this may be as high as 15-30 percent by weight. The hybrid "dent" maize varieties are used almost exclusively throughout Zimbabwe. Households have indicated that such maize under common local storage conditions may begin to spoil after 6 to 9 months. This virtually precludes inter-annual storage of maize. Greater attention to maize seed storability may yield high payoffs to future seed breeding efforts. Millet and sorghum, on the other hand, have better storage characteristics, and are used to some extent as security crops, but these grains are not preferred for consumption in many areas. Production and processing constraints limit small grain production and storage in other areas (Hedden-Dunkhorst, 1990). Improving the technology of local grain storage may provide greater incentives for temporal arbitrage in grain, thus promoting the availability of grain later in the season.

Furthermore, if the GMB pan-seasonal price were adjusted by deducting transportation costs to urban storage centers, the incentive for surplus producers in deficit areas to store their marketable grain for sale in seasonally higher-priced local markets would be enhanced.

Therefore, the removal of policy restrictions on grain movement, the ability of approved buyers to resell grain locally, and access to grain for purchase at collection points may be necessary but insufficient conditions to promote the development of competitive, low-cost markets in rural areas. Many important barriers to entry and investment in private and cooperative trade are not directly related to grain marketing policy per se. Their alleviation will require rural development strategies more conducive to rural investment. For example, the Small Enterprise Development Cooperative (SEDCO) and Zimbabwe Development Bank (ZDB) are

designed to promote rural development through provision of credit. Further research is required to assess the problems SEDCO and ZDB encounter with providing credit to rural entrepreneurs, and what problems these entrepreneurs encounter with SEDCO and ZDB. Does SEDCO perceive rural grain trade as a legitimate or needed activity to support? Unless accompanied by favorable rural development and macroeconomic policies, the potential benefits of grain market reform may be negated.

IMPLICATIONS FOR GRAIN MARKETING POLICY REFORM

Summary of Main Points

1. Great strides have been made since independence to improve market outlets for surplus grain production in communal areas. However, the structure of the market has changed little in terms of improving availability of grain to buy in semi-arid areas.
2. Despite the assumption prior to independence, which is still implicit in the current organization of the grain marketing system, that communal areas are self-sufficient, a sizeable number of communal areas in the drier regions of the country do not produce enough grain to feed their populations.
3. Pockets of surplus and deficit households may be in close proximity to one another, distinguished mainly by variations in landholding, cash to finance investments in technology, and other productive assets. Therefore grain "surpluses" delivered to the GMB are not necessarily an indicator of food self-sufficiency within an area. In fact, such deliveries may mask, and even contribute to, considerable grain deficits in same areas. The drawing of grain out of deficit communal areas into the official single-channel GMB system raises grain prices in the former, just as the export of grain out of a country raises internal prices where supply and demand conditions prevail. Prices may rise almost up to the roller meal price (minus milling costs), since this represents the opportunity cost of acquiring staple maize when there is none to buy locally. Figure 7a indicates that this is exactly what happened in parts of Mberengwa district early in 1990. In a good rainfall year, the absence of an efficient food supply system in deficit communal areas may not produce major problems. In a drought year, it is disastrous (Blackie, 1984). Indirect evidence of this is provided by the geographical and temporal pattern of malnutrition presented earlier in this paper.
4. Government grain marketing policy was designed to promote rural welfare by providing a ready market for surplus production; there was obviously no intention to tax deficit households. Yet it must be recognized that the single-channel system, in the absence of a mechanism to make grain available throughout the year in the low-rainfall areas, is tantamount to a tax on deficit households, forcing them to buy urban-milled meal that is higher-priced, less nutritious and less preferred. Roller meal prices have

been 10 to 70 percent higher than maize prices observed during the pre-harvest months in the low-rainfall communal areas studied. Such a price difference on a staple commodity as essential as maize meal has undoubtedly exacerbated household food insecurity in these areas.

5. The econometric results in Appendix 1 indicate that the price elasticity of demand for grain by millers, a derived demand for maize meal by consumers, is -1.23. This indicates that a 10 percent reduction in consumer maize prices would elicit a 12.3 percent increase in maize consumption. Even if such price changes were confined to the semi-arid communal areas of the country, where about 35 percent of Zimbabwe's population resides, this would greatly reduce the government's maize oversupply problem. To some extent, therefore, Zimbabwe's overflowing maize stocks and chronic food insecurity are two sides of the same coin: the underdevelopment of informal staple food markets that fail to reduce the acquisition costs of staple food and stimulate consumption in semi-arid areas.
6. Informal grain trade among surplus and deficit communal areas, or between commercial and communal areas is underdeveloped partially due to government grain marketing restrictions but more importantly due to capital, transport, infrastructural and other multifaceted constraints facing rural entrepreneurs.

Implications for Policy

Many analysts have tended to think of grain marketing, price, and storage policy options in terms of finding the optimal trade-offs between price stability, consumption, budgetary costs, and other government objectives -- holding market structure constant (Bigman, 1985; Buccola and Sukume, 1988; Pinckney, 1988). The thesis of this paper is that greater focus on the restructuring of the market itself may considerably reduce the magnitude of these trade-offs.

However, this remains an untested hypothesis. We have examined the beneficial effect on rural food security, GMB stocks and budget outlays -- given well-functioning, competitive informal grain markets. Such markets have not appeared spontaneously. A major policy issue is whether the current organization of the market can be restructured in a way that (a) allows the GMB to maintain needed buffer stocks to guard against drought and provide a floor price for surplus producers in Zones A and B, (b) reduces government deficits associated with the GMB and drought relief programs, and (c) enhances real incomes and food security for the three million smallholders living in the semi-arid communal areas.

Although there are compelling reasons why competitive informal grain markets are a necessary condition for the attainment of these objectives, there is no foolproof blueprint for how to induce them into existence. However, efforts to incorporate the development of informal markets into future agricultural and nutrition policy would be more successful if they distinguish between market decontrol that simply legalizes

certain activities with the hope that they will spontaneously develop, and decontrol that actively facilitates new entry and investment in a range of marketing activities that have been identified as crucial to smallholders' needs. Past experience with reliance on the private and cooperative sectors has been disappointing at least partly because inadequate attention was given to the operating constraints they faced. Government policies that identify and alleviate these constraints and provide facilitative support for new entry and investment in critical rural marketing functions may greatly contribute to food security in rural areas.

The results of this paper suggest several policy alternatives. Although certain major changes may provide the greatest benefits over the long run, it is important to understand the skepticism with which private traders are viewed in some government circles. These misgivings, coupled with the facts that the effects of promoting informal grain distribution are untested in Zimbabwe and represent a distinct shift away from the highly controlled and regulated current system, may encourage a more gradual approach to reform. This would allow government to test the effects of adjustments, and, if successful, progressively restructure the system in line with its objectives.¹⁶

In the short run, such adjustments may include:

1. Encourage the government to abolish restrictions on the movement of grain between Zone B areas that require passing through a Zone A area. Partial decontrol of maize movement would not necessarily require the decontrol of maize from Zone A to Zone B areas. The GMB would still procure grain from Zone A and surplus areas of Zone B, which would allow it to meet urban demand and maintain strategic buffer stocks. The GMB would also maintain its role as a residual buyer in all areas, effectively offering a floor price to guard against adverse price fluctuations.

Movement decontrol of maize from Zone A to Zone B areas would probably create a more radical and unpredictable change in grain flows and prices in communal and urban areas. The extent to which such a partial decontrol of maize movement would affect the government's ability to ascertain national supplies, stocks, and demand, needs to be determined through further research.

¹⁶Recent events in Zambia and Tanzania demonstrate the risks of immediate and full market decontrol. Following food riots in 1987, President Kuanda renounced the IMF-sponsored structural adjustment programs and returned the country to its prior system of administered pricing. Zambia's grain policy has since flip-flopped several times, abolishing its marketing board, NAMBOARD, in the process. This approach to full decontrol followed by reinstatement of controls has probably not mitigated the current disarray in Zambia's grain markets. In Tanzania, the government also restricted the operation of private grain traders in 1989/90 after sweeping decontrol several years earlier. This was apparently because the National Milling Corporation and Cooperative Unions could no longer compete with the private traders (Amani and Kapunda, 1990). Lack of governmental control over food supplies and prices, especially in urban areas, was considered politically dangerous.

2. Allow collection points in communal areas to sell grain as well as procure it for extraction out of the area. The costs associated with selling could be reduced by conducting sales only once or twice a week. Such costs would almost surely be lower than the costs of transporting grain onward to main depots, the costs of handling and storing the grain by the GMB, and the costs of transporting mealie meal or drought relief back into these same areas.
3. Allow approved buyers to become "approved sellers". Under such an arrangement, the GMB would set selling prices at which the approved buyer/seller could sell grain to local consumers. This price would have to be high enough to provide incentives to the trader, and would have to allow for the trader's cumulative storage costs. The price must therefore rise through the season, and might be adjusted upward on a monthly basis. Even after 10 months of storage at 20 percent losses and a 25 percent personal discount rate, the approved seller could sell grain at \$10.00 lower than the price of 91 kgs of commercial roller meal and make \$7.50 per bag profit at the end of the year. Government support for investment in improved private storage may be helpful to induce more traders to perform this role. Over the long run, the need for controlling the selling price may become obsolete if a sufficient number of such "approved sellers" were operating in an area to ensure competition.
4. Develop government support for new entry and investment in the current missing link in the grain marketing chain: the distribution of grain from a known source of supply (local GMB depots and surplus communal areas) to known sources of demand (rural deficit areas). The Zimbabwe Development Bank or similar institution could play a role by providing concessional loans for private investment in vehicles, hammer mills, spare parts, storage, and marketplace facilities in specific areas. This could be complemented by government investment in rural road infrastructure.

Greater grain availability in semi-arid rural areas would also promote the development of rural hammer mills, dehullers, brewers, and other agro-based industries requiring adequate and reliable volumes of grain available for purchase. Currently, such agro-based industries are highly concentrated and are located in the major urban areas. A higher proportion of grain traded and processed locally may create rural employment and multiplier effects that are currently confined to urban areas.

The current system also features a circuitous flow of grain from rural areas to urban centers and then back to rural areas in the form of commercial meal. A significant portion of commercial transport is tied up in GMB contracts between depots and central silos (Jayne, *et al.*, 1990). Policies that rely more on decentralized storage and delivery of grain from the nearest surplus areas rather than delivery of meal from distant urban mills would significantly reduce the transport bottlenecks that are currently plaguing Zimbabwe's economy.

Changes in the grain marketing system may be an important precondition for success in the government's efforts to promote crop diversification into higher-valued cash crops. Currently, diversification may be hindered because many smallholders, in their production decisions, are not comparing the net returns from oilseed production (groundnuts or sunflower, for example) vs. the net returns from selling maize. For households that are grain deficit, their decision must weigh the net returns from oilseeds vs. the opportunity cost of not growing another acre of maize, which involves the mealie meal acquisition price rather than the GMB producer price -- a difference of 100 percent. More reliable grain markets in terms of price and adequate supplies would reduce the risks of cash cropping to produce income to buy food. In situations where markets for staple grains are highly unreliable, farmers will release resources for other cash-earning activities only after the basic food needs of their families have been met.

Implications for Targetted Food and Nutrition Interventions

Of course, marketing system innovations are not a panacea, just as nutrition programmes and technology are not panaceas. Interactive improvements in all three spheres are necessary in the long run to promote rural living standards. We feel that targetted food and nutrition programmes will continue to be necessary, as they are throughout the world, and will play a crucial role in alleviating hunger. An important task for food security policy is to develop financially viable targetting mechanisms that alleviate transitory food insecurity while concomitantly reducing the number of hunger-prone households over the long run through sustained rural development. A policy to foster the development of reliable informal trade may be an effective means to reduce the number of hunger-prone households and thus the size and costs of drought relief and supplemental feeding programmes.

Concluding Remarks

It is therefore not a paradox that rural food insecurity persists despite a 300 percent increase in official grain sales since independence. On the surface, the situation is due to substantial variation among households' productive resources, the ability to produce a marketable grain surplus, and other income earning opportunities. Yet the historical and current orientation of agricultural policy toward surplus producers and the void in the grain marketing system -- the absence of grain markets for consumers in rural deficit areas -- has certainly contributed to these income inequalities and the current level of food insecurity in the country. Careful consideration of the distribution of grain sales and incomes *within* communal areas as well as *between* them would be a step forward analytically in designing appropriate grain marketing policies to promote food security.

Such reforms would not put the government in a position of relinquishing control of maize pricing and distribution -- tasks that it currently performs -- but would rather facilitate private trade to perform useful functions that are currently not being performed.

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APPENDIX 1

THE IMPORTANCE OF COMMERCIAL MAIZE MEAL CONSUMPTION
IN ZIMBABWE'S RURAL AREAS

The purpose of this appendix is to examine the seasonal variation in demand for commercial maize meal, and to estimate the volume of commercial meal consumed in Zimbabwe's rural areas.

This report has demonstrated earlier that over 45 percent of households surveyed in three communal areas in Natural Regions III, IV, and V ran out of grain from own stocks before the 1990 harvest. We also suggest that, due to limited availability of grain to buy later in the season, many households in these areas must purchase commercial maize meal to meet their grain requirements.

The existence and magnitude of seasonal variation in national demand for commercial maize meal may be examined econometrically. The foregoing suggests that demand should be lowest during the post-harvest months, when most farm households consume grain from their own production. At this time, demand would be confined mainly to urban areas. This demand should be fairly uniform throughout the year because urban consumers purchase virtually all of their staple food needs each month. However, as a growing proportion of rural households in the grain deficit areas deplete their stocks through the season, we hypothesize that demand for commercial meal will rise, reaching a peak during the months immediately preceding the harvest, after which it will drop off considerably.

Unfortunately, monthly maize meal consumption data is unavailable. Therefore, a proxy for this variable is required.

Interviews with general managers of several commercial milling firms indicate that (a) there is a 1 to 2 week lag time between the purchase of maize from the GMB and the time at which it is milled and bagged for distribution, (b) once bagged, the maize meal is rapidly distributed out to distribution points and retail outlets, and (c) aside from working stocks, these millers do not store maize because of the pan-seasonal selling price of the GMB, which effectively performs free storage services for the millers. These points indicate that the demand for maize by commercial millers is basically a derived demand for maize meal by consumers, with a 3 to 4 week time lag. Therefore, the seasonal pattern of maize purchases by millers lagged one month provides a close proxy for commercial maize meal consumption.

