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**NATIONAL FOOD SECURITY STOCK
POLICIES AND PROCEDURES
IN SUB-SAHARAN AFRICA**

Literature Review and Inventory



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**NATIONAL FOOD SECURITY STOCK POLICIES AND PROCEDURES
IN SUB-SAHARAN AFRICA**

Literature Review and Inventory

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CONTENTS

	<u>Page</u>
LIST OF TABLES	v
LIST OF FIGURES	vii
ACKNOWLEDGMENTS	ix
 <u>Section</u>	
I INTRODUCTION	1
II GENERAL DESCRIPTION AND ASSESSMENT OF THE LITERATURE	2
Definitions	2
Working Stock Management	2
Stabilization Stock Management	3
Emergency Stock Management	14
Optimum Stock Size Determination Given Various Food Policy Objectives	21
Impact of Market Liberalization On Operating Rules And Procedures Associated With Various Kinds Of Stocks	24
III INVENTORY OF CURRENT STOCK POLICIES AND PROCEDURES	31
Regional Description of Trends in Sub-Saharan Africa Stock Management Policies	31
Inventory of Current Stock Policies and Procedures	35
IV BIBLIOGRAPHY	91
 Appendix 1 - ORGANIZATION CHARTS FOR AVAILABLE FOOD SECURITY MANAGING ORGANIZATIONS	
Appendix 2 - CEREALS DATA BY COUNTRY	
Appendix 3 - SIMPLIFIED DIAGRAM OF CROP PRODUCTION, DISPOSAL, AND INTER-RELATED ACTIVITIES IN NATIONAL EARLY WARNING AND FOOD INFORMATION SYSTEMS	
Appendix 4 - QUESTIONNAIRE ON FOOD SECURITY STOCK POLICIES	

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	Producer Benefits for Corn	10
2	Consumer Benefits for Corn	11
3	Estimated Price Stabilization Program Costs to the Agency	12
4	Three Scenarios for the Determination of Security Stock for OFNACER Burkina Faso	16
5	Number of Persons Who Can be Fed Under the Proposed Emergency Reserves	17
6	Imports of Cereals, Cereals-Based Food Aid, and Emergency Assistance Grains to Africa, 1985-1990	31
7	Inventory of National Food Security Stock Policies and Procedures	36

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Welfare Effects With Linear Supply-Demand Relations	5
2	Welfare Effects With Shifting Supply Curve	6
3	Welfare Effects Including Cost to Price Stabilizing Agency	8
4	Target Price Band Policy With Implied Net Purchases Function	9
5	Relationship Between Food Security in Indonesia and the Cost of Holding Stocks	20
6	Economic Cost and Price Stabilization With Alternate Trade Policies	26
7	Famine-prone Areas of Sub-Saharan Africa	33
8	Regional Associations in the Famine-prone Areas of Sub-Saharan Africa	34

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SECTION I

INTRODUCTION

The Food and Feed Grains Institute (FFGI) of Kansas State University was contracted by the USAID Africa Bureau in Washington, DC to conduct a study of the "Food Security Stock Policies and Procedures in Sub-Saharan Africa". The FFGI is presenting three reports to the Africa Bureau. The first report, which follows, involves an overview of the literature on foodgrain stock management policies and procedures and an inventory of current policies and procedures. The second report will involve an in-depth analysis of national food security stock issues as per case studies in various sub-saharan African countries. The third report will synthesize the findings of the earlier two reports and provide do's and don't's with regard to foodgrain reserve stock policies and procedures.

The first report is based on an in-depth literature review on food security stock policies and on shared experiences by professionals who have worked in the food security stock management area in developing countries. This report includes a general description and assessment of the literature on food security stock policies and procedures, and an inventory of current food security stock policies and procedures. The general description and assessment of the literature is given in Section II and includes:

1. A definition and evaluation of various stock management policies and procedures in both theory and practice, including a description of the conditions under which producers and consumers gain and lose from various stocking policies and procedures,
2. A summary of the theory and practice regarding optimum stock size determination under various food policy objectives, and
3. A summary and synthesis of the information on operating rules and procedures commonly associated with various kinds of stocks.

The inventory of current food security stock policies and procedures is given in Section III and includes:

1. A regional description of trends in the sub-saharan African countries' national stock management policies, and
2. A table or matrix of current national food security stock policies and procedures.

SECTION II

GENERAL DESCRIPTION AND ASSESSMENT OF THE LITERATURE

Food security stock policies and procedures have been given a great deal of attention by the international community particularly since the declaration on the eradication of hunger and malnutrition by the 1974 World Food Conference convened by the General Assembly of the United Nations. Food security stock management policies have generally focused on three types of food stocks: working, stabilization and emergency stocks (U.N. Report of the World Food Conference, 1975).

Definitions

1. Working stocks are those required to assure a smooth uninterrupted flow of supplies from the farmer or point of import to the processor and ultimately to the consumer. These stocks are normally held by producers, consumers, and traders at the state, region, village, and household levels (FAO, Committee on World Food Security, 1977a).
2. Stabilization stocks are those held by the public sector's price stabilizing agency in order to protect producers from exceptionally low producer prices and to protect consumers from exceptionally high consumer prices. As producer prices drop, the price stabilizing agency stands ready to buy the necessary foodgrain stocks to keep prices to the producer at or above the floor price. As consumer prices increase, the price stabilizing agency stands ready to sell or inject into the market the necessary quantities to keep the consumer price at or below the ceiling price. The price stabilizing agency does not intervene when market prices (both producer and consumer) remain within the target band composed of the floor price and the ceiling price.
3. Emergency stocks are used as a first line of defense in case of a sudden availability decline or a sudden drop in purchasing power which affects those who can not secure any cereal nor any other food intake. The provision of the emergency stocks which serve as temporary supplies must guarantee minimum consumption until regular food aid or sales arrive which replenish the market (Kottering, 1988).

Working Stock Management

In many countries, working stocks are held by the public sector, often parastatals, who may have a monopsony on the buying of cereals from the producers and a monopoly on the selling of cereals to wholesalers, retailers, or consumers. If the public sector monopolizes the grain trade, working stock management involves simply maintaining the purchased stocks, committing sufficient stocks to the market to meet consumer demand, and importing or exporting cereals to have in stock only what is needed for domestic use.

In some countries where the government never gained a monopoly or where partial market liberalization has taken place, a public sector or parastatal agency may

Problems of Food Security

be one of a number of buyers of cereals and one of many sellers of the cereals to wholesalers and retailers. In such a case, the working stocks held by the agency tend to fluctuate from year to year, which makes it difficult for the agency to deliver sufficient stocks to specific markets it services. Under such an arrangement, the agency is unable to utilize its resources efficiently and ends up managing a losing operation. What has evolved from that situation is typically a restructuring of the agency into more of a price stabilization and/or national food security stock management role with only stabilization stocks and/or emergency stocks, respectively.

Stabilization Stock Management

Stabilization stock management policies incorporate the broad objective of all commodity price stabilization programs, i.e., to improve the welfare of commodity producers and consumers. A price stabilization policy is generally followed when the benefits (direct and indirect) accruing to producers, consumers, the government, and the rest of society exceed the costs to the same of implementing such a policy.

The theory of price stabilization is presented below in the partial equilibrium model. The target price band policy followed in price stabilization programs is then illustrated. Finally, an application of price stabilization for a developing country is given.

Partial Equilibrium Model. Most empirical investigations of commodity price stabilization have used historically the simple Marshallian partial equilibrium analysis of a closed economy developed by Waugh (1944) for consumers and Oi (1961) for producers and synthesized by Massell (1969). A brief description of the partial equilibrium model is presented as follows:

The income and welfare effects of price stabilization are illustrated in Figures 1-3 (Ahmed and Bernard, 1989). Figure 1 shows a standard linear supply-demand relationship with two equally probable supply curves - S_1 and S_2 . The third curve, S_3 , represents an average of the other two. With supply fluctuating between the two extremes over time and without price stabilization, producers' average revenue is $(OP_2 \times OQ_2 + OP_1 \times OQ_3)/2$. When intervening, the government or price stabilizing agency would buy Q_0Q_4 in the period of high supply (S_1) to maintain price at P , whereas it would sell Q_0Q_1 during a poor harvest (S_2). In this case, price stabilization raises the variability of gross revenue while at the same time increasing its mean. It was Massell (1969) who combined both producers' and consumers' welfare and illustrated that the distribution of welfare changes is determined by the origin of the random fluctuation, and that price stabilization produces a net gain to the society.

In Figure 2, the case of a shifting supply is illustrated, with supply curves S_1 and S_2 each occurring 50 percent of the time. The price P_0 is the buying and selling price (assuming 0 storage costs, an assumption relaxed in Figure 4) of the price stabilizing agency. By preventing the price from falling to P_1 , producers gain revenue $(c+d+e)$, while consumers lose $(c+d)$, so that there is a net gain in the system of e . Preventing the price from rising to P_2 benefits consumers by $a+b$ and costs producers only a in foregone revenue, and there is a net gain of b . Hence stabilization gives producers a net gain of $c+d+e-a$ and consumers a net loss of $c+d-a-b$. The total net gain by producers and consumers together is $e+b$ (Ahmed and Bernard, 1989).

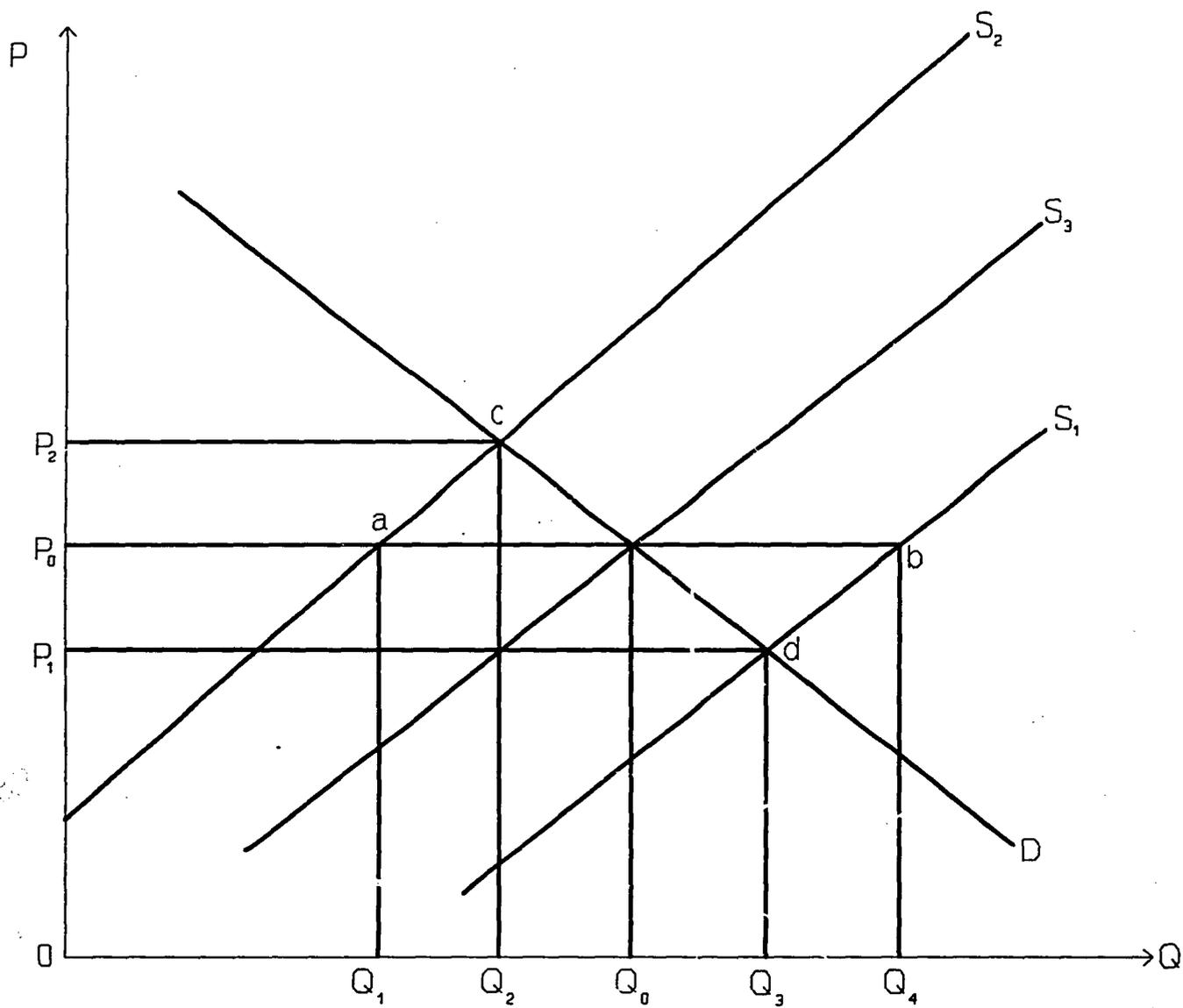


FIGURE 1. Welfare Effects With Linear Supply-Demand Relations

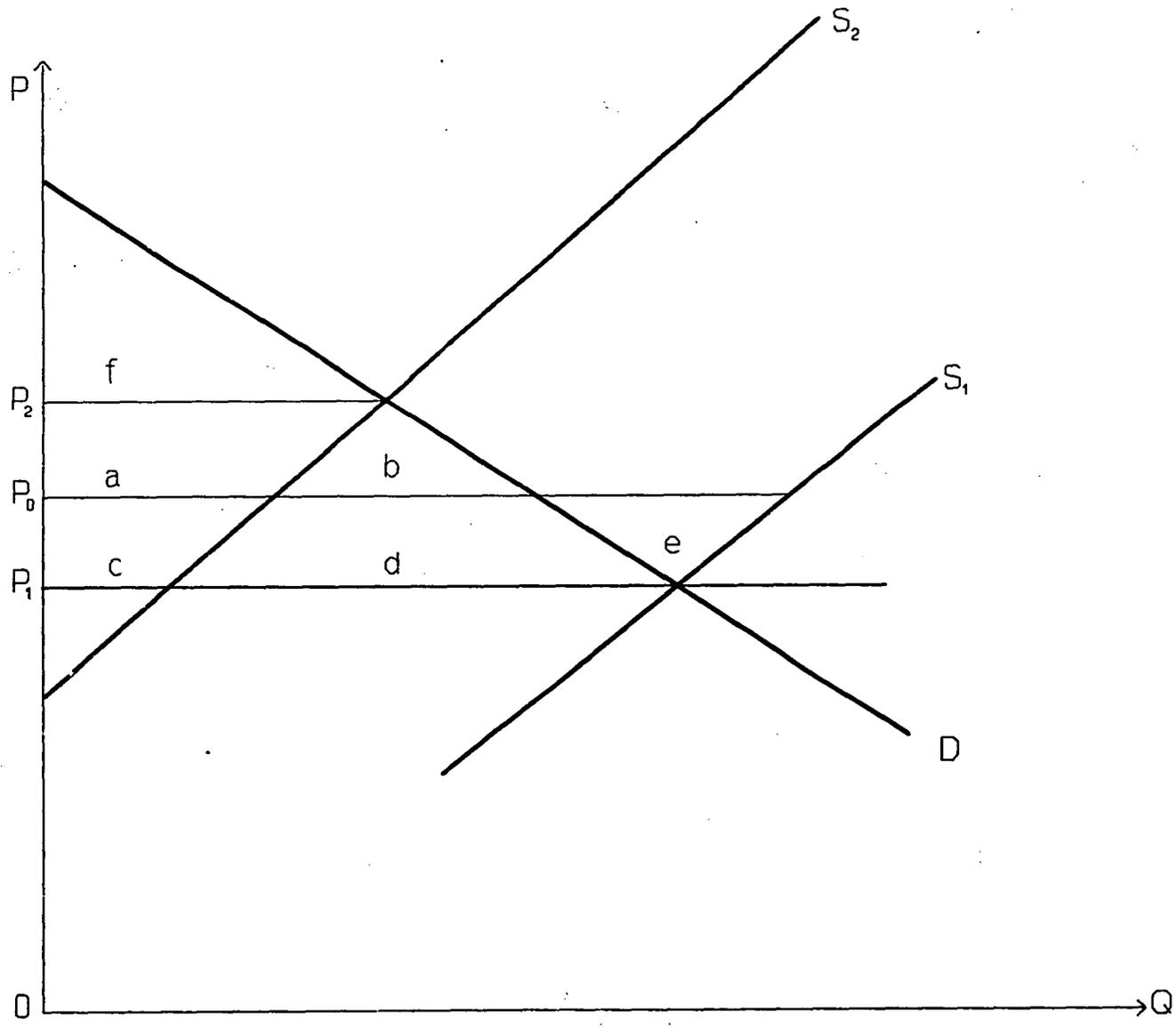


FIGURE 2. Welfare Effects With Shifting Supply Curve.

In Figure 3, storage costs to the price stabilizing agency are included in the determination of the welfare effects with a shifting supply curve. In this case, the price stabilizing agency operates to stabilize prices within a range of P_1P_2 so that it earns a profit of $P_2 - P_1$ on each unit bought or sold. These profits are used to offset storage, interest, insurance, and other costs of maintaining stocks. The cost per unit when the stabilization (government intervention prices) is set at P_2' and P_1' are equal to k and q , respectively. Here, partial price stabilization is closer to optimal than absolute price stabilization.

Target Price Band Policy. In Figure 4, the target price band composed of a floor price and a ceiling price is illustrated. The model assumes that the price stabilizing agency has a target price, P^* (in the upper graph). A ceiling price is set, P_{max} , at which the agency promises to sell sufficient quantities of the commodity (whose price is being stabilized) to meet demand. Similarly, a floor price is set, P_{min} , at which the agency will buy the commodity which it is offered. Between P_{max} and P_{min} , prices are allowed to fluctuate freely. Each of these prices corresponds to a quantity consumed on the X-axis. If, for example, actual production in year t is Q_t , which corresponds to a free market price, P_{fm} , then P_{fm} is greater than P_{max} . The price stabilizing agency would then have to sell $Q_1 - Q_t$ in order to keep the price at or below P_{max} .

The lower graph shows the relation between production and agency purchases under such a system. The agency buys all that is produced above Q_h , and makes up the total difference between Q_1 and actual production (Pinckney, 1988).

Application Of Price Stabilization. This example for a corn price stabilization program in a relatively small developing country incorporates hypothetical supply/demand projections of corn at harvest, a negatively sloped consumer demand curve for corn, and a target band (Neils, 1989).

Suppose 21,000 tons of corn were projected to comprise the marketed surplus (total production minus household consumption) in this country. World supplies were, however, expected to be tight, with projected border prices at harvest of US\$ 0.12/lb. Assume also that the price stabilizing agency (hereinafter, referred to as 'the Agency') projected the quantity of corn (cleaned and dried) demanded in the country to be 20,000 tons. The Agency then forecasts a supply surplus of 1000 tons of corn. By examining supply/demand relationships, the Agency also projects that corn producer prices will be about \$0.075/lb at harvest. Assume the Agency sets a floor price at 85 percent of the projected producer price, or \$0.06375/lb. Suppose that at harvest the Agency found private traders were offering producers prices well below the floor price, say, offering only \$0.055/lb. The Agency would actively start purchasing corn from producers at the floor price. The Agency would buy that quantity of corn that would stabilize prices at or above the floor price. In this scenario, let us say the Agency would buy approximately 500 tons in each month from October through December. The Agency would store the 1500 tons of corn until the domestic market price exceeded the ceiling price (assumed to be \$0.125/lb, the highest price in the last 5 years). In this scenario, let's assume the consumer price increased to \$0.14/lb in August and the Agency injected 500 tons into the market in order to stabilize the price below the ceiling price. The Agency would be left with 1000 tons of corn in storage at the end of the crop year. That corn would represent an inter-year supply of corn that would either be stored until prices again exceeded the