Standard demand theory specifies that demand for a good is a function of its price, income levels, and the price of substitutes in consumption. After maize meal, wheat bread is the most important staple good consumed in Zimbabwe. Bread consumption is rapidly becoming an important part of rural as well as urban diets. All prices were deflated by the national CPI. Unfortunately, national income on a monthly basis is not available.

Using monthly data from the GMB and the Ministry of Trade and Industry from April, 1985 to September, 1989, an initial model assuming no monthly variation in demand was specified as

$$(1) \quad \text{DEMAND}_t = B_0 + B_1 \cdot (\text{PMEAL})_t + B_2 \cdot (\text{PBREAD})_t + \epsilon_t$$

where DEMAND represents maize demanded by commercial mills, and PMEAL and PBREAD are the deflated retail prices of commercial roller meal and wheat bread.

Annual demand for commercial meal is also thought to be greatly influenced by the quality of the harvest and the availability of grain in rural areas (Blackie, 1984). During drought years, for example, annual demand for milled maize tends to rise substantially. This is evident by examining grain procurement by urban millers during the drought years of 1982/83, 1983/84, and 1987/88 (Table 2, :67). The less grain produced and retained in communal areas, the greater the need for commercial maize meal to make up the difference. To examine the importance of this relationship, model (1) is compared with a similar model containing an additional RETENTIONS variable (i.e., annual communal maize production minus deliveries to the GMB). An F-test found that the inclusion of this variable increased the explained variation of the model at the .01 level of significance. Results were as follows (t-statistics in parentheses):

$$(2) \quad \text{DEMAND}_t = 173,598.9 - 959.05 \cdot (\text{PMEAL})_t - 71,129.32 \cdot (\text{PBREAD})_t - 0.02 \cdot (\text{RETENTIONS})_t$$

(3.14) (-0.90) (-0.73) (-3.75)

$$R^2 = .36$$

$$\text{DW} = .99$$

$$F = 9.28$$

The very low Durban-Watson Statistic indicates misspecification, in part due to the absence of a seasonal component in the model.

Seasonality in mealie meal consumption was examined by using the following specification incorporating seasonal dummy variables:

$$(3) \quad \text{DEMAND}_t = B_0 + B_1 \cdot (\text{PMEAL})_t + B_2 \cdot (\text{PBREAD})_t + B_3 \cdot (\text{RETENTIONS})_t + B_4 \cdot (\text{JAN}) + B_5 \cdot (\text{FEB}) + \dots + B_{14} \cdot (\text{NOV})$$

with the hypothesis of no seasonal effects being

$$B_4 = B_5 = B_6 = \dots = B_{14} = 0.$$

Actual results (with t-statistics in parentheses) were:¹

$$\text{DEMAND}_t = 88,834 - 2,572.0 \cdot (\text{PMEAL})_t + 39,778 \cdot (\text{PBREAD})_t - 0.03 \cdot (\text{RETENTIONS})_t +$$

(2.90) (-2.98) (0.76) (-6.55)

$$4,347.3 \cdot (\text{JUL}) + 8,414.5 \cdot (\text{AUG}) + 13,922.0 \cdot (\text{SEP}) + 14,725.6 \cdot (\text{OCT}) +$$

(0.83) (1.58) (2.62) (2.63)

$$17,919.6 \cdot (\text{NOV}) + 21,295 \cdot (\text{DEC}) + 28,414.2 \cdot (\text{JAN}) + 25,526.1 \cdot (\text{FEB})$$

(3.18) (3.84) (4.94) (4.51)

$$18,260.4 \cdot (\text{MAR}) + 1,657.9 \cdot (\text{APR}) + 8,525.6 \cdot (\text{MAY})$$

(3.23) (0.32) (1.64)

$$R^2 = .72$$

$$DW = 1.72$$

$$F = 7.25$$

Own price elasticity of demand for maize: - 1.23

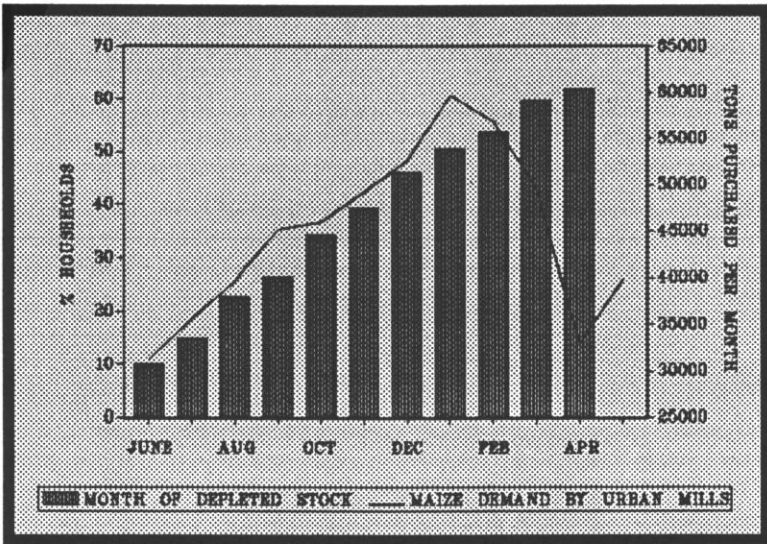
Wheat cross price elasticity of demand for maize: + 0.44

An F-test comparing models (2) and (3) indicated that the seasonal dummy variables improved the explained variation of the model at well beyond the .05 level of significance. At this level of significance, the null hypothesis of no seasonality can be rejected. The inclusion of the seasonal variables also reduced the problem of autocorrelation in equation (2).

December, January and February were shown to be the months of peak maize demand for millers (a slightly later peak mealie meal demand must be inferred for consumers), while June was shown to be the time of lowest demand.

These results point to a strong seasonal increase in mealie meal purchases later in the crop season, corresponding closely with the pattern of grain stock depletion among rural households in deficit areas (Figure A1). In March and April, households typically eat "green maize", which may explain why the proportion of households that run out of grain does not correspond to greater mealie meal purchases in these two months.

¹Since June was found to be the month of lowest demand, the model was standardized in terms of this month.



Source: UZ/SADCC/ICRISAT Food Security Database, 1990.

Fig A1: Seasonal Estimates of National Mealie Meal Consumption and Proportion of Households Depleting Own Grain Stocks: Mberengwa and Runde Communal Areas, 1989-90 Marketing Year.

The coefficient on RETENTIONS indicates a strong negative relationship between the annual amount of grain produced and retained in communal areas and the demand for maize by millers. The model indicates that for every additional ton of maize produced and retained in the communal areas, demand for grain to produce commercial meal drops by 0.32 tons.²

The next task is to ascertain roughly how much of the total mealie meal demand is consumed in rural areas. Unfortunately, this information is not available from millers. Our estimates of rural mealie meal consumption depend on the assumption that among urban consumers and a certain proportion of households in communal and commercial farming areas who do not have their own plots to farm, the demand for commercial meal is roughly constant throughout the year. This is reasonable because these families tend to rely on urban milled meal for sadza throughout the year.

The results of equation (3) show that June is the month of lowest demand (about 35,000 tons purchased per month). Allowing a lag of one month from the purchase of maize by millers to the purchase of maize meal in retail shops, July would therefore appear to be the month of lowest maize meal demand. This is also the period just after harvest, when most of the rural farm population eats grain from their own production. Considering the extraction rate from maize to maize meal, the results suggest that about 31,300 tonnes of meal are consumed during July. This may be assumed to be the quantity of commercial meal consumed by the year-round consumers mentioned above. This suggests that approximately 375 000 tonnes of maize are consumed by the year-round consumers in a typical year over the estimation period.

Notice that the demand for commercial meal rises progressively and substantially later in the marketing year. This seasonal pattern corresponds very closely with the months of rural households' grain stock depletion in three communal areas in NR IV and V this past year. It must be assumed that the steady rise in demand later in the season, which peaks just before the harvest, is attributable largely to rural households running out of own grain stocks.

The econometric results indicate that in a normal year, the rural population consumes about 130,000 tonnes of urban-milled meal per year. This consumption is probably concentrated in the low rainfall communal areas. It also includes households working on commercial farms that were allocated plots of land which were inadequate to meet the annual grain needs of the household.

In response to drought, it is unlikely that urban consumption would change much because urban dwellers produce little grain themselves and receive only small amounts of grain in the aggregate from relatives in communal areas. By contrast,

²This is calculated by multiplying the coefficient on RETENTIONS by 12 to convert to annual volume, then multiplying by the grain-to-commercial maize meal extraction rate of 0.88.

the effect of drought on crop failure in rural areas means that they would start purchasing mealie meal much earlier in the year. The results indicate that rural consumption of commercial meal in a drought year similar to 1987, holding other factors constant, is about 275,000 tons, or more than double the annual rural consumption during a normal year.

A hypothetical but not unlikely scenario may be constructed in which 50 percent of the communal area population and 50 percent of the commercial area population accounted for this seasonal rise in demand during the 1987 drought year. Under these assumptions, the average per capita consumption of commercial meal in the rural areas would have been 64 kilograms per year, or approximately 30 percent of per capita grain consumption requirements in Zimbabwe.³

Thus drought affects much of the rural population in semi-arid areas, not just in terms of own production, but in terms of real income lost through meeting staple grain needs by purchasing high-priced mealie meal. These results also indicate the volumes of commercial grain meal flowing into semi-arid rural areas at the same time that grain is flowing out through the official marketing channels.

³Grain consumption requirement of 230 kilograms per person per year is from the SADCC Regional Early Warning Unit for Food Security, 1990.

Structural Adjustment: Future Prospects For The Agricultural Sector In The 1990s

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PART I STRUCTURAL ADJUSTMENT IN ZIMBABWE

INTRODUCTION

Background to Structural Adjustment in Zimbabwe

At the heart of Zimbabwe's current economic difficulties lies the problem of growth. The Zimbabwean economy is in a vicious cycle of declining investment, low growth, weak export performance, and increasing unemployment. The growth patterns reflect the influence of external developments and domestic policies. While Government has very little influence on international trade developments, it has a wide range of policy choices on the domestic front.

The main thrust of Government policy after independence was in the direction of reconstruction and redressing the economic, social and racial imbalances that existed before 1980 as well as laying the foundation for growth with equity. Hence, the service sectors provided a significant proportion of economic growth in the early 1980's while growth in the major productive sectors including overall GDP was erratic during that period. These policies were however implemented at the cost of reduced investment, employment, foreign exchange availability and increased transfers of private savings through the financial system to finance the public deficit. Government responded by introducing a range of policy measures in the mid 1980s

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designed to arrest the deteriorating situation. However, most of the measures only addressed short term problems and thus could not put the economy on the course to sustained growth.

The first real indication that Government was considering major policy measures for sustainable growth came in the 1987 Budget speech when it was pointed out that Government had accepted in principle the need for trade liberalisation pending a study of the situation in Zimbabwe. This was further emphasised in the 1988 Budget speech. The study on trade liberalisation has been completed and Government has committed itself to a process of structural adjustment.

Scope of Paper

This paper is in two parts. The first part deals with the macroeconomic context of adjustment in Zimbabwe and the performance of the agricultural sector in that context. The second part deals with the future prospects for the agricultural sector in the 1990s with special reference to pricing policy and the future of the agricultural marketing system.

THE MACROECONOMIC CONTEXT OF ADJUSTMENT

Economic Performance and Policies in the 1990s

Growth Trends

The main feature of the Zimbabwean economy in the 1990s was periodic boom-slump conditions linked to external developments. The weather situation and agricultural performance; and to the availability of foreign exchange. This feature was not characteristic of the post-independence period alone but was also the case during the phenomenal growth periods of the mid-1970s when import substitution was the major strategy for coping with conditions existing at the time.

The immediate post-independence period benefitted from good agricultural performance reinforced by relatively high imports into industry. Much of the activity during this period, however, was focussed on the utilisation of existing capacity and reconstruction rather than investment into new areas. The economy suffered from short term fluctuations in response to weather conditions and levels of foreign exchange allocations.

Output growth exhibited cyclical fluctuations. There was a major boom in 1980-81 when annual average growth in GDP peaked to about 11 percent. This was followed by a prolonged recession in 1982-84 when output growth averaged 0,4 percent. The economy experienced a rapid recovery in 1984-85 with a real growth rate of about eight percent. This growth was realised primarily because of the good rains even though in real terms, total imports fell significantly. The deterioration in 1985-86, when real growth averaged about 0.2 percent, was followed by a better performance in 1987-88 with growth averaging about five percent. These fluctuating growth rates

in GDP point to some curious features characteristic of the Zimbabwean economy. First, the agricultural sector is an important source of demand throughout the economy and, up to a certain level, the sector's good performance stimulates the economy. Second, increased demand can only induce limited economic activity because of the existence of supply constraints such as inadequate foreign exchange to import essential inputs, to replace production equipment and to expand capacity. Third, the heavy dependence of demand on the agricultural sector and the sector's overall importance relative to total output and export earning capacity, render the economy vulnerable to unpredictable changes in weather conditions.

Trade and Balance of Payments

The Balance of Payments exhibited a number of remarkable cyclical tendencies during the 1980s. Firstly there were significant changes in Zimbabwe's resource position *vis-a-vis* the rest of the world. There were major terms of trade gains in 1980-81 resulting from favourable international commodity price developments and the removal of sanctions. However, severe and unsustainable external imbalances on the current account followed in 1981-82 as a result of negative terms of trade. A situation of near balance was reached in 1986 with imports increasing at a slower rate than exports. But the imports were much below the levels needed to sustain industry. If industry had been operating at full capacity, there would have been a deficit on the trade balance. Secondly, for much of the period after 1986, the balance of payments position was negatively affected by continued debt service obligations which were high relative to the level of exports, and by reduced capital inflows.

Government responded to these developments by implementing measures in the latter part of 1987 to bring about external balance. These measures included, among others, adoption of a realistic exchange rate policy, curbing dividend remittability, introduction of an Export Incentive Scheme, augmentation of the Export Revolving Fund and introduction of export promotion programmes to cover the agricultural and mining sectors (*i.e.*, AEPP and MEPP respectively). These measures went a long way towards increasing export volumes in mining and agriculture.

There are four main areas where the AEPP had a major impact. Firstly, agricultural exports rose from about Z\$970 million in 1988 to approximately Z\$1 billion in 1989-90 with the programme generating the additional direct exports. Secondly, it led to direct import savings. This was most evident in the case of wheat with production growing from less than 100 000 tonnes in 1984-85 to over 280 000 tonnes in 1989-90. Import savings also rose in the case of oilseeds, particularly soyabeans, which are essential to meeting the domestic demand for vegetable oils. Thirdly, the programme greatly assisted in providing raw materials for export production and in creating additional jobs. The provision of additional foreign currency for agricultural machinery imports in kit form, led to the creation of additional jobs at local assembly plants.

On the whole however, aggregate exports continued to be unsatisfactory. The levels of exports achieved in the period 1987-89 fell far short of meeting the country's import requirements and servicing the national debt, in the face of declining capital inflows.

There is strong interaction between external developments and domestic economic performance. The combination of terms of trade shifts and changes in resource balances had an impact on the level of domestic activity. As a consequence of past import substitution, there is generally very little substitutability between imports and production. A wide range of inputs which cannot be produced locally have to be imported as they are essential for production. However, the level and composition of imports is determined by the availability of foreign exchange which also depends on the state of the balance of payments. Thus the main constraint in the 1980s was the shortage of foreign exchange caused by the decline in net capital inflows, an increase in net capital outflows and a decline in net reserves. Reductions in foreign currency allocations negatively affected production. Available evidence suggests that the period 1980-81, when the country experienced external resource gains, was associated with high imports particularly of capital goods whilst the later half of the 1980s was bedevilled by huge import compressions because of foreign exchange shortages. The downswings in the cycle in 1982-84 and 1986-87 would appear to have emanated from the initial resource imbalances of 1980-81 and adverse terms of trade. The only exception was the recovery of 1984/85 when rapid economic growth occurred spurred by the weight of agricultural growth and cutbacks in foreign currency for the importation of capital goods. The current position is that there is no further scope for import compression.

The Budget and Domestic Resource Allocation

The public sector deficit is another side of the paradox in macroeconomic developments. At the time of independence, Government inherited a deficit of about 11 percent of GDP. After declining somewhat in 1982-83, the deficit (excluding the borrowing requirements of the Agricultural Marketing Boards), is now back to about the previous level. If the borrowing requirements of the Boards are included, the consolidated deficit for 1989 is estimated at nearly 12 percent of GDP compared to the Five Year Plan target of six percent.

The main cause of increased public expenditure (including spending on agricultural marketing boards) was the post-independence political economy. Government inherited serious inequities in infrastructure and human resources in 1980. It had to invest in social, physical and human capital and reorientate agricultural services towards small scale, communal and resettlement areas. wages and salaries were sharply increased both by scale changes and by the removal of *de facto* job access restrictions. Producer prices for controlled commodities were also raised sharply as an incentive for increased production. Increased expenditures were incurred in health, education, demobilisation and security, further increasing the deficit.

With specific reference to agriculture, parastatal deficits were caused by the conflicting pressures on Government to provide conducive producer prices, hold down the growth in consumer prices and to extend input and marketing services to communal, small scale and resettlement areas. The higher farm incomes resulting from higher producer prices, resulted in a widening of the public sector deficit while generating private savings that helped finance the deficit. Since producer prices are guaranteed, the tendency during the 1980s, was for both Board losses and deficits to rise even in good years.

Investment and Growth

Aggregate investment was at its peak in 1983-84 (about 19 percent of GDP) following the investment boom created by ZIMCORD. However, it had declined to about 16 percent of GDP by 1986 and continues to decline. As of now, Zimbabwe is attempting to maintain the real level of its capital stock largely through extending the life of capital equipment rather than refurbishment or replacement. At the current rate, net investment could decline to negative levels by the mid-1990s. The major constraints limiting investment included the shortage of foreign exchange and unsustainable domestic demand conditions. The shortage of foreign exchange discouraged new investment and meant that the country had to rely on utilisation of existing capacity.

The distribution between public and private fixed investment was skewed towards the public sector in the mid 1980s. Public investment rose rapidly soon after independence and has remained steady at about ten percent of GDP since then. However, private investment declined steadily from about 10 percent of GDP at independence, to less than six percent of GDP by 1989. The decline in private investment was mainly due to the lack of raw materials and capital goods but partly due to uncertainties about the availability of foreign currency and regional developments. These developments would appear to have 'crowded out' private investment and raised its risk premium, thereby also raising the profit margins, for risky ventures. One risky investment area to which a significant number of farmers have now diversified is horticulture, particularly cut flowers production.

Employment and Welfare

With investment continuing to be a problem and economic growth trends in the 1980s being unstable, employment levels continued to fall. The First Five Year National Development Plan envisaged an annual growth rate in formal sector employment of about 2.7 percent. On the basis of the numbers of those registered as unemployed and the school leavers entering the labour market each year, this target was clearly inadequate to solve the unemployment problem. The situation was even more serious when actual figures were taken into account. Despite the high growth rate experienced in 1985 for example, total formal employment increased by less than one percent. The agricultural sector continued to be the largest employer of labour in the formal sector despite a decline in its share of employment from 32 percent in 1980, to 27 percent in 1985. The fact that

agriculture continued to be the largest employer even when its share was declining in absolute terms, points to the lack of employment expansion in other sectors. The present situation is that the number of unemployed is rising faster than the number being absorbed into formal employment. With the number of school leavers rising each year from an estimated 100 000 in 1986 to over 300 000 in 1990, it is clear that the number entering the labour force is well above what can be supported by present trends in investment.

Given the present structure of the economy, it is clear that the role of the formal sector in employment has been diminishing over the years. Formal sector employment was either disproportionately below overall growth, or remained static even in periods of high real economic growth.

THE FRAMEWORK OF ADJUSTMENT

As previously indicated, Government would appear to have recognised that many of the policies implemented in the 1980s were only able to tackle the symptoms of the growth problem, leaving the underlying causes intact. However, what was lacking was a comprehensive programme of adjustment to tackle the internal resource imbalances, raise investment and provide an adequate incentive framework for restructuring.

Macroeconomic adjustment to achieve sustained growth, investment, exports and employment, implies a complete change from current policy through three main elements: General macroeconomic policy reform, domestic de-regulation and trade liberalisation. Macroeconomic reform involves creating a conducive climate for investment, addressing the imbalances in public expenditure, reducing the fiscal deficit, increasing parastatal efficiency, and effecting appropriate debt management. Domestic de-regulation on the other hand, involves price de-control, labour market de-regulation and relaxation of urban and rural land rules. Trade liberalisation involves exchange rate adjustment, reduction of tariff barriers, and removal of the foreign exchange allocation system.

MACROECONOMIC REFORM

There are two basic approaches to macroeconomic reform. First, resources need to be directed away from non-productive to productive sectors. The 1980s approach of deficit financing is not consistent with adjustment for growth. Macroeconomic policies need to support the redirection of investment towards the productive sectors to achieve the objectives of maintaining financial sector stability, increasing productive investment, and ensuring balance of payments equilibrium.

Investment Promotion

A number of developments indicate that Government has been preparing the groundwork for structural adjustment for some time. A great deal of effort was put into investment promotion through the publication of the Investment Register, the

organisation of investment meetings in such places and London and Paris, establishment of the Zimbabwe Investment Centre (ZIC), and the signing of the Multilateral Investment Guarantee Agreement (MIGA). Recently, there has also been a concerted attempt to review the surplus/blocked funds issue since many projects coming through ZIC involve this issue.

Investment is central to the whole adjustment process. The constraints to investment in the 1980s derived from two broad factors. First, the incentive and regulatory system was weak and depended upon the rationing of foreign exchange for imported inputs. Secondly, there was the tendency by Government to invest heavily in the public sector but without allowing for the capitalisation of parastatals. The questions to be asked now are: How can a sharp rise and appropriate composition of investment be achieved and what sort of incentive system would bring this about? Further, such issues as permitting the economy to seek appropriate interest rates, reducing the budget deficit and determining optimum levels of taxation, need to be evaluated in the context of investment promotion.

Public Expenditure

There are two main requirements for the achievement of a balanced pattern of public expenditure in the context of structural adjustment. First, there is the need for steady and controlled growth in aggregate demand to support a balanced output growth and a reasonable external trade position. If demand expands the way it did in 1980-81, the result would be a huge increase in imports and the diversion of export production to the local market causing a trade deficit. On the other hand, if demand is too slow, as occurred in the drought period of 1982-84, this would result in a domestic market too weak for overall growth.

The general thrust would have to be towards realigning public expenditure in a way that reduces the deficit. Reducing current spending is central to adjustment and would result in reduced public sector borrowing thereby reducing pressure on aggregate expenditure growth while freeing resources required for productive investment. In terms of budget allocation, more emphasis would have to be put on current projects (*i.e.*, works-in-progress) rather than new projects in order to clear the backlog for projects in the pipeline. But in general, there would be a need to prioritize the investment portfolio to come up with a 'core investment programme' to be fully funded by Government. Selection of a core of high priority projects would have to be done on the basis of a range of economic criteria. These projects would have to be carefully monitored during implementation so that timely decisions could be made to change course or to scrap them.

Public sector expenditure was the main basis for implementing the policy of growth with equity. Thus 'targeted subsidies' will need to be considered which take into account the social dimensions of adjustment. It will be important to find ways of ensuring that the poorer and more vulnerable groups in society can, to the extent possible, be protected from bearing undue hardships resulting from the adjustment

programmes and be assisted in actively participating in the emerging economic opportunities brought about by the reforms.

Parastatal Efficiency

In the mid 1980s, Government began to examine ways of improving the efficiency of operating in parastatals. Government set up the Justice Smith Commission of Enquiry into parastatals in 1988 whose terms of reference included looking into the operations of agricultural parastatals. Efficiency studies on each of the Boards also were carried out in 1987. However, the findings have not been incorporated into an overall programme of adjustment for the sector.

Successful parastatal adjustment will require an improvement in parastatal efficiency. Some of the important actions in this area could have long gestation periods. Thus budgetary requirements for parastatal reform in the early stages could, in net terms, be such as to increase Government outlays to parastatals in the form of making good accumulated losses rather than adjustment of costs *per se*. However, there are a number of areas which will require further development. First, there is the question of the capitalisation of parastatals, *i.e.*, giving them equality to participate in productive joint ventures with partners who can provide needed expertise. Second, there is the question of removing government controls of operation options and providing management with incentives to improve efficiency.

Debt Management

External borrowing will be an integral part of overall adjustment in order to support an increase in investment and growth. Zimbabwe will need a sustained capital inflow in the initial period of adjustment if resources are to be shifted into productive investment without squeezing current production and consumption too much. External borrowing will also be required. The extent of the borrowing (*i.e.*, the resource gap), will depend upon the level of projected export earnings and net capital inflows *vis-a-vis* foreign exchange requirements for imported inputs. However, Government should borrow mainly to generate productive investment.

Domestic De-Regulation

Government has already started changing its position regarding land rules. It recently moved to relax land rules by permitting title deeds at growth points. The whole question of land will become clearer once the land policy document has been completed. Another area that is likely to be the subject of change, is the labour market. Supportive labour policies can help to ensure that economic adjustment in Zimbabwe does not result in an anti-employment bias or a labour market that impedes adjustment. Some movement has taken place in the area of labour market de-control. Government is now allowing some form of collective bargaining in the determination of wage levels. However, one key issue central to adjustment must still be addressed. This is the issue of job security regulations which constrains both employment creation and labour mobility. In its current form, this regulation will

encourage capital-intensive approaches in production. If Government decides to relax this variable, options such as the use of protection schemes, *e.g.*, compensation or retraining which can encourage labour mobility and create efficiency in the labour market would need to be considered.

Trade Liberalisation

Trade liberalisation is another of the three pillars of structural adjustment. Government's concern with the efficiency of the existing import allocation system and its impact on industry, prompted consideration of the proposed trade liberalisation strategy. The main aim is to revitalise and expand industrial output, reduce costs to consumers and create employment.

The Zimbabwean economy has operated with many controls in the past 25 years including the foreign exchange allocation system, surcharges on imports, and tariffs. These controls support the development of an import substitution strategy with its attendant bias against exports. Thus, given the inherited foreign currency allocation system and the structure of the economy, trade liberalisation will have to be introduced with caution. Government has already indicated that the programme will be selective, gradual and phased over five years to allow weaker sectors, including those in agriculture, to adapt while being given initial protection. The whole process will involve putting emphasis on export promotion (*via* incentives), tariff rationalisation and reduction, and removal of non-tariff barriers. It will also involve reforming the foreign exchange allocation system which is a key issue in structural adjustment.

First Stage of Trade Liberalisation

The first stage of trade liberalisation will involve the substitution of the present system of foreign currency allocation, which is a quantity-based system, with a tariff-based system of production. Imports will be progressively freed, productive capacity modernised and producers prepared for external competition. In this first stage, which is to be a managed transition, export earnings will have to grow at a rate that will generate a supply of foreign currency sufficient to meet demand. In general, all goods will be freely importable subject only to a tariff. This will have wide-ranging effects, changing the structure of product and input prices, exposing firms to external competition and increasing domestic competition. It will have varying effects on different activities. The main beneficiaries in the agricultural sector will be exporters.

Within the overall trade liberalisation framework, the main areas of emphasis will be on the speed of adjustment, the phasing of quota removals, and the design of traditional and final tariff schedules. Gradual adjustment has the advantages of a more predictable macroeconomic situation and permitting costs to be assessed during the transition. However, it also has risks in terms of inefficient resource use and allowing the beneficiaries of protection to build up opposition to change. Phasing of quota removals can be done in three ways. First by making modifications

within the existing foreign currency allocation system to encourage economic restructuring prior to quota removal. This can be done by linking the current administered foreign currency allocations to an estimate of the economic efficiency of firms rather than to historical allocations. The problem with this approach is that the basis of information used may not be accurate. The second approach is putting the bulk of tariff items on the OGIL, then using the exchange rate and tariffs to compensate for the initial shock. This has the advantage of immediately introducing external compensation. A third approach is that of gradually removing quotas, e.g., putting about 20 percent of tariff items each year for five years onto OGIL. The main advantage of this approach is that of gradually moving away from the present system. But it involves difficult issues of sequencing and delays putting tariff items for the least viable sectors onto OGIL.

The design of the tariff schedule should be to provide initial protection to the vulnerable sectors before they can effectively compete with the rest of the world. The degree of protection should be just "adequate" and not "excessive". The tariff schedule should also adhere to GATT rules and take the PTA dimension into account. There should also be constant reviews of the tariff rates with a view to reducing them further to prevent excessive profits or high production costs.

Second Stage of Trade Liberalisation

The second stage of trade liberalisation will overlap with the first. It will involve complementing and supplementing the reforms introduced in the first phase as well as implementing a monitoring and evaluation mechanism. This way, there would be room for corrective measures to be taken where appropriate.

The success of trade liberalisation will depend on the ability of the programme to finance itself. However, it is important to note that the overall package of structural adjustment will determine the finances available for the initial part of the trade liberalisation programme. The key to successful trade liberalisation is to what extent the programme will generate export growth, new investment or re-investment of funds that would otherwise have been remitted abroad.