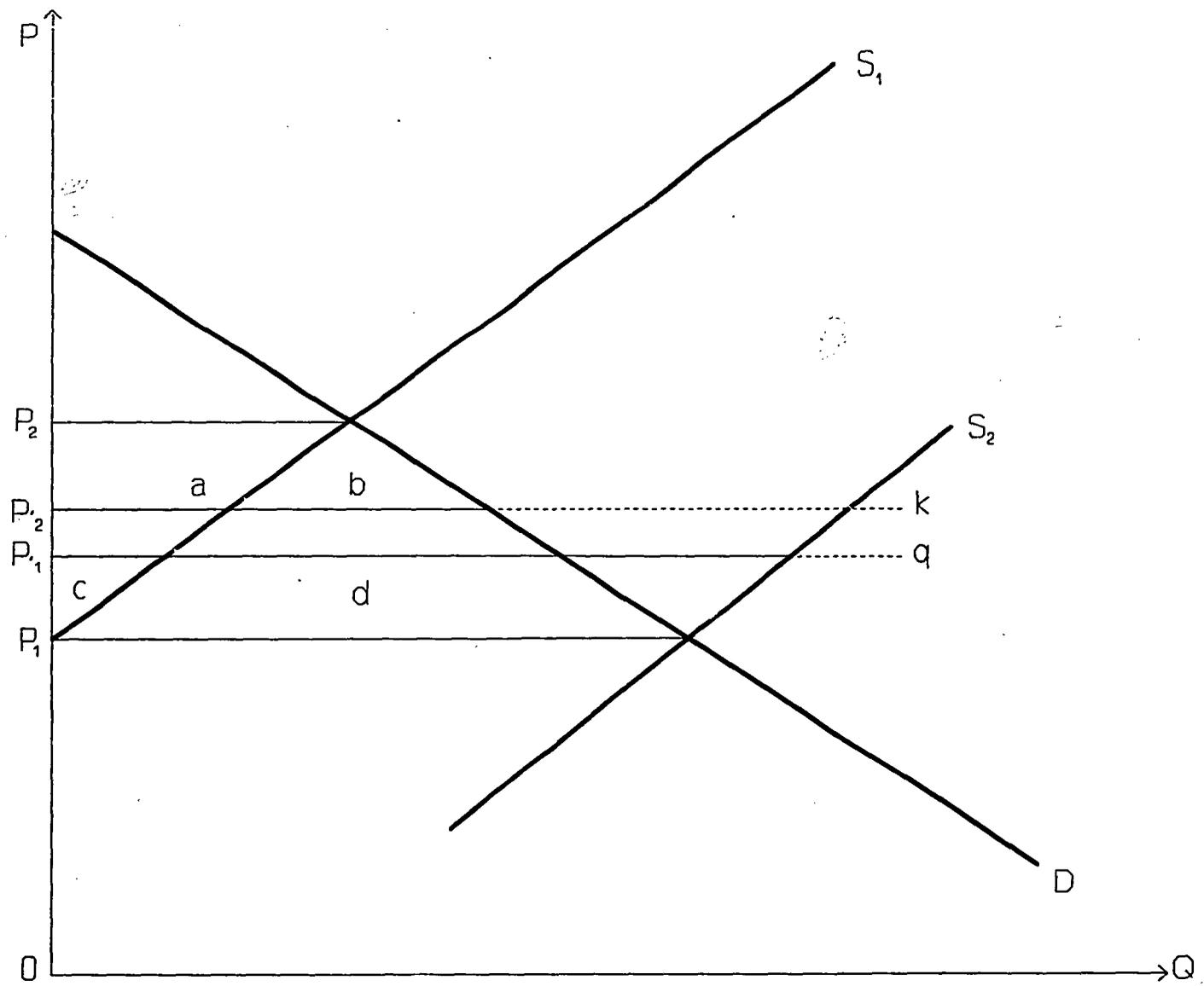


FIGURE 3. Welfare Effects Including Cost to Price Stabilizing Agency

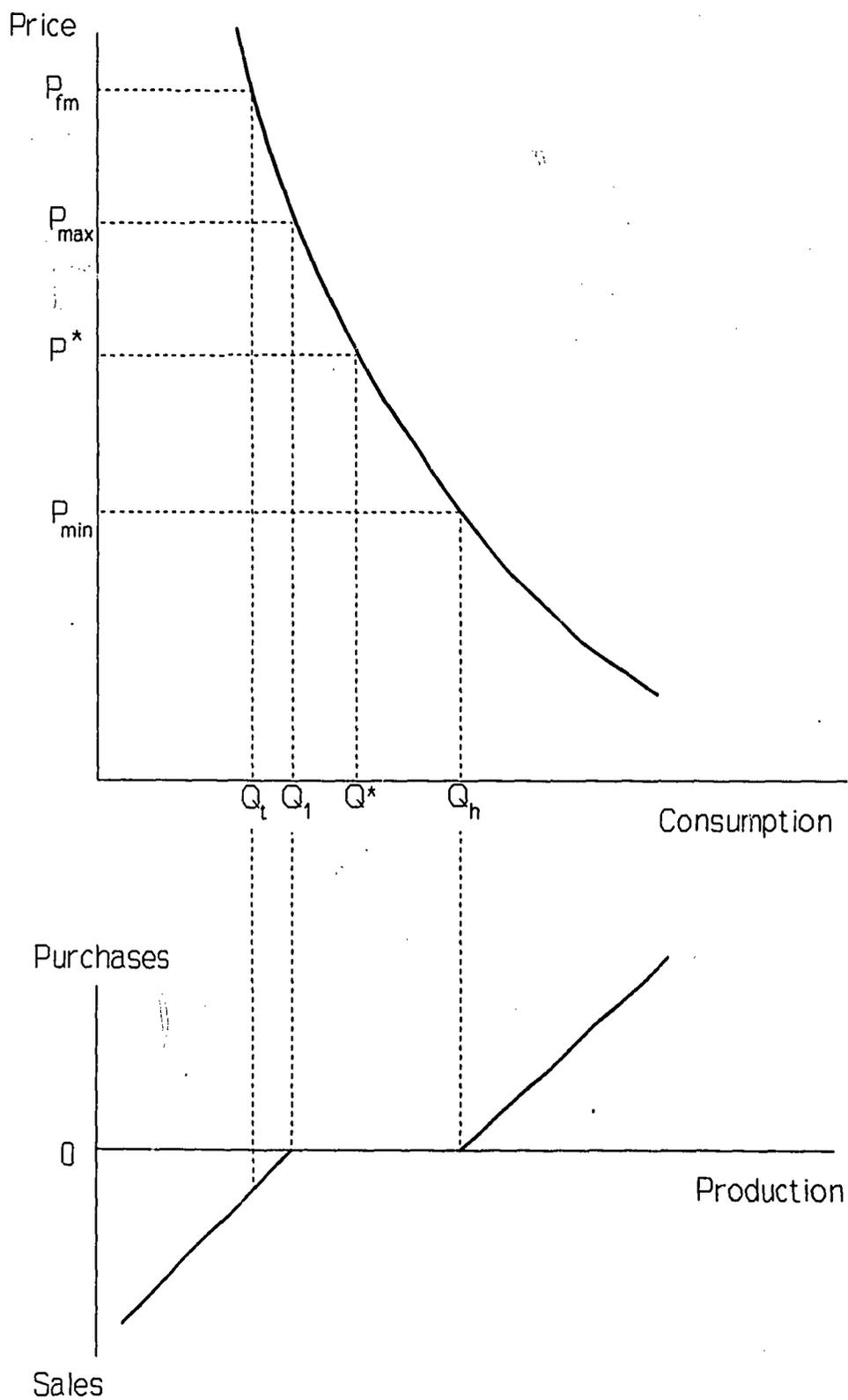


FIGURE 4. Target Price Band Policy With Implied Net Purchases Function

ceiling price or be exported if next year's marketed surplus was again projected to exceed consumer demand. In this example, assume the corn was stored for the next crop year, which was anticipated to be a deficit year.

Producer Benefits

In this scenario, producers directly benefitted when the Agency took corn supplies off the market since producer prices were maintained from October-December at approximately \$0.06375/lb when otherwise market prices would have reached \$0.055/lb. The producers benefiting from the Agency's action would be those who sold their marketable surplus during October-December when prices were stabilized (Table 1). For example, the producer benefits for October were \$45,500 (2,600 tons x 2000lb/ton x \$0.00875/lb). When the Agency supplied corn to the market in August, negative benefits (totaling \$3,000) were experienced by those producers having sold their corn during that month. The net benefits to corn producers in this scenario is \$133,500 or approximately \$0.00318/lb for 21,000 tons of corn.

TABLE 1

Producer Benefits for Corn

Month	Quantity Marketed (tons)	Price Effect (\$/lb.)	Net Benefits (\$)
October	2,600	0.00875	45.5
November	2,600	0.00875	45.5
December	2,600	0.00875	45.5
January	2,150	0	0
February	2,150	0	0
March	2,150	0	0
April	2,150	0	0
May	2,150	0	0
June	2,150	0	0
July	100	0	0
August	100	-0.015	-3
September	100	0	0
Total	21,000		133.5

Consumer Benefits

Corn consumers in this scenario were negatively impacted in October-December when prices were stabilized at the floor price instead of remaining at \$0.055/lb (Table 2). Consumers benefitted from the Agency's stabilizing of prices at the ceiling price in May-August. The net benefit to the corn consumers was \$-37,510 or approximately \$-0.00094/lb for the domestic utilization of 20,000 tons of corn.

TABLE 2

Consumer Benefits for Corn

Month	Quantity Bought (tons)	Price Effect (\$/lb.)	Net Benefits (\$)
October	1,667	-0.00875	-29.17
November	1,677	-0.00875	-29.17
December	1,677	-0.00875	-29.17
January	1,677	0	0
February	1,677	0	0
March	1,677	0	0
April	1,677	0	0
May	1,677	0	0
June	1,677	0	0
July	1,677	0	0
August	1,677	0.015	50.00
September	1,677	0	0
Total	20,000		-37.51

Agency Costs

The Agency incurs direct costs when implementing a price stabilization program. Fixed investment costs are incurred when planning, developing, and maintaining grain storage, processing and handling facilities and when developing technical and managerial human resources to operate stabilization programs. Variable costs are incurred when purchasing, transporting, handling, processing, storing,

merchandising, and financing the corn acquired for stabilization stocks and later released into the market or exported. Revenues (based on the merchandising margin) are received by the Agency when the corn is sold in the domestic market or exported.

In this scenario, the costs of such a program to the Agency would be estimated from the quantities of corn purchased and sold (Table 3). The Agency would need to purchase 1500 tons of corn during the months of October-December to stabilize producer prices at the floor price, \$0.06375/lb. The 3 million pounds of corn would be stored until August when 500 tons would be injected into the market in order to maintain the market prices at about the ceiling price, \$0.125/lb.

The ending carryover stock of corn would be 1000 tons. If storage costs are \$0.00125/lb for the first month of storage and \$0.00075/lb for each of the following months, the total storage costs for the year would be \$24,750. If other variable costs for handling, transporting, and merchandising total about 10 percent of total purchasing costs, then the total variable costs would be \$43,850.

The merchandising margin would amount to the total sales revenue for domestic sales (\$125,000) plus the value of the carryover inventory (\$127,500) minus the total purchasing costs (\$191,250). In this scenario, the Agency has earned a merchandising margin of \$61,250. Subtracting the fixed and variable costs from the merchandising margin would leave \$-7,350 net loss to the Agency.

TABLE 3

Estimated Price Stabilization Program Costs to the Agency

Month	Quantity Bought (tons)	Market Price (\$/lb.)	Purchase Cost (\$1000)	Qty. Sold (tons)	Mkt. Price (\$/lb.)	Sales Rev. (\$1000)	End Stock (tons)
Oct	500	0.06375	29.17	0			500
Nov	500	0.06375	29.17	0			1000
Dec	500	0.06375	29.17	0			1500
Jan	0	0	0	0			1500
Feb	0	0	0	0			1500
Mar	0	0	0	0			1500
Apr	0	0	0	0			1500
May	0	0	0	0			1500
Jun	0	0	0	0			1500
Jul	0	0	0	0			1500
Aug	0	0	0	500	0.125	125,000	1500
Sep	0	0	0	0			1000
Total	1,500		87.51	500		125,000	1000

Estimated Benefit Cost Ratio

The economic feasibility of the price stabilization can be estimated using a benefit/cost ratio. In this scenario, the total direct benefits to producers and consumers were \$95,990 and the total direct costs to the Agency were \$-7,350. The benefit/cost ratio then is 13.1, meaning the price stabilization is economically feasible under the assumptions given for this crop year. This scenario did not include the indirect benefits and costs of price stabilization, which are generally difficult to quantify.

As illustrated in this example, price stabilization comes at a net cost to the price stabilizing agency. In this scenario, the target band was relatively wide allowing the Agency an opportunity to recover the purchase and storage costs of the grain when injecting the grain at the ceiling price. The narrower the target band the less likely the Agency is able to recover the purchase and storage costs. A further problem with a narrow target band is that the private sector may not be provided the incentive to store grain over a significant part of the crop year.

Some countries only establish a producer floor price or a consumer ceiling price instead of both as part of their price stabilization program. The impact of having only a floor price is that consumers do not benefit directly from such a program. The impact of having only a ceiling price is that producers do not benefit directly from the program.

Advantages and Disadvantages of Price Stabilization

The advantages of price stabilization programs include:

1. Such a program gives the government/price stabilizing agency the means to regulate the market (against hoarding and other major events resulting in exceptional price swings) without directly controlling prices or influencing the seasonal nature to grain prices.
2. The program typically sets a target band that provides incentives for private sector on-farm storage while also guaranteeing a floor price. If producers are guaranteed the floor price for their crop and if they are made aware of the floor price before they plant the crop, the incentive may be there for them to increase their plantings. Without such a price guarantee, producers may experience wide swings in producer prices, and low prices in consecutive surplus years to the extent that prices may drop so low that certain producers end up going out of business, thereby destabilizing production.
3. Consumers are not subject to exceptionally high consumer prices for price stabilized grain and, therefore, are not likely to experience adverse effects on their food budgets in times when the market price is, otherwise, buoyed up by supply shortages in the market.

The disadvantages of price stabilization programs include:

1. Such a program must have established funds for administering, purchasing, storing, and recycling the stabilization stocks. Financial costs of carrying large stocks are high, management demands onerous, and heavy losses can be incurred through spoilage.
2. Farmers in many countries do not believe that floor prices would be maintained since cereals boards have almost never in the past been able to buy at official prices all the grain offered in good years.
3. Border trade is often substantial. A floor price might provide more income to farmers in neighboring countries than to home producers.
4. Training requirements of people to be involved in data collection and market analysis are generally very high and costly.
5. The macroeconomic effects of a successful floor price arrangement may be negative. Production of substitute crops may suffer; real income, export earnings and economic growth may be lower.
6. There may be better ways to spend the money that is needed to finance a floor price e.g., infrastructure expansion and maintenance (Club du Sahel, 1987).

Emergency Stock Management

Emergency stocks are used as a first line of defense in case of a sudden availability decline or a sudden drop in purchasing power which affects those who can not secure any cereal nor any other food intake (Kottering, 1988).

It is widely believed that the public sector (government) should reserve the right to organize and control security storage; this is not a commercial operation but a national duty (CILSS, 1978). Furthermore, motivation for the public involvement in the provision of emergency stocks is based on the occurrence of market failure. The reason for running a public emergency stock derives from a belief that the market fails to provide adequate insurance of entitlements to basic food supplies for everyone in times of crisis (Kottering, 1988). The stocks held by the private sector in storage are not enough for food security purposes, even under a fully liberalized environment.

Emergency stocks are only used on a short-term basis, i.e., as a temporary provision to guarantee minimum consumption until regular food aid or sales arrive which replenish the market. Such stocks are not there to cover chronic food shortages. Chronic food shortages require food aid, food-for-work or cash for work programs. Emergency stocks are not intended to stabilize the cereal market (Kottering, 1988), i.e., they are not used where markets exist and where market agents participate, even if prices reach exceptionally high levels. If world prices did reach exceptionally high levels and such prices were reflected in a liberalized, local market, then the poor would need to receive food via, for example, food stamps or free distribution.

The primary advantage of having emergency stocks is that it may be used to provide temporary food security in emergency situations (as mentioned above). "The strongest rationale for a reserve may rest on its effect on a government's financial ability to secure minimally adequate consumption of grain for the entire population at all times..."(Reutlinger, et.al., 1976). The disadvantages of having emergency stocks include:

1. Emergency stocks are generally kept for a relatively long period of time and, though a fraction is recycled each year, are very costly to maintain.
2. Unless clear rules for uses and mechanisms for replenishment of the emergency stocks are strictly adhered to, the stocks are often used for reasons not in line with the overall objective of the emergency stocks. This has potential for disrupting or displacing private sector marketing efforts.

Emergency Stock Size Determination Methodologies. A number of methods have been employed for determining emergency stock size including the typical method, the World Bank method, method used in Ethiopia, direct estimation, and the indirect approximation of the required stock, and the method combining financial stocks and physical stocks.

Typical Method

"The most typical method is to simply count the number of people not directly involved in the production of cereals, i.e., urbanites, nomads and those in chronically deficit prone and very remote areas, and multiply that with some measure of minimum quantity of consumption needed in case of emergency" (Kottering, 1988). The argument for this method asserts that those people will be the first ones to be affected by very high prices and the first ones to lack private household fall back reserves. "The true reason for catering for those sections of the population, only, is that the political rulers rely on the goodwill of the urban population and will only be interested in serving them"(Kottering, 1988). However, given the definition of emergency stocks it makes in fact no sense to calculate their level in such a fashion. The urban population carries in general such effective purchasing power that they will be, if at all, the last to be faced by a food shortage. Imports arrive firstly in urban areas. Wholesale marketing takes place in urban centers. Urban wage earners are much better placed to afford rising food prices. These are all reasons for why the calculation of the emergency stock should in fact not be proxied by counting the urban population.

In Burkina Faso, a method somewhat similar to the typical method was used by GTZ-PAROC (March, 1991) to determine the emergency stocks required by OFNACER under various scenarios, including time of arrival for imports (ranging from 60 days to 180 days), number of individuals in the targeted vulnerable group (ranging from 500,000 to 4,000,000 people), and cereal consumption requirements (ranging from 150 kg/capita/annum to 190 kg/capita/annum). The results are given below in Table 4.

TABLE 4

Three Scenarios for the Determination of Security Stock for OFNACER, Burkina Faso

Scenarios	Target Group	Time Period for Arrival of Food Aid and/or Imports (in days)			
		60	90	135	180
-----Tonnes-----					
Scenario 1					
150	500000	12329	18493	27740	36986
kg/capita	1000000	24658	36986	55479	73973
	2000000	49315	73973	110959	147945
	3000000	73976	110959	166438	221918
	4000000	98630	147945	221918	295890
Scenario 2					
170	500000	13973	20959	31438	41918
kg/capita	1000000	27945	41918	62877	83836
	2000000	55890	83836	125753	167671
	3000000	83836	125753	188630	251507
	4000000	111781	167671	251507	335342
Scenario 3					
190	500000	15616	23425	35137	46849
kg/capita	1000000	31233	46849	70274	93699
	2000000	62466	93699	140548	187397
	3000000	93699	140548	210822	281096
	4000000	124932	187397	281096	374795

World Bank Method

After the severe drought in the early seventies, the World Bank considered the question of what level of national emergency stocks ought to be provided (World Bank, 1975). At that time, as is currently the case, the argument revolved around the costs of such an undertaking. While no precise formula was offered in that paper with regards to calculating the appropriate level of emergency stocks, detailed attention was paid to the expected annual expense of such a stockholding, as well as to the percentage that could be expected to be fed over a three months period. All these considerations were then presumably weighed in the mind of the analyst who eventually opted for a particular level of emergency stocks (Kottering, 1988). The paper presented the following table.

TABLE 5

Number of Persons Who Can be Fed Under the Proposed Emergency Reserves

Country	Tonnage of Proposed Reserves (mt)	Equivalent Number of Individual Rations Over Three Months (assuming 150 kg/head/annum)	Total Population in 1980 (est.) (mill.)	Percentage of Population that can be feed
Chad	10,000	267,000	4.8	5.5
Mali	30,000	800,000	6.5	12.2
Mauritania	20,000	533,000	1.5	35.5
Niger	20,000	533,000	5.3	10.0
Senegal	20,000	533,000	5.1	10.5
Upper Volta (Burkina Faso)	20,000	533,000	6.9	7.7

Source: World Bank, 1975.

Method Used in Ethiopia

This study relied on historical data of famine affected population on a regional basis. The data reflected the number of people that enumerators had deemed to be on the verge of starvation in previous years of food crisis. Given that time series, the mean level of stocks needed to feed an expected number of people at risk of starvation in case of a recurrence was calculated. The level of emergency stocks needed would then be equal to the amount needed to feed that expected number of people during the time it takes imports to arrive (Kottering, 1988).

Direct Estimation

The direct estimation (and the following indirect approximation) method of determining the required stock of reserve grew out of and partly stands as a response to the data limitations and the general insufficient and highly uncertain information on production, marketing, and consumption in developing countries (Kottering, 1988).

The direct estimation method assumes that the emergency stock is intended for those at risk of not being able to obtain their minimum food intake. "Further, given that (the emergency stock) is intended for those target groups to bridge the gap between the onset of a sudden and unforeseen lack of entitlement for whatever reason, the recognition of it, the reporting of it, the consequent ordering of either commercial or aid imports and the arrival and distribution of those imports, the obvious way of deciding on the size of the emergency stock is simply to count the number of people likely to go hungry during a temporary crisis, multiply that number by their daily minimum need and multiply it once more by the length of time of the import gap" (Kottering, 1988).

All three components (headcount of people at risk, minimum consumption, and imports arrival time) involve some approximation and straightforward guesswork. While this may in the event be the only way of deriving some sort of rational figure, because it is the only possible way, there are nonetheless considerable problems associated with it which need explicit acknowledgement.

Firstly, the proxy used above for counting the number of people at risk is not obvious. Summing all those who are not directly involved in grain production is one proposed proxy. In the author's view, however, that "misses the point that those at risk are at risk because their purchasing power is insufficient, and not so much because they are removed a step or two from the immediate point of production" (Kottering, 1988).

To look at a disaggregated regional pattern would be the alternative proxy. "If it was felt that a large number or a majority of people in any such small region might experience serious difficulties, then they could be counted being at risk. The criteria for such a decision would be indicators such as lack of alternative means of income, ill-functioning local markets, general dependence on food aid, a low level of household and commercial stocks" (Kottering, 1988).

Another problem with the direct estimation technique is that it ignores any cost considerations. In theory one would wish to see the marginal cost of storage equated with the marginal benefit of insuring that extra bit of risk. As it is, there appears to be only an either-or decision. Either one considers the emergency reserve stock calculated as given above as an absolute minimum, without regarding the costs, or one adheres to a maximum budget outlay.

The direct estimation method may be suffering from a large margin of error, but it is at least based on an immediate count of those people deemed to be at risk.

Indirect Approximation of the Required Stock

The indirect approximation technique begins with the definition of emergency stocks and attempts to quantify the degree of risk involved, as risk is the basic concept on which the definition rests (Kottering, 1988). Risk is usually measured by the dispersion of a variable from its average value, i.e., by its standard deviation. The lack of availability of grain for the household is, in this case, the variable.

Assuming there is no data on hand that might reflect that variable, Kottering (1988) used a stylized model as a roundabout way of arriving at it. The annual aggregate net requirements of food are added together and the variance of the net requirements are calculated. Net requirements are defined as aggregate average consumption minus domestic production minus private stocks and minus commercial imports. Food aid imports are not used as they are employed, at least in theory, to smoothen out the shortfalls and thus smooth the variance measure.

The net requirements are examined in the aggregate because if there appeared a sudden shortfall in the aggregate someone somewhere would be affected by it. The advantage is that one doesn't need to identify those who are at risk. It is left to the market forces to sort out who are the people that will find themselves

without access. Providing insurance cover for those can be done without having to actually know who exactly will draw on it in the event (Kottering, 1988).

But this assumes the whole country has access to cereals through the private sector markets. In some countries, on the contrary, private sector markets may not reach some remote regions during, especially, the lean season.