THE COSTS AND BENEFITS OF ADJUSTMENT

In discussing the costs of adjustment, it must be recognised at the outset that many countries decide to adjust when their Balance of Payments situation has become unsustainable. Balance of payments difficulties reflect imbalances in the economy particularly when a country maintains a level and structure of aggregate demand together with an associated set of product and factor prices that are not compatible with its productive capacity. While imbalances may be supported for a time through external borrowing (as happened in Zimbabwe in the mid-1980s), continued reliance on such borrowing results in a debt burden of unmanageable proportions. The ensuing debt-servicing difficulties may, in turn, lead to reduced access to or even withdrawal of foreign funds, thus harming the growth prospects. In this situation,

an adjustment process that limits expenditures to financial resources available is inevitable.

The underlying factors contributing to balance of payments difficulties vary from country to country. In the case of Zimbabwe with its periods of excessive domestic demand, adjustment policies including financial and monetary measures, were implemented to bring the level and growth rate of demand into line with the level and growth rate of productive capacity. Excess demand stems mainly from the public sector which dominates total investment in the economy. Thus the adjustment programme will require public sector savings. When imbalances are attributable to inadequate growth in supply due to structural weaknesses caused by price distortions in the economy, adjustment policies would aim to improve resource allocation so as to strengthen the productive base of the economy.

Adjustment will involve a reduction in aggregate demand. Thus there will be changes in relative factor and product prices and a shift in resource allocation. This will mean reduced consumption and some labour mobility. However, these costs need to be measured against the costs of not adjusting. When adjustment is postponed, distortions become entrenched and it becomes increasingly costly to rectify. Further, where adjustment is delayed too long, it will eventually occur through a forced reduction in imports or other crisis measures not consistent with longer-term development.

PART II AGRICULTURAL PRICING POLICY IN ZIMBABWE

INTRODUCTION:

Agricultural Policy Objectives and Requirements

The prices that are set for the controlled agricultural products are the focus of the major discussions on agricultural policy between the government and the farm unions.

The annual farm review and the consequential government decisions on farm prices embody major policy decisions each year in the implementation of the objectives of the Governments' national agricultural policy. These policy objectives can be summarised briefly as:

- o to increase food production in order to ensure food security for our growing urban and rural population;
- o to sustain and expand employment in the agricultural sector;

- o to improve the net balance of payments by both increasing earnings from agricultural exports and reducing food import requirements;
- o to improve the living standards of farm families, particularly the families of communal, resettlement and small scale commercial farmers;
- o to generate higher rates of economic growth for the national economy as a whole, since agricultural growth has major multiplier benefits for other sectors;
- o to provide a regular supply of raw materials for our domestic manufacturing industry.

All these objectives are of major importance and are being realised to a significant degree. There is, however, scope for further development that will enable the agricultural sector to achieve the government's policy objectives to a greater extent. It is necessary to take account of both the growth of the national population and the need to improve the overall nutritional standards in the country. Many of the rural people are living at standards which are close to and even below the poverty line and the need to improve the living standards of some of the poorest people in Zimbabwe is at the heart of the government's current economic and social policy. This policy of improving living standards must continue to take cognisance of the need to expand employment in rural areas, which will have immediate benefits in terms of relieving the pressure of unemployed rural people moving into the towns and cities. The benefits of increased agricultural production are not confined to the farmers and their families. The spin off or multiplier effects of increased farm output on the growth in the economy as a whole have proved to be of major importance in Zimbabwe in 1988 when the upsurge in the economy was triggered by the much improved agricultural performance.

Increased farm output will result in additional earnings of foreign exchange, either from sales of unprocessed products or, of growing importance, in the form of more highly processed products. The incorporation of value-added activities in the export realisations is of major benefit, but it is not a substitute for the need to generate a higher total volume of agricultural exports. There are also significant opportunities to improve the balance of payments by replacing imported food, *e.g.*, wheat, with domestically produced supplies, particularly as producer prices in Zimbabwe for products such as wheat are substantially below the costs of importing these products.

Factors Which Determine Agricultural Prices

Decisions on producer prices must take account of and provide a balance among a wide variety of factors. While the importance of the different factors varies as between individual crops and livestock, there is nevertheless, a considerable degree of consistency across the different products. One of the major issues which has been of prime importance is the need for continuity in the government's producer price

policy from one year to the next. This requires that producer prices be set in the context of the trends in demand and supply for the product concerned including realistic projections of these trends over the coming few years. The fact that a product may be in temporary shortage or surplus may be important in determining the deviation from the general price trend in any particular year. However, producer prices determined by the government should not reflect over-reaction to purely short term factors. Annual price changes are more effective if they are of a regular and relatively small character rather than irregular and relatively large.

As previously mentioned, decisions on prices should reflect the level of consumer demand and the supply response by producers. Products which are in strong demand but for which there is a supply shortage such as soyabeans and wheat, justify higher price increases than those which are currently in surplus with high stocks such as maize. Only in this way will it be possible to meet the food needs of ordinary consumers in Zimbabwe. At the same time producer price increases must be reflected in higher wholesale and retail selling prices if further marketing board deficits are to be avoided. For products primarily for the export market, such as cotton, the same underlying policy is required -- the prices should be fixed in relation to the trend in expected export realisations but not necessarily fixed solely in relation to export prices in any one particular year.

The problem of surpluses is relevant only in the case of maize, as surplus stocks of sorghum and millets are being brought under control following the announcement in September 1989 of adjustments in the government's grain strategy. For other products the predominant factor is the need to encourage expansion of output to meet increased domestic demand and realistic export opportunities. This is particularly relevant in the case of wheat, oilseed crops and cotton, as the price recommendations for 1990-91 in relation to these products reflects. There is a very strong demand for bread and even the record 1989 wheat crop was insufficient to meet this demand. In the case of oilseed crops -- soyabeans, sunflower seeds and groundnuts -- the current level of production is not adequate to meet domestic requirements.

The level of prices must also take account of the higher production costs that have to be borne by farmers. Over the past decade, increases in producer prices have not kept pace with inflation and, in real terms (*i.e.*, prices deflated by the CSO Consumer Price Index) farm prices have declined.

Considerable emphasis has been given by the farming unions to their cost of production models and the profitability of various crops in relation to the level of variable costs. Production costs relative to prices received are important in estimating of the level of supply response of any particular crop or category of livestock, but they are not the overriding factor. The levels of consumer demand, the ability of consumers to absorb increased retail prices and the overall stock situation are also of major significance.

Decisions on producer and selling prices must also take into account the financial situation for the four marketing boards. It is a matter of serious concern that the much improved outlook of a few months ago has been reversed and the current financial position of the marketing boards is no better than at this time last year. There is serious need to reduce the prospective level of deficits in order to free up financial resources for development oriented investments.

Effects of Macro-Economic Policies

Output, incomes and export earnings in the agricultural sector depend on the level of producer prices determined by the government, the increases in farm costs, efficiency of production at farm level and the consequences of the government's major macro-economic policies. The question of the effects of the broader economic policies followed by the government in the agricultural sector often tends to be overshadowed by the consideration of direct agricultural policy measures, particularly the decisions on producer prices. The agricultural sector has very close links with the rest of the economy. As a result, government decisions taken elsewhere have a major impact on farm production and farmer incomes. This impact is often greater than that of producer prices and other agriculture-sector policies.

The most important macro-economic issues for the farm sector are exchange rates and trade policy. Farmers are by far Zimbabwe's most important foreign exchange earners' accounting for 45 percent of all exports while using less than one tenth of imports. Over a third of all farm income is earned by exports; thus the exchange rate is perhaps the single most important determinant of net farm earnings.

Depreciation of the Zimbabwe dollar tends to increase prices paid for exports, thus boosting farm incomes. Depreciation simultaneously raises the prices of imported inputs but these items, such as chemicals or mechanical spares, are not large components of farm budgets: their quality and availability is usually more important than their price. The combination of exchange rate depreciation (giving higher Z\$ prices for both exports and imports), and liberalization of trade controls (making imports more widely available, although at a higher price), is therefore very important to the health of the farm sector. Encouraging steps have already been taken in this direction, and many farmers have responded with expanded production and even greater net foreign earnings. Export promotion however, has been focused on the large-scale commercial sector. A remaining challenge is to spread the benefits more widely through higher prices and better marketing opportunities for cotton, oilseeds and other exportable small farm products.

A second major link between the macro-economy and agriculture is through wages and employment policy. This has a particular significance for communal farmers. In Zimbabwe, urban minimum wages are three times the value of the average communal family's production. These minimum wage levels combined with current job security legislation, have prevented urban employment from growing significantly since independence. Young people and new families are having to remain in the

communal areas, reducing the available area per person and pushing down per capita production and incomes. Expanding off-farm employment through more flexible employment arrangements and other means, would contribute greatly to improving communal farm living standards.

In sum, the health of the agricultural sector is closely linked to that of the rest of the economy. It is not possible to improve agricultural prices and incomes without simultaneously affecting other sectors, and vice-versa. An equitable balance must be sought between the sectors. In trade, this balance requires fair treatment for agriculture through a realistic exchange rate and reasonable access to imported inputs; in employment policy, it requires more equal treatment of urban and rural workers. While producer price policy has a major impact on the crop mix and year-to-year production levels, overall farm income is strongly affected by macro-economic policy and appropriate policies are necessary for agricultural growth.

Transport is another policy area which has major effects on the development of the agricultural sector. Movement of grain particularly from the communal areas continues to be seriously affected by shortages of suitable vehicles. The issue of the poor feeder roads in some areas is an aspect which needs to be addressed. The movement of agricultural exports is another area of concern, particularly as it relates to maize and cotton lint.

The Determination of Farm Prices in Zimbabwe

The intricacies involved in producer pricing policies, the timing of announcements and indeed the whole question of subsidies, may not be fully appreciated. The price fixing procedure for controlled products begins with discussions between producer organisations and the Economic Policy Committee of the Agricultural Marketing Authority (AMA). Producers are also represented on the advisory committees of the four statutory marketing boards - the Dairy Marketing Board, Cotton Marketing Board, Grain Marketing Board and Cold Storage Commission. For each commodity a forecast is made about the state of the trading account at the end of the following production season. This forecast of the trading account reflects expected income from local and export sales as well as estimated expenditure on purchases, transport, handling and storage.

After these discussions the AMA presents its producer price recommendations to the Ministry, which then negotiates with producer organisations. Various consultations take place within the Ministry before recommendations on the various producer prices are forwarded to the working party of senior officials of the Ministerial Economic Co-ordination Committee (MECC). This working party has the power to modify the recommendations made by the Ministry before they are submitted to MECC, a committee composed of Ministers of all the economic Ministries. Finally, MECC makes recommendations to The Cabinet which ultimately makes the final decision on both producer and consumer prices for all controlled commodities.

Part of the problem experienced in the timely announcement of producer prices is associated with the fact that in order to determine the local selling price recommendations, the likely level of the Board's costs must be known. In turn, the Board needs to know the estimated levels of intake and disposal before they can calculate the relevant costs at given producer prices and local selling prices. Intake and disposal estimates are provided by the Crop Forecasting Committee. This committee can only determine the forecast in March each year. As a result, a very tight schedule is faced in completing price recommendations, advising the Ministry of Industry and Commerce of our proposals in order for them to prepare a paper on retail selling prices and for both papers to proceed through the various committees of Government for approval.

The announcement of prescribed prices is usually made in an atmosphere of great and varying expectations from farmers and interested parties. Reactions from farmers often range from "completely disappointing" to "satisfactory" or "encouraging", depending on the crop and the magnitude of the proportionate change from the previous year's prices. For example, maize producers welcomed the 1989-90 price increase of nearly ten percent as "fair-to average", yet they had expressed disappointment on the previous year's eight percent increase.

Issues for Further Consideration

There can be endless discussion on whether the price for a particular controlled product was fixed at the right level at the last price review -- or the one before that or even the one before that. Similarly there can be, and no doubt will be, considerable discussion on the appropriate price for each controlled product before prices are decided next year and in subsequent years. The issue of pre or post planting prices can also be a source of long, and not necessarily constructive, discussion.

There are, however, some issues which could be usefully considered in terms of underlying principles of present pricing policies, and which are not just a matter of the particular figure for the 1991-92 year. Three issues are:

- (1) Should seasonally or territorial variable pricing arrangements be implemented?
- (2) Should targeted producer or consumer subsidies be adopted, rather than uniform pricing arrangements?
- (3) Would 2-tier pricing arrangements lead to a greater realisation of the government's agricultural policy objectives?

No doubt there are other issues which can be considered and proposals would be welcome. However it is suggested that attention be focussed on the three issues identified above.

Seasonally and Territorial Variable Prices

The issue of pan seasonal and pan territorial pricing arrangements has been considered on a number of previous occasions. There are two key questions to be resolved. In principle, would the potential benefits outweigh the disadvantages that are likely to arise? Secondly, can an effective system of implementation be worked out and put into effect that would capture the potential benefits while minimising disadvantages?

The benefit of seasonally variable prices is that they would encourage farmers to retain crops and store them on their own farms, thus reducing storage costs for the marketing boards. In practice, the only board involved would be the GMB, as seasonally variable pricing arrangements already arise with the DMB and CSC and are less likely to be important in the case of cotton. A second benefit is that seasonally variable pricing would ease the pressure on the limited facilities for transporting grain and oilseeds from farm to depots as intake would be spread over a longer period. Thirdly, seasonally varying prices might encourage storage for subsequent local consumption in the area of production.

There are however important disadvantages: on-farm storage is less efficient than organised bulk storage arrangements in terms of control of post harvest losses from pests and other causes of loss or deterioration. Seasonally variable prices would also mean that farmers most in need of cash for family and other purposes would be at a serious disadvantage as they would sell at the earliest time and receive the lowest seasonal prices.

Furthermore it is not clear whether seasonal variations in pricing and, consequently longer delivery periods, would enable the GMB to plan its marketing strategy in a more effective way. At present the GMB has a clear indication relatively early on in the marketing year as to the quantities that will be delivered in the course of the year. With seasonally variable pricing the volume to be delivered may not be clear until well into the marketing year.

The balance of advantages as between uniform and variable seasonal prices is not evident. The balance could well vary from year to year depending on supply and demand levels in any particular year. There appears to be no generally agreed view as to whether it would be desirable to introduce seasonal prices for grain or oilseeds. This is an issue on which further discussion might be beneficial as well as some detailed research work into the magnitude of the potential costs and benefits.

Variable pricing according to location would seem to offer more clearly identifiable benefits, at least in principle. It seems most likely that, in the absence of government intervention in determining location uniform prices for grain and oilseeds, prices in deficit consumption areas would be higher than in the areas of surplus production. This would encourage greater supply in the deficit areas and at the same time lead to some alternative cropping in the surplus areas. The amount of the appropriate price differentials involved depends on the costs of transporting

grain between the two areas. This would lead, theoretically, to a better use of the total resources that are involved in production in Zimbabwe.

There are however two complications that have to be considered. Could an effective system of pricing be derived that would achieve the theoretical benefits of better utilisation of production resources in crop output? Secondly, would there be any significant difficulties in implementing such a scheme in practice? There could be problems in determining the appropriate regional boundaries and price differentials that should apply. It might be preferable to consider a number of regions. Large price differences between just two regions could result in undesirable effects in terms of the changes in rates of intake at different depots. As in the case of seasonally varying prices, it would be useful if a detailed study were to be made that would generate a model in which alternative scenarios could be evaluated.

The second pricing proposal which has been advocated on a number of occasions, is the targeting of producer or consumer subsidies in order to achieve a more effective use of government funds used to offset the marketing board deficits. It is difficult to find persuasive arguments, at least in principle, against the view that if the government is to provide consumer or producer subsidies, then these should go to the least well off consumers or producers and that the better off should not receive income transfers in their favour. There are however some major obstacles to effective subsidy targeting.

The first problem is to determine who the present payments to the marketing boards actually benefit. Are they consumer subsidies, producer subsidies or subsidies to the employees and other beneficiaries of marketing boards expenditures or some combination of all the three? In the case of the producer benefits it would be possible to make some direct estimates on the basis of current border prices of tradable agricultural products, particularly maize, other grains and cotton lint, but in the case of fresh milk and beef, border price comparisons run into major complications. However, estimating reasonably precise current border prices is far from straightforward, even for grains and cotton lint. The prices of potentially imported farm products are themselves affected by the actions of other governments in providing export subsidies and other support measures for their own agricultural sectors; these actions often constitute large distortions from a genuinely competitive market price for farm products. Perhaps the current GATT round will eventually sort this out, but it would be unwise to rely on such an outcome in the foreseeable future.

On the assumption that the marketing boards' large financial deficits are to a large extent the consequence of substantial subsidies to either consumers or producers, then the question is whether it is appropriate for these to be given to all producers or all consumers, or whether effective steps can be taken to direct such subsidies to lower income groups. It is unlikely that there would be serious objections in principle to a policy directed towards this end, but there are considerable operational problems to be overcome before such objectives could be realised.

- (1) Can the target group be clearly identified in such a way that the boundary between this group and the non-target group is clear and unmistakable?
- (2) Could the targeted subsidies benefit the most needy within the target group, or would they end up supporting the most prosperous within that group, with little benefit to the least prosperous? Are income supports which are targeted through the price mechanism an appropriate and effective form of income transfers?
- (3) Can the payments to the target group be made in such a way that the benefits really do accrue to this group, with no major leakages of the benefits to other groups?
- (4) Is the proportion of the present subsidies going to the non-target group of sufficient size to release a worthwhile volume of recoveries to be used either to cut the marketing boards deficits or to increase the subsidy benefits to the target group?
- (5) Would the withdrawal of subsidies from the non-target group have adverse economic consequences which would outweigh the benefits from a reduction in marketing boards deficits (or higher subsidies to the targeted groups)? This may be of particular relevance if shadow prices are used in estimating costs and benefits on subsidy changes.

These issues are not easy to resolve. There are no clear cut answers either positive or negative. We need detailed, objective and carefully organised research work on the likely outcome of a policy of targeted subsidies for the different agricultural products. If, for any product, there was a reasonably clear cut benefit from the adoption of such a policy, then it would be possible to recommend to government that their agricultural and food pricing policy be adjusted to generate the net benefits that have been estimated. It would not be necessary to adopt such a policy for all subsidies at one time; a step by step approach could be adopted in which the lessons from the initial steps could be integrated into the subsequent ones.

A third issue that has been raised in relation to agricultural pricing policy is that of a two-tier pricing system. This has been recommended for milk and for maize, but not actually implemented (in the case of milk the concept has been accepted but circumstances have so far led to the deferment of its implementation). Multi-tier pricing proposals are based on a number of objectives, including the targeting on subsidies as discussed above, the restriction of entry of new producers and manipulation of the market to generate returns above competitive market levels.

One problem with such pricing systems is only too obvious in Zimbabwe. After much discussion and negotiation, a detailed two-tier pricing system was agreed for milk in 1988 and approved by government. Owing to changes in the rate of supply increases following this agreement, this system has never been brought into operation. In other words multi-tier pricing arrangements tend to be considered in

terms of particular supply/demand situations and, as these situations change, so does the support for and benefits from such pricing arrangements.

Where the effect of multi-tier pricing would primarily be concerned with the beneficiaries of the subsidy element in the prices, then the questions set out above need to be addressed. Where the effects of a multi-tier price system would bear heavily on the non subsidized elements, such a system would result in distortions to the market in favour of an existing group of producers. In the case of the dairy sector, the implementation of the two-tier pricing arrangements, as set out in the document "Blueprint of Zimbabwe's Dairy Industry", would almost certainly result in a sharp reduction in the volume of milk for processing, and could well lead to potential milk supply problems for the new Chitungwiza factory. It is of significance that the producer prices awarded by government over the past two years have been above that which would have been paid had the proposed pricing arrangements, as set out in the Dairy Blue Print actually operated. It is therefore essential that the likely consequences of multi-tier pricing arrangements be taken fully into account before any such system is implemented.

As the supply and demand situation for farm products is liable to change much more quickly than is sometimes anticipated, the introduction of multi-tier pricing systems may in practice have quite different effects to those which were intended. Moreover it is not desirable to have frequent changes in the prevailing pricing systems. Even though it may appear beneficial in the short term to introduce changes, it is the medium to long term effects which must be the determining factors. These long term issues give rise to the very complex problems of forecasting the supply/demand balance for a number of years ahead.

CONCLUSIONS

It would clearly be beneficial to undertake detailed research on the different proposals for changing the present pricing system for farm products, provided this is within the basic parameters of government policy on controlled producer prices. There has to be a clear indication that adjustments in the present system would be beneficial in economic and or social terms for changes to be made; it would be inappropriate for government to launch into experiments with very uncertain outcomes. We need well researched ideas which can demonstrate clear economic and social outcomes and which are practical in terms of the day to day implementation. There is a great deal of criticism of government pricing policy ranging from comments about "our obscure pricing policy" to remarks about failure to take account of all the factors critics see as relevant. Satisfying those who want to see producer prices increased while simultaneously reducing inflation and cutting the subsidies to the agricultural marketing boards is unlikely. However, constructive, well formulated and well researched proposals are always welcome, provided they take full account of the basic objectives of the government's economic and social policies or include suggestions for changes in these parameters themselves.

Agricultural Growth And National Food Security

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and J. Govereh.⁴*

INTRODUCTION

Zimbabwe experienced rapid growth in smallholder maize production during the first five years of independence. The country mounted record maize stocks and became a consistent maize exporter. Yet the majority of small farmers based in semi-arid regions remain food insecure.

The post-independence gains were largely derived from a technological and institutional base originally constructed to serve large-scale commercial farmers. Most of these farmers operate in higher rainfall regions. Correspondingly, small farmers in higher rainfall zones derived the largest share of post-independence crop yield and income advances. Most small farmers living in low rainfall and drought prone areas benefitted little.

The period of growth in smallholder maize production has now ended. Evidence suggests the easy gains from initially expanding technological and market support for small farmers have been achieved. Yet most available technologies remain ill-suited to the country's extensive semi-arid regions. Input markets are limited and efforts to extend national buying facilities to these regions have proved costly.

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Large national maize stocks have allowed the maintenance of annual drought relief programs. These have offered the transitory semblance of food security. However, new agricultural development strategies are needed to provide consistent food access to the majority of small farmers living in low rainfall regions. Only a more broadly based foundation of sustainable economic growth can offer long run food security to all population groups.

This paper highlights the limits to post-independence agricultural growth through a review of key aggregate production statistics and a disaggregated picture of the incidence of these trends. Analysis of the results of four detailed surveys of smallholder decision making and farming practices⁵ allows examination of the distributive effects of public policy on the smallholder population. These surveys cover a cross-section of the country encompassing 12 communal areas in all eight Provinces. The paper concludes by identifying several options for establishing a sustainable basis for food security and income growth in the nation's semi-arid regions.

POST-INDEPENDENCE AGRICULTURAL GROWTH

Maize production doubled in Zimbabwe between 1980 and 1985. Production from the smallholder farming areas⁶ roughly tripled (Figure 1).⁷ One-half of this gain was sold through formal market channels to the Grain Marketing Board (GMB). As a result, the GMB's maize stocks rose to record levels equivalent to 2.5 times the average annual level of domestic market demand (industry and drought relief program purchases). Despite persistent drought, Zimbabwe was able to maintain food self-sufficiency.⁸ Higher maize retentions contributed to greater household maize consumption.

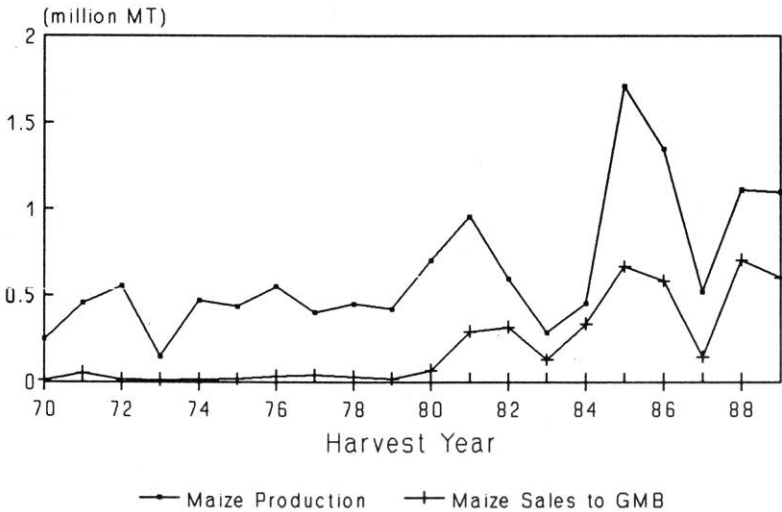
This remarkable achievement gave Zimbabwe prominence as a success story in African agricultural development. Instead of searching for low cost food imports, Zimbabwe was seeking opportunities to export grain. Particular significance was attached to the contributions of small farmers.

⁵These surveys were conducted by each of the authors of this paper between 1985 and 1989. They are herein collectively referred to as the Zimbabwe Surveys.

⁶Communal Areas and Resettlement Schemes. Note that this does *not* include small-scale commercial farms. In other analyses of agriculture in Zimbabwe, these are sometimes identified as smallholders. But the average size of small-scale commercial farms is 125 hectares. Communal farms tend to average around five hectares of arable land.

⁷The aggregate data for smallholder production, grain sales, fertilizer use, credit use, grain prices and input prices have been drawn from a SADCC/ICRISAT database which updates Rohrbach (1988). In most cases this will simply be identified as SADCC/ICRISAT (1990).

⁸Limited maize imports were required only in 1984.

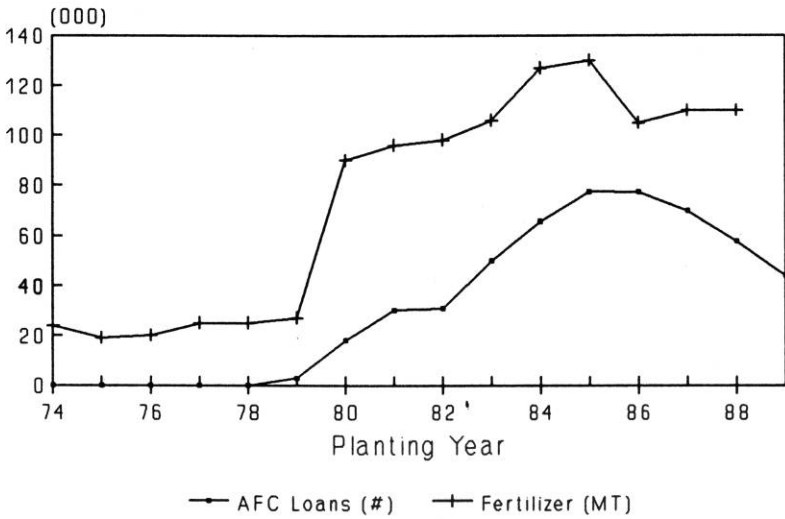


Source: SADCC/ICRISAT (1990).

Figure 1. Zimbabwe: Smallholder Maize Production and Sales to the Grain Marketing Board, 1970-1989.

The stimulus to this growth came from a dramatic change in the structure of agricultural opportunities and incentives facing small farmers. Improved production technologies were readily available. Improved input availability and expanded product markets increased the profitability of commercialized small farm maize production.

Agricultural credit first became available to small farmers just before independence. By 1985, over 77 000 small-scale loans were being granted for almost Z\$40 million (Figure 2). Fertilizer sales to small farmers increased from 27 000 to 130 000 metric tonnes between 1979 and 1985. Sales of hybrid maize seed rose almost fivefold. In 1979, the GMB operated four buying points in the smallholder farming areas. By 1985, the GMB had established 13 permanent depots and 135 temporary collection points. Private sector input suppliers actively marketed their products in the small farm areas, running on-farm demonstration plots and offering supplementary extension support. The government optimistically predicted a seven to eight percent average annual growth rate in agricultural output from the smallholder sector (GRZ, 1986:25).



Source: SADCC/ICRISAT (1990)

Figure 2. Zimbabwe: Smallholder Fertilizer Purchases and AFC Loan Disbursements, 1974-1989.

LIMITS TO GROWTH

The rapid post-independence growth in smallholder maize production has now ended. Production levels peaked at 1.7 million metric tons with the 1985 harvests. During the four following years, production levels remained below 1.35 million Mt. Smallholder maize yields similarly peaked in 1985. Smallholder maize deliveries to the GMB have remained roughly constant. In effect, per capita production levels and market deliveries have fallen.