Once the standard deviation (the square root of the variance) of the net requirements is found, the level of security reserves which is the insurance can be extended to cover a certain percentage (x) of all possible cases by multiplying the standard deviation by some number z. There is a direct relationship between x and z such that as z increases so does the confidence that possible net requirements can be met. If imports are only taking 3 months to be ordered, delivered, and distributed, the standard deviation of availability for the whole year is divided by 4, and then multiplied by whatever level of z. That way the emergency reserve covers the shortfall only for three months.

The advantage is that a specific level of stocks can be related to some level of insurance (confidence level); that way the decision of what stock level to set can be made by comparing the extra bit of insurance (some more percentage points of confidence that any emergency can be met) with the extra bit of spending required (i.e., a higher insurance premium) as incurred for the servicing of the stock (Kottering, 1988).

The indirect approximation approach is data intensive as compared to the direct estimation method. Many developing countries do not have the essential data. The indirect approximation approach has been used in Indonesia to determine the carryover stock level needed for a given required level of food security (Calverley, 1988). In the analysis, it was found that a two million ton carryover in 1983 would ensure that stocks meet demand in seven years out of ten. With the higher trend production in 1985/86, 1.5 million tons of carryover would provide food security 19 years out of 20.

The results of the analysis indicated that at low levels of confidence (<90 percent), small increases in stock levels have significant effects on improving food security (Hindmarsh and Trotter, 1990). Beyond about 90 percent confidence limits, very substantial increases in stocks increase food security by very small margins. For example, in 1985/86, increasing the stock level from 1.5 to 5 million tons, which was the original target, increased the level of confidence from only 95 to 98 percent (Figure 5).

Recent work in Ethiopia on the size and location of a Food Security Reserve recommended regional stocks to provide food security up to the 80 percent confidence level (of no stock-out) and a centralized store, containing some 30 percent of the total Food Security Reserve, to provide additional security up to the 95 percent confidence level (Hindmarsh and Trotter, 1990).

In another study incorporating risk in the stock size determination, Reutlinger, et.al. (1976), using a stochastic simulation model, found that there is a tradeoff between stability of grain supplies and grain reserve size, in that greater stability can only be purchased by adding to reserve capacity. Each incremental unit of stability is more costly than the previous unit, in terms of

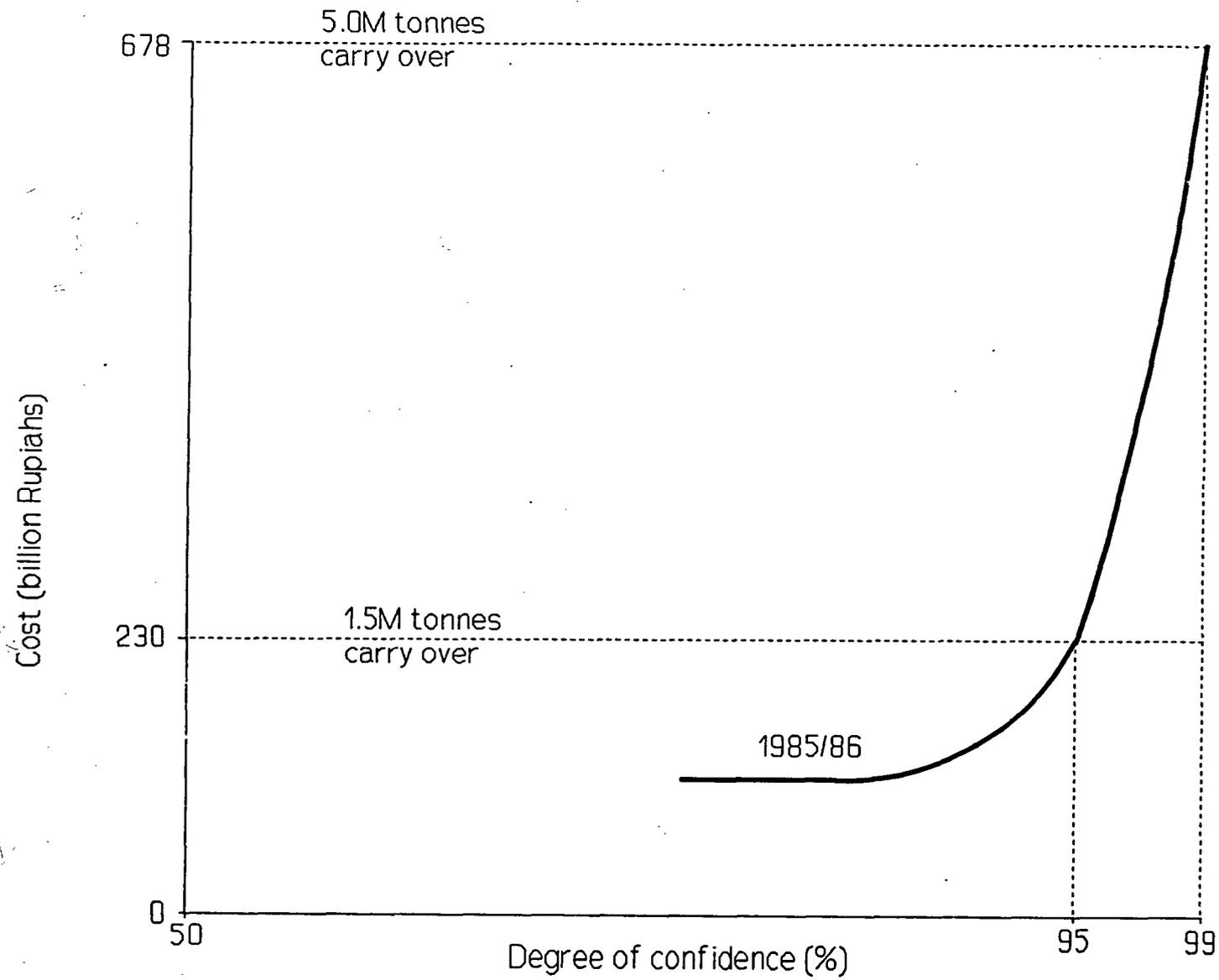


FIGURE 5. Relationship Between Food Security in Indonesia and the Cost of Holding Stocks

the needed capacity additions. Using the size of the standard deviation of supplies, over the 9000 sample years at each (reserve) stock capacity, as a surrogate to stability in grain reserves, they found that this standard deviation is reduced as capacity is increased. The stabilization effect exhibits decreasing marginal returns to increments in storage capacity.

Method Combining Financial Stocks and Physical Stocks

A more recent methodology for food security is to use a combination of financial and physical grain stocks as the food security stock. In this method, the recommended mix of the stock types depends on the world market price for the grain. When world market prices are high, the mix of the two stock types more heavily favors holding physical stocks. When world market prices are low, the mix more heavily favors holding financial stocks. This method is more suitable to countries that are not land-locked. Typically, land-locked countries are in need of some emergency stocks at all times because of transport problems (Dresruesse, GTZ, personal communication, 1991).

Optimum Stock Size Determination Given Various Food Policy Objectives

FAO Recommendations Of "Safe Grain Stock Levels" In The 1970's. As the decade of the 1970's began the world had experienced nearly twenty years of substantial food surpluses. In the developing world, food issues centered around the "green revolution" and the abundance it brought. In the developed world, a major concern was how to protect farm incomes from the deadly effects of low commodity prices brought about by too much of a good thing. Although the famines in Asia and Africa were disturbing, relief efforts focused on how to finance and manage the logistics of food aid, on how to efficiently tap the huge north american grain surpluses to relieve hunger halfway around the world.

However, when it became clear, less than three years into the decade, that the Soviet Union had cornered the last of the cheap grain, leaders in most countries were caught off guard. As farmers in exporting countries, encouraged by strong markets, bought larger tractors and planted roadside to roadside, leaders of poor nations worried how they would feed their people if the coming harvest provided barely enough even for the rich countries.

It was no surprise, then, that grain stocks were an item of major interest at the 1973 annual meeting of the Food and Agriculture Organization (FAO) of the United Nations (UN). The delegates to that 17th session urgently requested the governing body, the FAO council, to undertake a review of global grain stocks and national reserve grain stock policies. The delegates wanted to know if there would be enough food for everyone the next year. The task was given to FAO's Committee on Commodity Problems. The results would be reported at the World Food Conference called by the UN General Assembly for 1974.

The Committee faced a new kind of task. FAO had long collected and compiled data on all kinds of agricultural products for its agricultural yearbook. However, the committee would now have to analyze the data and make recommendations based on that analysis. The world was to be warned if global grain stocks became dangerously low. But before stock levels could be considered "too low", someone had to decide what level was "safe".

Bureau people used three common-sense approaches to determining the "safe" level of global grain carryover stocks. In their report to the FAO council they carefully and repeatedly warned that there was no accepted methodology for their analysis, and that the results would be accurate only under the assumptions they made (relatively free trade, all other factors equal, etc.). First, they calculated the difference between excess production in exporting countries and consumption (above the level of local production) in importing countries from 1955 to 1973. The year-to-year variation in this difference was one index of a "safe" level of carry-over stocks. Next, they found the largest single-year shortfall between overall production and consumption during the same 18-year time period. The shortfall would have been made up by carry-over stocks. Finally, the ratio of world grain stocks to disappearance was calculated on a yearly basis and used as a third index of a carry-over level which, until then, had been sufficient to keep prices stable and people fed.

The three techniques all gave results ranging from about 17 to 18%. Of that, it was estimated that 5% should be the minimum emergency reserve.

There were many challenges to the 5/18% figures. Internal FAO memos detail many discussions, re-calculations, etc., either by FAO bureau people or outsiders. For a decade, discrepancies were explained as due to the inclusion of suspect data or to assumptions that differed from those of the original work. In 1984, the FAO Directorate ordered a review of what it called "the famous 17-18% figure". The result of that review by an outside consultant was the report "Safe Levels of Global Grain Carry-over Stocks for World Security" by Alexander Sarris in 1985. The author concluded from his study that the "safe" level was actually more in the range of 18-25%. FAO reviewers thought the higher level was due to (1) greater overall variability in stock levels since 1973, (2) different assumptions made, and (3) different methodology for arriving at the "safe" level.

Extent To Which The FAO Targets For The 1970's Remain Valid In The 1990's. Since the World Food Conference (1974) also resolved that each nation must develop its own food security policy in order to contribute to global food security, FAO representatives became involved in many countries with the establishment of target grain reserve levels. In 1974 at FAO's 18th Session of the Committee on Commodity Problems, the list of sub-saharan African countries that had established national cereal stock policies and established stock targets included Ghana, Kenya, Liberia, Malawi, Nigeria, Senegal, Somalia, Sudan, Ivory Coast, and Zambia. There was often confusion in-country that the 5/18% figure quoted in the 1974 report could somehow be used in the development of national policy. This confusion still exists in many sectors, and the 17-18% figure was mentioned in passing in a mid-1991 FAO committee report. It refuses to die, much to the chagrin of FAO bureau people.

In the mid 1970's, the FAO recommended levels of national (emergency) food reserves for specific nations were based primarily on the time it takes to import the cereals into the country and the consumer demand for cereals for the entire targeted population. For example,

1. In Botswana, the recommended level of emergency stocks was based on one month's total grain requirements which, when combined with the one month's

supply of operational stocks in Botswana, amounted to 20% of a 6 months' grain supply for the country (FAO, 1975a);

2. In Lesotho, the recommended emergency stock size was based on the expected market demand for food grains for the two months of the year when the demand was highest (FAO, 1977b).