The sale of improved agricultural inputs to small farmers has also declined. Fertilizer sales lie 15 percent below the levels achieved in 1985. Only 44 000 small farmers received loans during the 1989-90 cropping season, a decline of over 40 percent from the 1985 peak levels. Despite inflation, the total value of these loans had declined to Z\$33 million. One reason for the decline in loan disbursements is the failure of many small farmers to repay past debts. The Agricultural Finance Corporation (AFC) is struggling with a large debt on the smallholder credit account. The GMB similarly found the 1985 expansion of marketing facilities costly and unsustainable. Seventeen additional grain buying depots have been established. But

the number of temporary collection points has dropped (in 1989) to 42. Even so, the GMB also faces large debts on its grain trading accounts.

One reason for the slowing of the growth in smallholder maize production is the decline in the profitability of the maize enterprise. Maize producer prices increased by 20 percent between 1985 and 1989. But basal maize fertilizer prices (compound D) increased by 63 percent. The price of the standard maize top dressing increased by 55 percent. The costs of grain transport have also commonly risen by more than 50 percent.

Large-scale commercial farmers have responded to this loss of profitability by broadly shifting land out of maize production. These farmers have reduced their maize production and market deliveries by more than 40 percent. Small farmers have reduced their fertilizer use.

Further growth in smallholder maize production has also been limited by the lower returns to the expansion in the use of available technologies and agricultural market institutions in drier agro-ecological zones. Most current technologies and market agencies were originally designed to serve large-scale commercial farmers based in the higher rainfall zones. The extension of these technologies and institutions to serve small farmers with favorable agronomic positions brought rapid production growth. The expansion of these programs and markets in drier regions brought an increase in institutional debt.

HIGH VERSUS LOW RAINFALL AGRICULTURE

According to 1982 census estimates, only about 19 percent of all small farmers live in the high rainfall zones (Table 1) -- areas receiving a consistent supply of at least 750 mm of rainfall (Natural Regions I and II). Roughly 21 percent of small farmers live in medium potential areas receiving 650-800 mm of rainfall but subject to frequent mid-season dry spells (Natural Region III). Forty-two percent of small farmers live in areas receiving 450-650 mm of rainfall and frequently subject to dry spells and drought (Natural Region IV). Almost 18 percent of small farmers live in areas demarcated as inappropriate for crop production due to limited and inconsistent rainfall (Natural Region V). Regardless, these farmers consistently seek to grow their family food supplies.

The post-independence gains in small farm grain production were largely a phenomena of the higher rainfall regions. These gains were founded on improvements in maize productivity and the expansion of maize cropping systems. The maize technologies were primarily developed for Natural Regions I and II. Natural Region III is a transitional zone. In many years maize will do well, but farmers concerned about drought may be better off growing sorghum. In Natural Regions IV and V, farmers ought to face an advantage growing sorghum and pearl millet (mhunga). These crops are genetically more tolerant of drought.

Table 1.
Distribution of Smallholder Land and Population, 1982.

Natural Region	Average Annual Rainfall (mm)	Proportion of Smallholder Land	Proportion of Smallholder Population
I	1 000 +	0.9	1.8
II	800 - 1 000	7.8	17.6
III	650 - 800	17.2	21.3
IV	450 - 650	44.9	41.5
V	<450	29.2	17.8

Source: Rohrbach (1988), SADCC/ICRISAT (1990).

Before 1980, national priorities placed little value on the development of technologies for producing sorghum and millet in the semi-arid zones. Sorghum varieties and hybrids developed for malting were imported from South Africa and planted by commercial farmers in Natural Region III. These largely satisfied the domestic brewing industry. Virtually no interest was apparent in breeding food quality sorghums or millet or in the promotion of sorghum and millet production in the smallholder farming areas.

The lack of interest in sorghum and millet technologies and strong national maize breeding program led farmers throughout the country to view maize as their major staple. Farmers in Natural Region III virtually universally grow maize. While sorghum and millet remain important crops in parts of Natural Regions IV and V, many of these farmers now allocate a large share of their land to maize.

The transition to a maize-based cropping system in many semi-arid regions has occurred over a three to five decade period. The reasons for this transition are multiple: extension support has historically promoted maize, maize is easier to process, maize requires less labor and maize is less subject to bird damage. Most significantly, investments in maize research have yielded short season maize hybrids which compare favorably with unimproved sorghum and millet. As a result, maize generally yields better than sorghum or millet except under the most severe drought conditions. Correspondingly, small farmers have almost universally adopted maize hybrids.

In effect, a technology development and promotion system was constructed for maize which was not available for the competing small grain crops. The decision to invest in developing maize production systems was a logical reflection of the desire to maximize the apparent returns on research and extension resources. But the

failure to develop and promote improved sorghum and millet technologies left the majority of small farmers in Zimbabwe with only limited investment options. These farmers could adopt the improved maize technologies, remain subsistence sorghum and millet producers or move out of agriculture. Often, a combination of these strategies has been pursued.

The lack of research interest in improving production systems for food quality sorghum and millet is simply indicative of a broader failure in the development of semi-arid crop and livestock systems for small farmers. The strong post-independence growth of smallholder agriculture as a whole has deflected attention from the extensive and consistent reliance of a large proportion of small farmers on public food distribution programs. This dependence will continue without major new strategies to stimulate growth in the productivity of agriculture in the nation's semi-arid regions.

THE COMMERCIALIZATION OF SMALLHOLDER PRODUCTION

The distributive impact of the post-independence maize based development strategy is highlighted in the results of recent farm survey investigations (Table 2). The majority of households in higher rainfall areas are selling grain. Most in drier regions do not. The dominant share of grain sales made by farmers in the higher rainfall regions are to the GMB⁹. Over 80 percent of farm households in Mangwende, for example, have sold grain to the GMB. The average size of these sales in 1985 was 3.2 Mt per household. Most sales made by households in the drier regions are to other farm households. Only four percent of the households in Nata and Semukwe have ever marketed crops to the GMB either directly or indirectly (through cooperatives or approved buyers). No household in the Ramakwebane or Binga samples has ever sold grain to the Grain Marketing Board.

While most farm households in the country use hybrid seed¹⁰, only farmers in high potential areas tend to use fertilizer. Households in high potential areas are also more likely to receive agricultural credit and extension advice. Two-thirds of all farm households in the Mangwende sample received credit by 1986, though many no longer participate in AFC programs. Though a small number of farmers in the lower rainfall areas have received credit in the past, few still received loans at the time of the surveys.

⁹Either direct to depot, through collection points, cooperatives or approved buyers.

¹⁰Actual percentages may be higher if recycled hybrid seed (hybrids harvested and replanted) has been identified as non-hybrid grain.

Table 2.
Distribution of Agricultural Production Indicators.

Communal Area	Proportion of Smallholder Households					
	Natural Region	Selling Grain	Using Hybrid Seed	Applying Fertilizer	Receiving Credit	Receiving Extension Advice
High Rainfall						
Hurungwe	II-III	90.9	97.6	74.1	38.6	n.a
Mangwende	II	83.0	100.0	84.0	37.0	53.4
Bushu	II	61.8	83.3	95.6	25.0	n.a
Medium Rainfall						
Buhera	II-IV	72.9	n.a	n.a	n.a	n.a
Mudzi/Mutoko	III-IV	47.8	n.a	n.a	n.a	n.a
Chibi	IV	14.0	100.0	12.9	5.0	26.4
Ramakwebane	IV	60.4	97.8	8.3	4.2a/	14.6a/
Nata	IV	33.3	97.9	20.8	0.0a/	6.3a/
Low Rainfall						
Mazvihwa	V	37.5	100.0	0.0	6.3a/	14.6a/
Semukwe	V	64.6	100.0	10.4	6.3a/	10.4a/
Binga	V	36.8	33.3	0.0	0.0	n.a

a/ percent of farmers who have ever received credit or extension advice.

Source: Zimbabwe Surveys

If the survey results roughly match the distribution of agricultural support and commercial activity in the larger smallholder economy, the extent of participation in the post-independence agricultural growth can be estimated. These data suggest that during the late 1980's, over one-half of grain produced by the smallholder sector came from the 20 percent of farmers residing in higher rainfall zones (Table 3). Over 80 percent of smallholder grain deliveries to the Grain Marketing Board came from these high potential areas. These farmers account for roughly 75 percent of all grain fertilizer use in the smallholder sector and probably a larger proportion of the agricultural credit allocated for grain production.

Table 3.
Estimate of the Distribution of Participation in the Commercial Economy
by Smallholders Across Natural Regions

Natural Regions	High Potential I - II	Medium Potential III - IV	Low Potential V
Population	19.8%	61.0%	19.2%
Grain Production	50.3%	39.8%	9.9%
Grain sales	80.2%	16.9%	2.9%
Fertilizer	91.4%	8.4%	0.3%

Source: SADCC/ICRISAT (1990); Zimbabwe Surveys.

Distribution of Growth Within Natural Regions

The maldistribution of grain production across natural regions is mirrored by a similar skew in the distribution of production and market participation within natural regions. Regardless of rainfall levels and consistency, smallholder farming areas seem to have a similar distribution in production levels (Table 4). The top twenty percent (quintile) of producers account for 50-60 percent of each area's grain production. The bottom forty percent of each area's farmers account for only about ten percent of grain production. Every region has its relatively wealthier and poorer farmers. Farmers seem to have widely varying levels of productivity regardless of the rainfall regime. The average levels of wealth and productivity, however, are grossly different.

These relationships are roughly matched by the distribution of fertilizer use (Table 5). In high rainfall areas, where farmers face the greatest incentives to apply fertilizer, the skew in application is most limited. The top 20 percent of farmers use around forty percent of all fertilizer. But virtually all farmers tend to apply at least small quantities of this input. The producers of larger quantities of grain seem to use fertilizer more efficiently. They may be able to plough their fields earlier, provide more timely weeding or may employ more productive methods of fertilizer application.

Table 4.
Distribution of Grain Production Within a Sample of
Smallholder Farming Areas in Zimbabwe

Communal Area	Cropping Season	Population Grouping Distribution by Level of Production					
		Top 10%	Top 20%	2nd 20%	3rd 20%	4th 20%	5th 20%
High Rainfall							
Hurungwe	1985-86	39.0	58.4	21.3	12.3	6.3	2.5
Mangwende	1985-86	28.1	47.9	25.5	16.0	8.4	2.8
Bushu	1985-86	37.3	54.1	21.8	12.6	7.6	3.8
Medium Rainfall							
Buhera	1987-88	39.4	55.1	21.3	13.2	7.8	2.6
Mudzi/Mutoko	1987-88	32.3	49.2	23.3	15.1	9.2	3.1
Chibi	1985-86	46.7	65.1	16.1	10.4	6.4	2.0
Ramakwebane	1988-89	27.1	43.6	26.5	15.8	9.4	4.2
Nata	1988-89	30.3	47.8	21.9	15.8	10.2	4.7
Low Rainfall							
Mazvihwa	1988-89	31.1	49.1	27.3	13.6	6.6	3.3
Semukwe	1988-89	31.1	52.1	24.5	13.2	7.5	2.7
Binga	1985-86	22.7	38.7	24.0	15.9	13.4	7.8

Source: Zimbabwe Surveys.

As rainfall declines, the skew tends to increase. Few farmers use the input and even fewer use significant quantities. Application rates in the higher rainfall areas average 340-640 kg per household. In the medium rainfall zones rates of usage range from five to 30 kg per household. In Natural Region V, virtually no farmers use fertilizer.

The low rates of fertilizer use in the drier regions of the country present a stark contrast with extension recommendations commonly prescribing 150 to 200 kg per hectare (Natural Region IV). Small farmers are widely ignoring these recommendations. The limited proportion of farmers seeing extension staff indicates a lack of trust in extension recommendations as much as an indictment on the efforts of the extension agents.

Table 5.
Distribution of Fertilizer Use Within a Sample of
Smallholder Farming Areas of Zimbabwe

Communal Area	Cropping Season	Population Grouping Distribution by Level of Production					
		Top 10%	Top 20%	2nd 20%	3rd 20%	4th 20%	5th 20%
High Rainfall							
Hurungwe	1985-86	22.7	36.7	18.8	24.0	10.5	10.0
Mangwende	1985-86	30.0	47.9	27.8	16.0	6.4	1.9
Bushu	1985-86	20.2	36.0	22.9	20.3	11.3	13.5
Medium Rainfall							
Buhera							
Mudzi/Mutoko							
Chibi	1985-86	82.3	88.4	0.1	9.5	1.9	0.0
Ramakwebane	1988-89	60.4	69.1	0.0	13.1	17.8	0.0
Nata	1988-89	59.0	65.7	4.8	13.4	16.2	0.0
Low Rainfall							
Mazvihwa	1988-89	0.0	0.0	0.0	0.0	0.0	0.0
Semukwe	1988-89	84.4	88.6	10.5	0.8	0.0	0.0
Binga	1985-86	0.0	0.0	0.0	0.0	0.0	0.0

Source: Zimbabwe Surveys.

Virtually regardless of extension support, farmers in even the driest regions of the country have adopted hybrid maize seed. This technology seems to offer fairly consistent and readily evident returns at a low cost. Fertilizer, in contrast, is broadly perceived as expensive and highly risky. These data suggest the need to revise fertilizer recommendations to meet the needs of low resource, risk averse farmers.

Not surprisingly, producers of larger grain surpluses sell more grain (Table 6). In areas with greater grain sales, the top producing quintile accounts for 55 to 70 percent of total market deliveries. In a year of favorable rainfall, sales average 1.4 to 7 Mt per household in the sample communal areas. As the level of grain sales declines in a communal areas, the skew becomes less consistent. In the medium rainfall areas, gross average gross grain sales ranged from 115 to 475 kg per household. In the low rainfall areas grain sales ranged from an average 100 to 150 Kg per household. These were virtually all intra-village sales. Most of these households sold no grain. Virtually all were periodically net food buyers. Many, possibly the majority, were chronically food deficit.

Table 6.
Distribution of Grain Sales Within a Sample of
Smallholder Farming Areas of Zimbabwe

Communal Area	Cropping Season	Population Grouping Distribution by Level of Production					
		Top 10%	Top 20%	2nd 20%	3rd 20%	4th 20%	5th 20%
High Rainfall							
Hurungwe	1985-86	42.9	64.2	22.1	9.5	3.0	1.1
Mangwende	1985-86	31.9	53.7	26.9	14.0	5.4	0.4
Bushu	1985-86	50.8	70.8	22.1	6.4	0.3	0.5
Medium Rainfall							
Buhera	1987-88	67.1	82.6	11.7	4.7	1.0	0.0
Mudzi/Mutoko	1987-88	70.0	89.1	10.4	0.5	0.0	0.0
Chibi	1985-86	95.2	95.8	3.5	0.8	0.0	0.0
Ramakwebane	1988-89	14.9	36.1	32.3	18.3	11.9	6.9
Nata	1988-89	15.6	30.6	12.7	18.6	14.1	18.4
Low Rainfall							
Mazvihwa	1988-89	52.4	69.6	8.1	14.2	7.3	1.0
Semukwe	1988-89	9.7	28.6	25.9	19.0	14.3	12.2
Binga	1985-86	8.7	53.4	42.5	0.0	1.6	2.5

Source: Zimbabwe Surveys.