More recently, the FAO and governments of most developing nations with emergency stock needs have expanded their criteria for emergency stock size determination to include such developments as:

1. The forecasting ability of the national Early Warning System. The size of the emergency reserve is reduced by the ability to anticipate the shortfall. If the country's early warning system (crop reporting system) can anticipate the need to import, the lead time given by the system is subtracted from the required lead time, and the size of the reserve is reduced accordingly.
2. The size of the targeted or the vulnerable (to famine, flood, etc.) population. The target population is seldom the entire country's population. It may, for example, be the rural and/or urban poor.
3. The extent of private sector storage of cereals. The CILSS study, done by ARUP Partners in 1978, recommended a carryover stock equivalent to 20% of average production. Importantly, the 20% included the stocks held by private producers (on-farm) and marketers. This has implications in one-year famines and in multi-year famines. In a multi-year famine, farmer-owned reserves can be expected to be fairly completely exhausted the first year.
4. The storeability of the imported grain. In many countries in sub-saharan Africa imported grains have characteristically been softer and more insect-prone than the more desirable locally grown grains which tend to be harder.
5. The financial stock available to the food security stock management organization. With sufficient foreign exchange and adequate import infrastructure, imports, especially commercial imports, of cereals can be made on a very timely basis and, thereby, minimize the need for physical stocks.

Along with these criteria, the rule of thumb applicable to most of sub-sahara Africa is that commercial supplies require 3 months and donated food aid requires 6 months lead time, as a base figure (Shaw, WFP, personal communication, 1991). Actual cases in which some of these criteria were used by FAO and developing countries' governments in determining emergency stock size follow:

1. In Mali, FAO recommended in the mid 1970's a national food security stock target size of 58,500 tons based on the amount of grain required to provide food for urban dwellers and people in the most drought-prone areas for 3 months while emergency food was imported (Wohlers, personal communication, 1991). Since the size of the target population has increased substantially since the mid 1970's, it is questionable whether the original target level provides an adequate margin of safety today. However, the early warning capabilities available now, combined with the increased level of grain reserves held by the private sector, encouraged by the credit programs established in 1986 and the increased capability of the

private sector to supply effective demand for cereals, may provide the needed margin of safety.

2. In Kenya, the government decided in 1990 to increase the Strategic Grain Reserve stock size from the level of 4.0 million bags to 8.5 million bags in order to take into account the milling constraints, the significant consumer resistance to imported yellow maize in drought situations, and the financial losses incurred in exporting white maize in years of surplus. The government has decided to retain locally produced maize within the country and try to break the recurrent import/export cycle (Coopers and Lybrand, 1987).

3. In Tanzania in 1975, FAO representatives assisted the government of Tanzania in determining, as part of their food security policy, an appropriate reserve grain stock level. The method used in the 1970's to establish the emergency stock level of 100,000 tons was the same, with a few refinements, as that used today. The method is based on the amount of time required to receive the necessary amount of grain in the event of an "emergency" crop shortfall. The quantity of cereal grains required for the target population for that period of time is considered the amount that must be held in reserve (FAO,1986).

From these examples, it is clear that governments of those countries that need an emergency food security reserve normally employ a mix of food policies in order to augment the level of food consumption for certain consumers and to counterbalance fluctuations in domestic production and world prices. These governments have basically three food policy options open to them:

1. They can import food from abroad as needed, if they have sufficient foreign exchange and adequate import infrastructure;
2. They can depend on domestic stocking operations by storing food in years of abundance to be drawn down in years of shortage; and
3. They can allow consumption to adjust to the level of domestic food availability (Konandreas and Francescutti, 1991).

The FAO division that was formed to service the 1974 resolutions regarding food security reviews is now working to develop a computer model of the food economy of a developing country. The model was developed to provide a better framework for understanding the optimum mix among various policy options and to what extent physical foodgrain stocks should be built to protect against production shortfalls and world price instability (Abbott, Konandreas, and Benirschka, 1991). This model specifically describes flows of food grains through the production/distribution/consumption chain and the policy environment that may impact on these flows. The model's output allows the policy analyst to assess alternative food security policies in terms of their financial impact on producers, consumers, and taxpayers, including the efficiency of public interventions, as well as their impact on selective food security indicators (consumption of selected vulnerable groups and market price levels). The model does not address the issue of a "safe" global grain carry-over level. FAO experts (and many academics also) have concluded that the food security of a given group of, say, Africans, at a given point in time probably has little to do with global grain carryovers, whether "safe" or "unsafe".

Impact Of Market Liberalization On Operating Rules And Procedures Associated With Various Kinds Of Stocks

Cost Minimization Requirement of the Security Stock-Holding Agency. When markets are liberalized in terms of both prices and trade, the public sector no longer holds working stocks, that is, stocks used on a day-to-day basis to maintain the flow of stocks in the market from producers to consumers. A very significant affect of the public sector no longer actively participating in the market is that the public sector must find an alternative means of generating revenue to offset especially the emergency stock maintenance and management costs. Most public sector stock holding agencies that have previously operated autonomous to the government must immediately put into operation a means of minimizing its costs of maintaining its stabilization and/or emergency stocks. Also critical is that the government respond to the revenue constraining position the agency is in by supporting price stabilizing and/or emergency stock maintenance activities. In Madagascar, after market liberalization took place, the Government of Madagascar did not enhance its support of the parastatal in charge of the stabilization/emergency stocks, thereby leading the parastatal into its own fiscal crisis (Shuttleworth, 1989).

Decreased Storage Capacity Requirements. Before liberalization, the public sector may have been intervening in the market on a regular basis and holding far more stocks (as working stocks) than it would require for price stabilization after liberalization. For a price stabilizing agency, trade liberalization effectively reduces the stock holding requirements by stabilizing grain supplies, as denoted by the reduced frequency of a shortfall in grain supplies. In Figure 6, the probability of a shortfall in grain supplies as a function of free trade (and the annual economic cost of storage) is illustrated (Reutlinger, et.al., 1976).

Target Price Band Policy Requirements. After liberalization, and if price stabilization is an objective, the target band in price stabilization must be set wide enough to provide the necessary incentive for the storage of grains by the private sector throughout the crop year. The private sector holds stocks for different reasons than those of governments. The economic literature on this subject usually distinguishes three reasons why the private sector would hold stocks: for transactions purposes, for precautionary motives, and for speculative reasons (FAO, 1990). Stocks held for transaction purposes may be thought of as "pipeline stocks", which are usually estimated at 6 weeks supply of normal or total supply/consumption. Stocks held for precautionary purposes are held to avoid losing markets if supplies are unavailable. Speculative stocks are held in many developing countries because market information is poor and markets tend to be relatively inefficient. For example, if harvests are better than normal, private agents take advantage of lower than normal prices to build-up stocks. Currently, governments throughout the world still hold a very large proportion of world cereal stocks while the private sector tends to hold few stocks wherever governments intervene substantially in cereal markets. When the release rules on government stocks are linked to market conditions (e.g., for stabilization purposes), are well known and applied with consistency, the private trader will hold much less than otherwise. In these cases, a one ton increase in government stocks, other things being equal, is likely to lead to a fall (or crowding out) of one ton in private stocks and vice versa. When the release rules are uncertain or not followed consistently or when the private sector lacks market information,

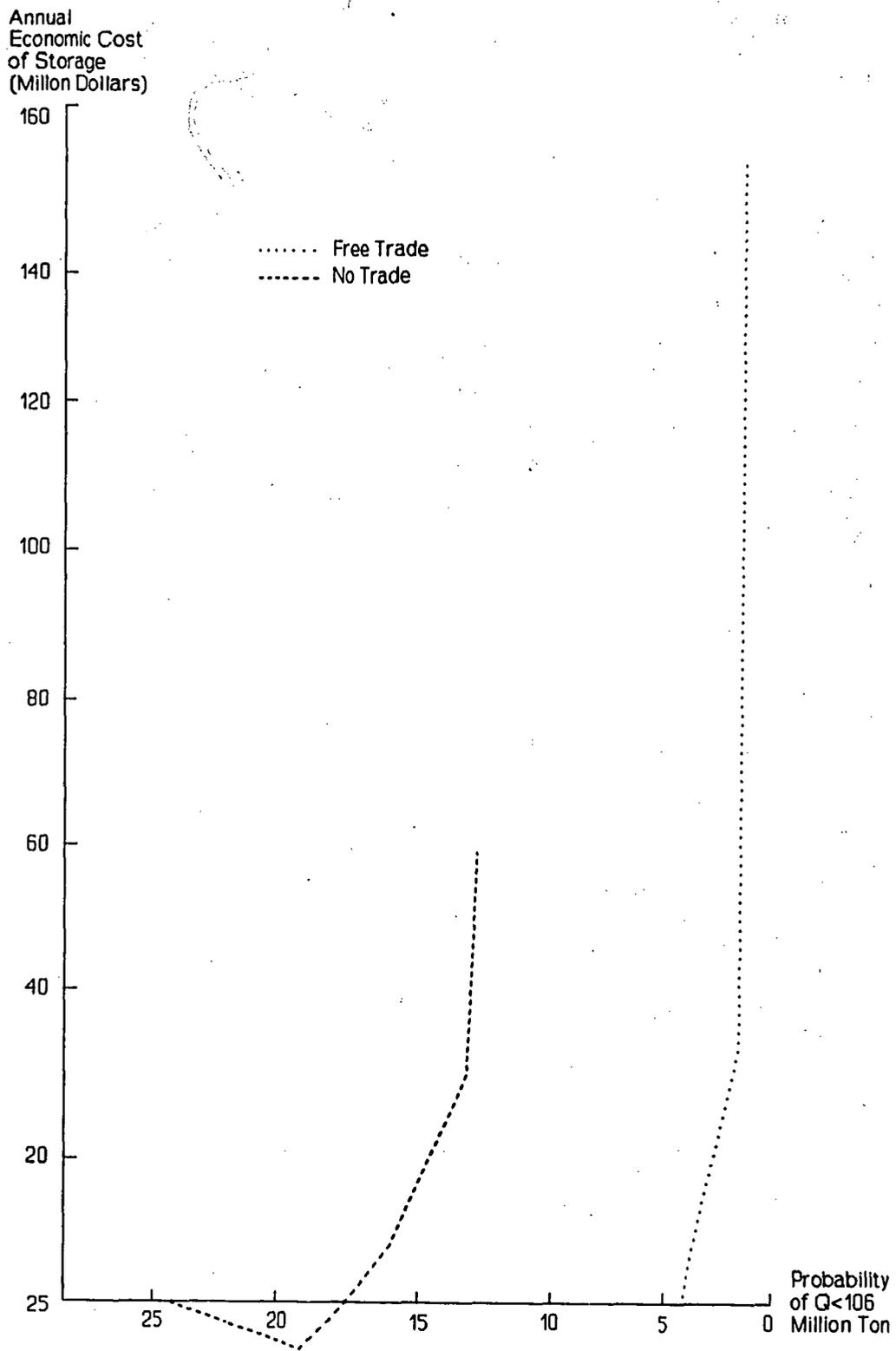


FIGURE 6. Economic Cost and Price Stabilization With Alternate Trade Policies

the private trade would not be completely crowded out by the government. In this case, a one ton increase in government stocks would not lead to a one ton fall in private stocks, but to a fall of less than one ton in private stocks (FAO, 1990).

The width of the target band also impacts the potential involvement of the price stabilizing agency in the market. Setting a narrow target band implies the agency is likely to be more involved in the market than if the target band were wide. More involvement in the market not only implies significantly more stabilization stocks to be maintained by the agency, but also less opportunity to the agency for recovering the total costs of the stocks. Unless the target band is too narrow or both the floor and ceiling prices are set too low or both set too high, the range that prices are free to vary within should allow prices within that target band to reflect long-run market equilibrium prices. In countries where production technology is improving rapidly and costs of production are dropping each year, it is imperative that the price stabilizing agency lower its floor price at least in line with lower production costs if long-run equilibrium prices are to be maintained within the target band.

Floor Price Determination. The floor price for the producer is based on various criteria. In some countries, the floor price follows closely the trend in the cost of production for a given crop and, to that extent, the floor price serves as an income stabilizing mechanism for producers (World Food Programme, 1985). In other countries, the floor price serves as an incentive or disincentive for producers, particularly in the case where a country has no export market but is pursuing a policy of self sufficiency (Neils, 1989). In still other cases, the floor price is set based on the projected border price (Konandreas and Fransecutti, 1991). This policy is especially relevant in keeping local grain supplies within the country where the grain has been produced .

Ceiling Price Determination. Setting the ceiling price for the consumer has been based, in many countries, on the maximum consumer price affordable to the poor or the most vulnerable groups (Neils, 1989). Prices above the ceiling prices for any prolonged period of time may cause low-income people (people who, in many developing countries, spend as much as 40 percent of their total expenditure on cereals) to lower their cereal consumption but in so doing may lead to malnutrition. The ceiling price may also be set based on the border price (Konandreas and Fransecutti, 1991). This policy may be followed in order to prevent stocks from entering illegally from neighboring countries.

Adjustments To Floor and Ceiling Prices. The floor price and the ceiling price can be adjusted with time. For example, the floor price in some countries is adjusted each month after the harvest period to reflect the costs of storage and loan interest rate charges. Since the floor price is announced before the producers plant the grain, floor prices should not be changed during or after the planting season. Surveys should be taken in advance of planting to determine how much acreage farmers are intending to plant. Based on these pre-planting surveys and the projected consumer demand for the grains, the price stabilizing agency should have a reasonable indication as to the maximum quantity of grain the agency is likely to purchase. In any event, however, the agency must be aware of the potential for exporting excess grain and, if no export market exists, must work that risk into the floor price offered the producers.

The ceiling price may need to be adjusted if the floor price is adjusted in order to maintain the band at a uniform width. If inflation and non-farm wages increase relative to the cost of farm inputs, then the ceiling price may need to be increased relative to the floor price. The ceiling price may be adjusted at any time to reflect significant changes occurring in the consumer economy (Ahmed and Bernard, 1989).

Stock Acquisition Requirements. Before liberalization, the public sector may have either had a monopsony or been able to consistently buy sufficient quantities from grain producers to maintain a dominant role in the market. After liberalization, the public sector, if involved in price stabilization and/or emergency stock management, must acquire and replenish its stocks from various sources including the local market if there is sufficient/surplus stocks in country or internationally through importation. Price stabilization stocks are obtained locally when producer prices drop and producers sell to the price stabilizing agency at or above the floor price (World Food Programme, 1985).

If the public sector is only involved in managing emergency stocks (and not involved in stabilization stocks) it must initially acquire the stock through a number of channels. In most cases, the government of these sub-saharan African countries does not have the funds to buy the stock either locally or internationally and, consequently, must rely on donor funding. The acquisition of these emergency stocks to the recommended level is generally done on a gradual basis over a multi-year period. Generally speaking, the need to acquire emergency stocks is more expedient than the need to acquire stabilization stocks simply because the emergency stocks are meant to be available at all times in order to avoid famine. However, where countries don't have access to donor funded food aid for building emergency stocks, the public sector must be very prudent when acquiring emergency stocks. The Early Warning System functioning in most countries in sub-saharan Africa may provide timely and pertinent information to the organization in charge of managing the emergency stock in such a way that the acquisition of the stocks can be done when projected prices are relatively low.

The size of the emergency stock may be larger, the same, or smaller than the size of the stabilization stock. If the emergency stock is intended as a stock for meeting the temporary needs of the vulnerable groups in at-risk zones only in the country, then it is likely the emergency stock size in that same country would be smaller than the stabilization stock size. If the emergency stock is intended as a stock for meeting the temporary needs of the entire population in that country, the emergency stock may be similar in size to the stabilization stock. If the target band of the price stabilizing agency is very wide and, particularly, the ceiling price is very high and unlikely to be reached under even poor crop production years, then it is possible the emergency stock size may be larger than the stabilization stock size. In some countries, for example, in Botswana, where only a floor price for sorghum has been established, stocks may be purchased from the producers at the floor price but the same stocks are usually kept only for later sale in the local market or exported (FAO, 1975b). In that case, emergency stocks would be obviously larger than the stabilization stocks. Emergency stocks are potentially held for long periods of time (as much as five years), and, necessarily, are to be kept in facilities appropriate for long-term storage. Stabilization stocks need not be held in long-term storage facilities

as the stocks are implicitly used in less than emergency situations which theoretically occur more often.

Stock Release Requirements. The release of emergency stocks is generally done on the basis of certain objectives and conditions having been met which varies by country (see Section III). For example, in Chad emergency stocks are released to disaster-stricken people where 10 percent of pre-schoolers exhibit less than 80 percent weight/height ratios of norm (FAO, 1989b).

Emergency stocks are intended to temporarily make cereal grains available to those suffering through a catastrophe or to those lacking purchasing power as a result, for example, of a production shortfall resulting from drought conditions. Whether the stocks are distributed free or at below market prices depends on the nature of the emergency. The impact of emergency stocks is measured by the number of lives saved and the amount of malnutrition prevented not by its affect on market prices. Still, domestic sales and purchases of the emergency stock may contribute to some extent to the stabilization of the cereals market (Kottering, 1988). A grain reserve stabilizes not only cereal supplies, but also national market price, the balance of foreign trade, and the level of subsidy payments by the government to poor consumers (Reutlinger, et.al., 1976).

To recycle the price stabilization or the emergency stocks, the public sector would need to add a fraction of total stocks to the market in such a way that prices are not driven above the ceiling price and so that private sector marketing is not hindered as a result of public sector competition. One means of recycling stocks is to sell the stock to be recycled through a competitive bidding process. If the price stabilizing agency buys more stocks at the floor price than needed for protecting the consumer, the agency must export the excess in order to minimize costs of storage. For example, in 1985 FAO recommended in Zambia that if the projected June 1st stock is equivalent to more than six months of market demand, the possibility of exporting the excess should be considered (FAO, 1985a).

Stabilization Stock Operating Policy And Market Distortions. When injecting stabilization stocks into the market, the price stabilizing agency aims to limit the impact of supply disturbances (a form of market distortion). In any country, however, the impact of intervention by the price stabilizing agency in stabilizing the market is first viewed critically by the private sector. If the early experiences in intervention by the price stabilizing agency prove successful, the private sector will respond in a manner that acknowledges the influence the price stabilizing agency has on producer and consumer prices. For example, in Madagascar, at the time of harvest the private sector was only offering the producers a price for their grain that was well below the producers' costs of production, in spite of the fact that the price stabilizing agency had set a floor price above the producers' cost of production. Once the price stabilizing agency began mobilizing trucks for hauling grain from the producers' farms to the agency's storage facilities the private sector immediately changed their price offered to producers to a price above the floor price (Mueller, FAO, personal communication, 1991). In some countries in Africa such as Chad, price stabilization stocks have been such a small percentage of the total marketed surplus that when injected into the market, the additional stocks had virtually

no impact on prices and consumer prices remained well above the ceiling price (due primarily to supply disruption).

Price Variability And The Use Of Stabilization Stocks. Trade liberalization may increase commodity price variability in countries (e.g., in the EEC) that currently protect their domestic cereal markets. In an FAO study (FAO, 1989b), it was found that, on average, the elasticities linking changes in domestic prices to changes in world prices were found to be around 0.5 (from 0.33 to 0.82). In other words, a 10 percent increase in world prices was associated with an increase of roughly 5 percent in domestic producer prices of cereals, and vice versa. Also, in these countries the private trader would be expected to hold more stocks than at present.

In other countries more open to trade yet where the Government currently holds large stocks (e.g., in the USA) there would also presumably be an increase in private stockholding and a reduction in Government carryover following a move to free trade. It is not obvious what the net effects of these changes would be. In Mali, for example, the liberalization of marketing was followed by a drought in 1982-84 which raised free market prices to double the official prices and resulted in very limited quantities being sold to the state marketing organization (Staatz, et.al., 1988). Agricultural production, by its very nature, tends to vary significantly from year to year and it is difficult to separate the impact of structural adjustment and market liberalization from that of changes in climatic conditions. Although adjustment programs may have resulted in some positive developments in aggregate staple food production in certain countries, there are also many cases of insignificant and/or negative association between the two. It is still too early to assess fully the medium and longer-term effects of structural adjustment programs, which generally includes market liberalization.

In assessing the impact of liberalization on prices, however, it is important to understand what amount of price fluctuation between the harvests is acceptable, in order to maintain supply stability in the markets, to maintain purchasing power at a level whereby the consumer can still buy food crops, and to give producers some element of certainty under which to make planting/investment decisions. If the following rule of thumb in a fairly competitive market is assumed - monthly increase of 1%-2% for each of losses, storage costs and interest - then food prices could be expected to rise 3%-6% per month after the harvest, and by about 25%-50% by the time of the next harvest (World Bank, 1990).

SECTION III

INVENTORY OF CURRENT STOCK POLICIES AND PROCEDURES

This section includes a regional description of trends in sub-saharan African food security stock management policies and an inventory of national food security stock policies and procedures.

Regional Description Of Trends In Sub-Saharan Africa Stock Management Policies

Background. Issues of food security and its management vary in the extreme across the vast continent of Africa depending on many factors. These include climate; topography; demographics; ethnicity; agricultural practices; and social, economics, and political factors in an infinite number of combinations.

The more famine-prone areas of sub-saharan Africa are shown in Figure 7. Excluded are Arab Africa to the north, the mostly wet lowland areas of tropical West Africa, and industrially developed South Africa. Arab Africa is excluded because it is not sub-saharan and, therefore, not within the study area. In part of western and southern Africa the topography, rainfall, and/or advanced economic development combine to reduce concerns about the adequacy of the food supply. In the remainder of the continent periodic drought, population pressure, and/or poverty combine to produce periodic or chronic famine for significant portions of the population. Prolonged violence has intensified the problem in several areas.