The Distributive Impact of Production Policy

If the skew in production and market patterns within the various smallholder farming areas is matched with the skew across communal areas, the distributive impact of national food policy begins to emerge. Twelve percent of Zimbabwe's small farmers account for 45 percent of smallholder grain production. Four percent of the nation's smallholders account for about 28 percent of all grain production. This skew becomes more extreme in poorer years.

Correspondingly, the top 12 percent of all grain producers account for over 75 percent of all grain sales. The largest four percent of grain producers account for over 50 percent of all grain sales.

A skew in the distribution of smallholder crop production and market participation should be expected. A skew of this magnitude may even be economically justified. Past investments in expanding input and product market systems and in promoting

the adoption of improved technologies have achieved high payoffs. The post-independence strategy of extending production and market support, particularly for farmers based in higher rainfall regions, was a tactic which appropriately exploited a set of highly favorable investment opportunities.

But the commercialization of agriculture in a wider cross-section of the smallholder economy will require a new set of strategies. Without these, most small farmers will face a rising incentive to migrate out of agriculture and the cost of drought relief programs will continue to mount.

EXTENDING THE LIMITS OF AGRICULTURAL GROWTH

In the short run, the food security of small farmers based in Zimbabwe's semi-arid regions may be derived from the establishment of a more efficient set of food distribution programs. Improved health care, water supplies and sanitation can enhance the efficient use of available food supplies. Market adjustments may facilitate the movement of grain from surplus to deficit regions, thus reducing the costs of grain purchases. In the long run, however, food security can only be achieved through the stimulation of agricultural growth in the low rainfall regions.

The principal requirement for extending the bounds of agricultural growth in the smallholder sector is the improvement in the productivity of land, labor and agricultural capital. Farmers throughout most of the country perceive the returns to investments in schooling to be substantially higher than the returns to investments in key agricultural inputs such as fertilizer. These investments are viewed as means to provide children with the opportunity to get off the farm and earn higher wages in the government or industrial sector.

Low returns to agricultural labor similarly discourage the allocation of time to crop or livestock production. Enterprise budget analyses identify labor returns as low as forty cents per manday in semi-arid cropping systems (Rohrbach, 1990; Masters, 1990). Higher value may be attached to the allocation of time in drinking beer. In comparison, unskilled, casual labor can earn formal sector wages of four to five dollars per day. Stack and Chopak (1990) and Hedden-Dunkhorst (forthcoming) reveal that households throughout the country earn significant shares of their income from off-farm sources. In drier regions of the country off-farm income often represents the principal cash source.

The post-independence growth in maize production clearly displayed the capacity and willingness of small farmers to invest in expanding their production when technologies were available and improvements in market access lowered input costs and improved product prices. In effect, the expansion of both input and product markets significantly improved production profitability. Improved profitability brought greater agricultural investment. Higher returns to land brought a large expansion of maize area. Higher returns to capital brought investments in more

hybrid seed and maize fertilizer. These investments were complemented by expanded use of farm labour.

In most parts of the country, however, suitable production technologies are still lacking. Farmers in the drier regions have turned to maize, a second best technology, because this is all that is available. The returns to investments in this technology are limited. The justification for expanding input and product markets into the semi-arid regions is correspondingly diminished.

Technological change is an essential precondition for agricultural development. The structure of incentives facing scientists and extension workers favor the concentration of efforts in higher rainfall regions. The payoffs to investing in the development and diffusion of technologies for high rainfall agriculture are more apparent and probable. Increasing the productivity of farm resources in semi-arid agriculture is a difficult task.

But these calculations may not adequately account for the losses associated with failing to promote technological change in the semi-arid regions. Ultimately, these costs must be measured in terms of food insecurity, poverty and a corresponding trend toward environmental degradation. Long term investments are required to resolve these constraints.

The post-independence growth in maize production has also displayed the importance of market development. Investments in market facilities and efforts to promote market participation were essential for increasing the profitability of technology adoption. Again, improved market access raised production incentives by increasing the returns to agricultural investments.

OPPORTUNITIES FOR PROMOTING SUSTAINABLE FOOD SECURITY

The slowing of national agricultural growth, clear evidence of the skewed distribution of post-independence gains and rising pressure to reduce the deficits of the GMB and AFC together argue for the construction of a new strategy for developing agriculture in the nation's semi-arid regions. This strategy should incorporate the development of new technologies and market services specifically attuned to the needs of low rainfall agriculture.

Improved Cropping Technologies

Extension workers are widely promoting the planting of sorghum and millet to replace less drought tolerant maize in the country's semi-arid regions. Official producer prices for sorghum and millet have been kept high in order to encourage the production of these crops and to support the incomes of small sorghum and millet producers. Despite these pressures, most small farmers in the low rainfall regions persist in growing maize.

In practice, official price announcements have been largely irrelevant to the vast majority of small farmers unable to grow a surplus. Further, many of those farmers who are able to produce a surplus in the semi-arid zones face local prices which are already high due to sub-regional grain deficits. Most sorghum and millet ultimately delivered to the GMB comes from a small minority of larger producers, many based in relatively high rainfall zones.

A more important reason for the continuing production of maize is that maize hybrids often yield more than available unimproved sorghum and millet varieties. Even the improved South African maize varieties available to farmers during the 1950's and 1960's seem to have often yielded more than available sorghums and millet. Further, maize provides a valuable source of food early in the harvest season because it can be consumed green.

A more effective means to encourage the production of grain crops which are relatively more drought tolerant than maize is to encourage the development, dissemination and adoption of improved cropping technologies. Recent indications suggest new varieties may be available which increase sorghum productivity at little cost.¹¹ Though officially released, few farmers have access to this seed. Greater efforts are required for seed multiplication and dissemination.

Extension agents need the resources to conduct demonstration trials. Currently, they have virtually no resources for such these experiments. Without such resources, the loss of credibility associated with an irrelevant set of past recommendations cannot be remedied.

Recent trials with a low cost treatment for nematodes show promise of significantly increasing average sorghum yields in semi-arid regions. These results merit immediate farm level testing for possible widespread dissemination.

The development of expensive large-scale irrigation systems has been commonly proposed as a means to promote greater food production in the semi-arid regions. These require heavy capital subsidies and are often inefficiently managed. Limited water supplies are clearly a principal constraint to production and income growth in the nation's drier regions. However, a broader and more economically efficient response may be to promote improved water harvesting technologies for dryland cropping systems.

Small farmers in the semi-arid regions have shown a determination to adopt new technologies when these offer a proven and steady return. The adoption of maize hybrids is evidence of this responsiveness. A more productive set of technologies for more drought tolerant crops simply need to be made readily available.

¹¹Two new sorghum varieties, SV1 and SV2, and a new pearl millet variety, RPMV1, have recently become available.

Livestock Systems

The semi-arid regions of Zimbabwe are particularly suited to livestock production. Yet most support for the livestock subsector in the form of improved technologies, animal health facilities and market infrastructure is geared toward larger commercial operations and to farmers in higher rainfall zones. These are geared toward farmers who have already decided to invest in livestock as a commercial enterprise. A new national strategy is needed to promote the establishment of a more commercialized, small-scale livestock production enterprise in the nation's semi-arid regions.

The simple demarcation of arable from grazing areas is inadequate. The subsidized establishment of grazing schemes has not proven a viable, long term, self-sustaining production system. Though smallholder land tenure systems may historically have been communally managed, crop and livestock production enterprises have consistently been operated by individual households. The pattern of smallholder agricultural investment has shown that farmers will invest heavily in clearing and improving individual crop plots allocated for life. Investments in livestock systems will probably also require an individualized land tenure system.

Renewed attention must be directed toward the identification of alternative livestock feeding systems. Again, it is highly unlikely that sustainable investments in improved feeding systems will be made on a communal basis. Without land tenure reform, some form of pen-feeding may be the only viable option. Past research on small-scale pen-feeding systems is extremely limited.

One option would be to allocate five to 10 hectares of grazing land to individual households and encourage the development of a forage-based grazing system. This might encompass pen-feeding as a final stage of fattening for the market. Facilitation of the development of a market in grazing rights would distribute income, or possibly animals themselves, to households without livestock. Owners living off the farm could be heavily taxed for their grazing rights. Extension strategies could promote stock control in the context of improved feeding and health care systems.

Efforts to extract older animals for slaughter at centralized facilities must be matched by the ready access to young stock. Efforts to promote destocking during periods of drought should be combined with efforts to facilitate restocking when the drought ends. Greater efforts are needed to improve calving rates and reduce livestock mortality.

Livestock commercialization strategies should not simply, or perhaps even primarily, focus on cattle. Sheep and goats are important income sources in many of the country's least developed regions. Smallstock are more commonly traded for food in years of drought.

Intra-rural Markets

Current market policy largely promotes the extraction of grain and livestock from the rural areas to feed centralized stocks and urban consumers, (including an urban processing industry). Efforts to extend these markets to relatively more remote and less densely populated semi-arid regions have often involved an element of subsidy. Ultimately these subsidies promote the carrying of grain out of deficit regions after harvest and the delivery of maize meal or drought relief back to small farmers later in the year (Jayne *et al.*, 1990).

This subsidy could be reallocated to the development of an intra-rural stockholding and trading network moving grain (or livestock) from surplus to deficit households and supporting the maintenance of local food stocks. This would lower grain prices to consumers and provide producers with a more accessible and consistent grain market. Transport costs and the heavy strains on the limited national transport fleet could be reduced.

Market liberalization alone will not answer the problems of semi-arid regions. More likely, the withdrawal of government support for the extension of national markets will lead to the isolation of poorer producers and remote regions. Liberalization must be accompanied by a positive investment program to stimulate the development of rural market facilities and localized trade.

CONCLUSION

Each of the four major farm household surveys conducted over the past five years in Zimbabwe reveals a sharp skew in the participation of small farmers in the nation's agricultural development. The post-independence strategy of extending technologies and institutions primarily developed for the larger-scale commercial sector to the smallholder sector primarily aided farmers situated in the limited, higher rainfall zones. The greatest production and income gains were made by a small proportion of these farmers.

The majority of small farmers who are situated in the country's extensive semi-arid regions remain agriculturally underdeveloped. These farmers are the poorest and most food insecure in the country. The historical bias favoring larger-scale commercial farm operations has left these farmers with little or no access to the improved technologies necessary to increase their agricultural productivity. The recent orientation of agricultural development policy and investment has similarly failed to meet the needs of these households.

Zimbabwe has achieved aggregate, national food security as a result of the rapid growth of smallholder maize production after independence. The country is self-sufficient in maize and will likely remain so in the near future. Food security for the majority of small farm households will only be attained, however, with more concerted efforts to pursue a consistent strategy for improving agricultural

productivity in the semi-arid regions. The country must aim to ultimately replace the omnipresent drought relief programs with a sustainable income base.

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Household Income Patterns In Zimbabwe's Communal Areas: Empirical Evidence From Five Survey Areas

Abstract

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INTRODUCTION

Food security is now widely accepted as an essential element of Zimbabwe's agricultural development policy. Improving food security involves two inter-related components: increasing the national availability of food through production, storage and trade; and increasing household access to food through greater access to production resources, income and government transfers (Rukuni and Bernsten, 1988). In recent years, Zimbabwe has consistently realised aggregate grain surpluses, thus ensuring national food security. However, there continues to be widespread food insecurity at the household level as evidenced by the relatively high incidence of malnutrition documented in a series of national surveys on health and nutrition (e.g., World Bank, 1983; UNICEF, 1985, CSO, 1989); a large proportion of rural producers, particularly in low rainfall areas, who are net purchasers of grain (Stanning, 1988; Mudimu, *et al.*, 1988; Chigume, forthcoming); and the continuing need to distribute large volumes of drought relief (Jackson, 1986; Jayne and Chisvo,

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1990). It is thus apparent that household food insecurity in Zimbabwe is a problem of poverty reflecting inadequate access to food by particular socio-economic groups rather than inadequate food production at the national level.³

Drawing on the 'food entitlement concept' developed by A.K. Sen (1981), household food security is seen to be a function of a family's ability to generate sufficient net income -- through own production for home consumption, income generating activities and transfers -- to achieve a nutritionally adequate diet at all times. Food insecurity, therefore, is a poverty problem and lies in the inability of households to ensure sufficient income to access the ample supplies of food available. Thus a key variable of interest to policy makers concerned about food security issues is household income. This report uses cross-sectional survey data from communal farmers in five locations to look at income levels among rural households of Zimbabwe.

The five survey areas covered are as follows:

- o **Hurungwe Communal land, Hurungwe District, Mashonaland West.**
Hurungwe communal land is a grain surplus region. Maize occupies 90 percent of the area under grain crops in this region and accounts for around 70 percent of the cultivated area. Population pressure on available land resources is not severe and generally farmers in this province have larger land holdings than is the case elsewhere in the country.
- o **Bushu Communal land, Chaminuka district, Mashonaland Central.**
Bushu Communal land is also a grain surplus area in most seasons. Land holdings are on average smallest in Bushu (1.8 ha) due to high population pressure on available land. Maize accounts for 95 percent of the area under grain crops which occupy some 65 percent of the total cultivated area. The other main crop grown is cotton.
- o **Mudzi and Mutoko communal lands, Mudzi and Mutoko Districts, Mashonaland East.**
Mudzi and Mutoko communal lands are mostly grain - surplus areas although in any one season quite a few households are deficit producers. Maize is the dominant grain crop grown but sorghum and millets are also widely produced. In Mudzi only about 25 percent of the arable land is cultivated because of a draft animal shortage due to tsetse infestation.

³ Available data indicate that a number of social groups suffer from hunger and malnutrition in Zimbabwe, including the unemployed, communal farmers, labourers on commercial farms and estates, landless households, female headed households and the disabled (Christensen and Stack, 1990). However, in terms of total figures, communal farmers are the most numerous and, geographically, the problem seems most acute in the low rainfall areas in the southern parts of the country (Matabeleland North and South).

- o **Sabi communal land, Buhera district, Manicaland.**
This is mostly a grain deficit area. Households cultivate maize but small grains (sorghum and millets) dominate in terms of land allocation.
- o **Manjolo communal land, Binga district, Matabeleland North.**
A grain deficit area located in a marginal rainfall area Southeast of Lake Kariba. Grain crops account for almost 100 percent of the cultivated area with bulrush millet and sorghum the two most important ones. Average land holding size is relatively large (7.2 ha) due to low quality of the soils and to the fact that polygamous and extended households are a common feature of the people in this area of Zimbabwe.

This paper focuses on two related issues: the structure and level of household income and the nature of economic differentiation among rural households.

FRAMEWORK OF ANALYSIS: HOUSEHOLD INCOME MODEL

Annual net household income is determined as a cash-equivalent of production for home consumption (crops, livestock and non-agricultural products), cash from income generation activities (sales of farm products, non-agricultural products, and labour) and cash equivalent of transfers (remittance, gifts, drought relief, *etc.*). In calculating net household income, the costs of acquiring the farm products and cash are subtracted from the total amount received by the household. The residual is the monetarised value of farm products and cash the household has left for consumption, investment and savings requirements.

SOCIO-ECONOMIC PROFILE OF HOUSEHOLDS IN THE SURVEY AREAS

There is considerable variation within and between areas in access to land -- a determining factor in farm households ability to meet it's food needs and participate in the market. Households in Buhera and Binga have relatively larger holdings but this reflects the quality of the soils and the fact that households are in general larger in these areas. Land holdings are smallest in Bushu where there is considerable population pressure on available land.

Average cattle ownership is highest in Hurungwe and lowest in Mudzi/Mutoko and Buhera. Sheep and goat ownership is highest among Binga households where they act as an important cash reserve to be drawn on during drought. Except in Buhera, over 20 percent of sample households own no cattle and this proportion is highest in Bushu where population pressure on land is greatest.

Overall, the number of female headed households in the sample is quite small, ranging from none in Binga to 9 percent in Mudzi/Mutoko. However, since over one-third of household heads are absent for most of the year in Bushu, these households are effectively managed by women.

Household size is greater in the survey areas located in the lower rainfall areas. One factor accounting for households being particularly large in Binga is that many men there are polygamists and it is also quite common for married sons and their wives to continue residing at the father's homestead.

HOUSEHOLD INCOME SOURCES

With the exception of Bushu, crop income (both subsistence and market) dominates household income and the magnitudes are much larger for the better rainfall areas. In Natural Regions IV and V, the share of income derived from the value of grains, other crops and livestock consumed or utilised on the farm is high, ranging from 39 percent in Buhera to between 60 to 70 percent in Binga, whereas the share of subsistence items in the income of households in Hurungwe and Bushu is only 14 to 20 percent. The share of household income realised in cash is much lower in marginal rainfall areas.

Market income derived predominantly from the sale of crops, accounts for the largest share of cash income received by households in Hurungwe, Mudzi/Mutoko and Buhera whereas non-farm income plus remittances accounts for two-thirds of cash income in Bushu. In Binga, livestock income is the single most important source of cash.⁴

Local farm wages make only a marginal contribution to household income in all five survey areas, suggesting that even in better rainfall areas, there is not a significant multiplier effect derived from households employing more labour in the production of cash crops. However, there is some evidence to suggest that higher cash incomes generated in the better rainfall areas from the marketing of farm products generates a demand for local goods and services which provides more opportunities for self employment than in the low rainfall areas of the country.

HOUSEHOLD INCOME DISTRIBUTION

In all five survey areas the distribution of remittances and transfers, although unequal, does show less inequality than any other income component. Remittances and transfers are an important means of supplementing the modest income derived from the sales of farm products by households in the middle income groups. However, lack of access to alternative income sources is one of the factors accounting for the low incomes of the poorest households.

Distribution of the subsistence income component varies among the five survey areas. In four areas (Hurungwe, Bushu, Buhera and Binga), the data appear to support the hypothesis that subsistence income is less skewed in its distribution than

⁴ The lack of data concerning on-farm utilisation of livestock for Mudzi/Mutoko and Buhera households means that the subsistence component of income has been underestimated.

cash income derived from farm and non-farm sources.⁵ Subsistence income shows the least inequality in its distribution in survey areas in Natural Regions II and III (Hurungwe and Bushu), where subsistence income accounts for a relatively small share of total income and in Binga where households are farming in one of the poorest agricultural areas in the country, are little involved in the cash economy and are deriving the bulk of their income from subsistence.

Income derived from the sale of farm products shows the highest level of inequality in its distribution among sample households, with 25 percent of households accounting for over 60 percent of net market income in four out of five survey areas. On the basis of available data from all five survey areas, it would seem that access to non-farm income sources often further enhances the income level enjoyed by farmers who participate most in the sales of agricultural products.

INCOME PATTERNS

Some general observations are as follows:

- o The importance of the subsistence income component decreases from lower to higher rainfall areas and from lower to higher income categories in each survey area.
- o The importance of the market farm component increases from lower to higher rainfall areas and from lower to higher income categories in each survey area.
- o No clear trend emerges with regard to the share of the non-farm income component across rainfall areas possibly because of the heterogenous composition of this income source. However, in two low rainfall areas (Mudzi/Mutoko and Binga) the importance of non-farm income decreases from lower to higher income categories. The reverse is true in Bushu. In Hurungwe, non-farm income makes a significant contribution to income received by the lowest and highest groups. There is no trend across income categories in Buhera.
- o The role of remittances and transfers clearly diminishes across income categories in the higher rainfall areas and, to a lesser extent, for Binga households.

⁵ The highly skewed distribution of subsistence income found in Mudzi/Mutoko is an anomaly. If we accept these figures, the top 25% of households would have to be consuming on average \$341 worth of own crops per month. This isn't possible and the data is currently in the process of being cross-checked.

INCOME CATEGORIES AND VARIOUS HOUSEHOLD CHARACTERISTICS

Households receiving the lowest total and *per capita* incomes were labour-poor households, operating below-average size holdings, and owning very few cattle. In all five survey areas, farm size, household size and ownership of cattle increase from lower to higher income categories.

The ratio of cattle to land increases from higher to lower income groups whereas the reverse is true with respect to farm size per resident household member. A similar trend is observed across survey areas as we move from higher to lower rainfall areas. This indicates that lack of draft power not only limits the area cultivated but also likely puts greater reliance on human labour. Both of these factors are likely to act as constraints to raising household income levels. There was insufficient evidence to support the common assumption that female headed and female managed households are disadvantaged socio-economic groups.

SUMMARY AND CONCLUSIONS

Some of the regularities identified from the income studies that are of interest to policy makers concerned with food security issues are:

- o Families in all natural regions attempt to secure their cash needs from several sources. Although agricultural production activities (crop and livestock) clearly predominate, local self employment and links with the urban economy are also relatively important sources of cash, particularly for poorer households.
- o The share of income derived from agriculture (subsistence and market), ranges from 65 to 85 percent across survey areas and was generally higher in lower rainfall areas where the subsistence income component was also of greater relative importance than the market component. In the poorest rainfall area the only significant market income derived from agriculture was from the sale of livestock.
- o The contribution of remittances to household income was greatest in both absolute and relative terms in the higher rainfall areas, which was surprising.
- o The distribution and control of both agricultural and non-farm income sources highlights a situation of marked rural inequalities across all natural regions although inequalities were found to be highest in low rainfall areas of Mudzi/Mutoko and Buhera.
- o Empirical evidence supports the hypothesis that the distribution of remittances and transfers and subsistence income components show less

inequality between households than either market income or non-farm income.

- o Income patterns across and within survey areas showed certain regularities. The importance of the subsistence income component decreases from lower to higher rainfall areas and from lower to higher income categories in each survey area. The reverse is true for the market income component.
- o Income sources of greatest significance to lower income households were subsistence income, local farm wage and self employment in low rainfall areas and remittances and self employment in higher rainfall areas.
- o In all five survey areas, farm size, household size and ownership of cattle increased from lower to higher income categories.

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Workshop Consensus And Follow-up Activities: Towards a Blueprint For Integrating Food And Nutrition Policy

T.S. Jayne¹ and Julia Tagwireyi²

Observers concerned with food and nutrition developments in Zimbabwe since independence are faced with reconciling two distinct sets of literature on the subject. On the one hand, Zimbabwe has received international acclaim for the tripling of marketed grain sales among smallholders and the continuation of food self-sufficiency since independence. On the other hand, widespread chronic malnutrition persists, especially in Zimbabwe's rural areas. The level of malnutrition appears to have declined only marginally over the past 10 years. While malnutrition has many causes, inadequate access to food is clearly one of the most important in Zimbabwe. Discussions highlighting this dilemma of malnutrition amidst food abundance have crystallized into what may be termed Zimbabwe's food insecurity paradox.

Participants at the Nyanga Workshop have proposed a set of activities to address this apparent paradox. These recommendations are the result of intersectoral working group discussions involving representatives of the Ministries of Health, Agriculture, and Finance and Economic Planning, and other organizations listed in the Annex of these Proceedings. This concluding chapter summarizes the comments by rapporteurs and participants on the subject of developing an integrated food and nutrition policy for Zimbabwe.

Two general activities were proposed to ensure that the dialogue is continued and sustained:

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1. the need to increase awareness of the food and nutrition situation through information dissemination on a regular basis to influential policymaking groups and to society in general; and
2. the need to establish an appropriate institutional framework to address the problems of food insecurity and malnutrition in Zimbabwe.

INFORMATION DISSEMINATION ON THE FOOD AND NUTRITION SITUATION IN ZIMBABWE

Government surveys since 1985 have consistently revealed widespread chronic as well as transitory malnutrition in Zimbabwe. Despite the availability of these publications, senior government officials continue to express shock at the magnitude of the problem. The malnutrition data presented at the workshop was clearly a revelation to a number of participants. It is understandably difficult to imagine that substantial malnutrition could still persist after a decade of phenomenal agricultural expansion among Zimbabwean smallholders and millions of tons of national grain "surpluses." The reasons for this apparent paradox, discussed in detail in several papers in this volume, include: (1) production technology poorly suited to low-rainfall environments; (2) the current organization of the grain marketing system and the absence of viable informal grain markets, which result in artificially high consumer staple food prices in rural areas; (3) inadequate food targeting mechanisms; (4) poor infant feeding practices and nutrition-related knowledge of mothers; and (5) poor sanitary conditions.

The workshop participants agreed that information concerning the magnitude and causes of malnutrition in Zimbabwe should be more widely disseminated to other key policy makers and to the Zimbabwean society in general. This is an important first step toward increasing awareness and mobilizing support for an integrated policy response to the problem. In this regard, the following proposals were made for immediate follow-up:

- a. The recommendations from the Workshop should be quickly reproduced and circulated to participants to enable them to begin discussions within their organizations and with their ministers. Each of the participants at the Workshop agreed to be duty-bound to circulate the conclusions and recommendations of the Workshop to their Permanent Secretaries.
- b. The organizers of the Workshop, namely individuals from the Ministry of Health (MOH), Ministry of Lands, Agriculture and Rural Resettlement (MLARR), and the University of Zimbabwe (UZ), will meet with Permanent Secretaries of MOH, MLARR and Ministry of Finance and Economic Planning to discuss the Workshop recommendations and suggest a course of action.
- c. Proposals are to be made to give greater exposure to information on malnutrition and its causes. Suggestions may include (i) the inclusion of

malnutrition data in existing bulletins, such as the National Early Warning Bulletins; and (ii) the dissemination of information through mass media to sensitize the Zimbabwean society about hunger and malnutrition in the country. Several participants noted that the mandate of existing bulletins would need to be modified somewhat before malnutrition data could be presented in them.

ESTABLISHMENT OF AN INSTITUTIONAL FRAMEWORK TO ADDRESS HOUSEHOLD FOOD INSECURITY AND MALNUTRITION

The workshop participants acknowledged the multifaceted nature of food insecurity and malnutrition problems. A premise articulated by most members of the group was that there are potential gains from intersectoral collaboration, and a mechanism to facilitate this collaboration. Currently, there is a National Steering Committee for Food and Nutrition (NSC), composed of members from the Ministries of Lands, Agriculture and Rural Resettlement, Health, Finance and Economic Planning and Development, Energy, Water Resources and Development, Education, Local Government, and Community and Cooperative Development. Several members of the NSC were present at the Workshop. The Workshop participants proposed that this committee be reorganized to form a National Action Committee on Food and Nutrition (NAC), to be comprised of the current membership of the NSC as well as the Drought Relief Committee. This reorganization would integrate currently distinct decision-making bodies, and would facilitate better planning and coordination of long-run and short-run policy responses to food insecurity and malnutrition. The suggested terms of reference for the NAC would be:

1. To continuously assess the nature and extent of the problems of hunger and malnutrition. This would require collaboration with existing monitoring programmes that focus on agricultural production and supplies.
2. To map out strategies to address the problem of food insecurity and malnutrition. This would include the formulation of a Food and Nutrition Policy.
3. To coordinate the implementation of currently disparate programmes to address hunger and malnutrition, such as the Food For Work Programme, Drought Relief, Supplemental Feeding Programmes, etc.
4. To coordinate, direct, and commission -- but not to execute -- relevant research.
5. To prepare a "Cabinet Discussion Paper". The objective of this paper would be to seek a mandate for a preparing a proposal for integrating food and nutrition policy. The Ministry of Health has been proposed as the vehicle for getting this paper to the Cabinet. If and when such a mandate for a comprehensive proposal to integrate food and nutrition policy is given,

the NSC will organize its preparation. The proposal will address (1) the integration of Drought Relief, Supplemental Feeding, and Food for Work Programmes under one committee, the National Action Committee; (2) the need to promote the use of sound weaning foods by mothers; (3) the need for nutrition policy to go beyond short run feeding programmes and tackle the longer-run issues of improving nutrition through agricultural pricing, marketing, and production programmes; and (4) the need for agricultural policy to explicitly focus on how to promote income growth in low-rainfall areas and among food-deficit farm families. Households in these categories have been shown to generally be the poorest and most vulnerable to food insecurity and malnutrition.

CONCLUDING COMMENTS

The plan of action developed at the Nyanga Workshop for integrating food and nutrition policy in Zimbabwe is noteworthy in that it has been developed internally among local Ministries and organizations. Thus the impetus for change has already begun internally. The objectives of the plan are to (1) seek a mandate from the Cabinet regarding a proposal to improve the organizational framework for addressing food insecurity and malnutrition in their short- and long-run dimensions; (2) to actually prepare this proposal in collaboration with other interested groups (contingent on point 1); and (3) to sensitize policy makers and the Zimbabwean society in general about the magnitude of the malnutrition problem in the country. These may be modest but significant steps toward promoting a more effective food and nutrition policy in Zimbabwe.

National Consultative Workshop On Food, Nutrition And Agricultural Policy

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