TABLE 6

Imports of Cereals, Cereals-Based Food Aid, and Emergency Assistance Grains
to Africa, 1985-1990

Year	Total Imports	Food Aid	Emergency.
	------(1,000 metric tons)-----		
84/85	13,900	5,000	2,463
85/86	9,700	4,300	2,074
86/87	9,300	3,200	1,024
87/88	9,000	3,800	1,611
88/89	8,000	3,100	1,238
89/90	8,100	2,800	1,279

Source: WFP INTERFAIS Database.

Data from recent years elucidate two important facts of the food security situation in the famine-prone regions of Africa. One is that "emergency" food aid is a constant fact of life in this area of the world. The second is that in years of severe stress, the already substantial volumes of emergency food aid may have to be increased 100 percent or more. The mid-1980's were years of severe need in the famine-prone areas (Table 6). Total imports increased during the drought years 1984-1986, averaging 11.8 mmt. per year compared with 8.1 mmt. annually during the past two years. Emergency aid doubled during the 1984-86 crisis, averaging 2.3 mmt. compared with 1.2 mmt. in more recent times. The last two crop years have been considered average to good in terms of crop production potential. Yet even under these conditions, emergency food accounted for 15.8 percent of the total cereals imports in 1989/90. The vast majority of food assistance is directed to the famine-prone areas shown in Figure 7.

During the last half of the 1980's the U.S. individually contributed a little more than one-fifth of all emergency grain. Another fifth was contributed in the name of the WFP, to which the U.S. is a major contributor. The other major donor of grain for emergency relief is the CEC, which contributed 16.5 percent during this period, according to the WFP INTERFAIS Database. The rest was contributed by individual industrialized countries, NGO's, etc.

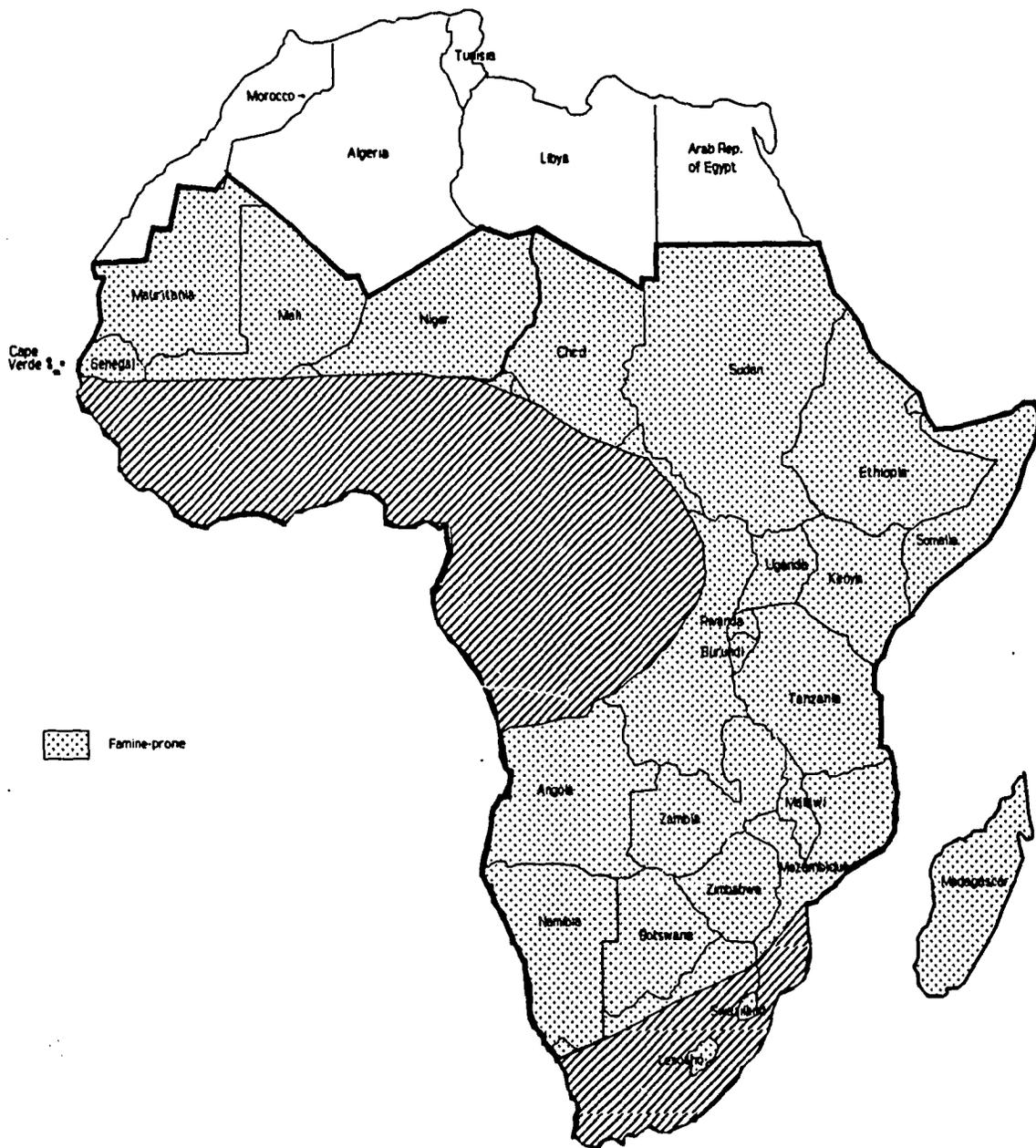
Not surprisingly, countries in various parts of the famine-prone areas have met to discuss common problems. All of the area identified in Figure 7 as famine-prone as represented by one of three regional organizations (Figure 8). These organizations are not specifically designed to address food issues, but rather to focus on a wide range of developmental and ecological issues, of which food security is a part.

Francophone West African countries in the famine-prone area are members of CILSS (Comité Interétats de Lutte contre la Sécheresse au Sahel). This organization articulates with European sponsors (OPED) through the Club de Sahel, formed in 1976. The focus of this organization is desertification, but a regional program of assistance to grain organizations has also been developed.

Former British colonies in the north-eastern corner of the drought-prone area have formed the Intergovernmental Authority on Drought and Development (IGADD). Chartered in 1986, its goals include regional cooperation in early warning systems and the development of a regional plan for training (IGADD, 1990).

Most Anglophone countries in southern Africa cooperate in SADCC, the Southern Africa Development Coordination Conference. SADCC was organized in 1980 to, *inter alia*, foster economic development. The regional program for food security is headquartered in Zimbabwe. The program of this organization relative to food security deals mostly with increased crop production and improved purchasing power through economic development.

Because each regional organization is comprised of countries with differing goals, levels of development, ideologies, etc., there are inevitably difficulties in mounting effective regional programs. An example is the regional security stocks tried by CILSS and proposed by SADCC, with little success. Therefore, the policies and procedures of individual countries may not be strongly influenced by the programs of the regional organization. However, the regional grouping provides a conventional way to reference the various areas of famine-prone Africa, and donors must be sensitive to regional initiatives.



Note: Shaded areas provide an approximation of the regions where drought and famine are not normally concerns of high national priority.

FIGURE 7. Famine-prone Areas of Sub-Saharan Africa

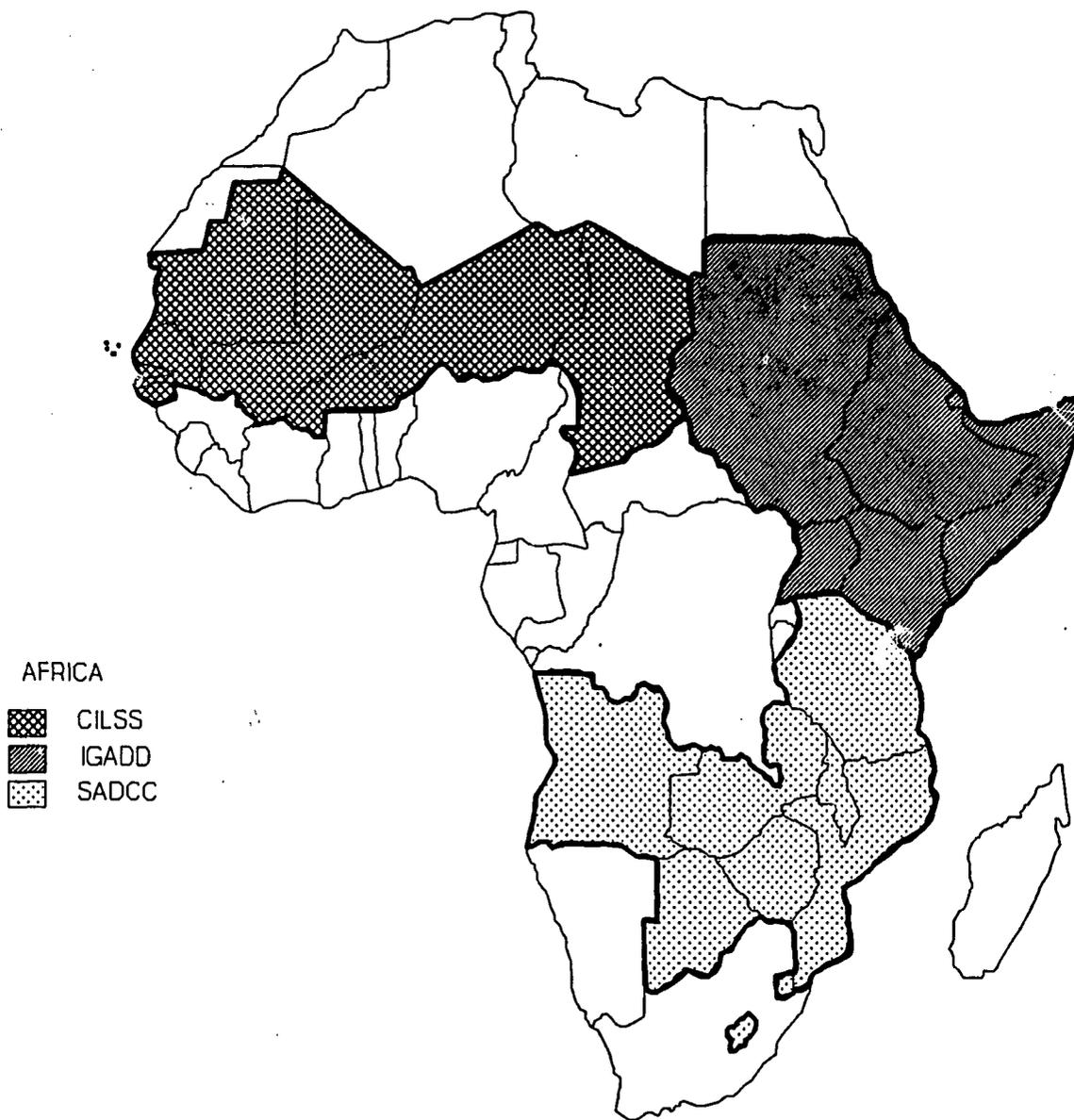


FIGURE 8. Regional Associations in the Famine-prone Areas of Sub-Saharan Africa

Inventory Of Current Stock Policies And Procedures

The inventory of current national stock policies and procedures for sub-saharan countries (Table 6) includes: the objective of the food security stock, the security stock managing organization, its management capability, and its source of funding, donor support for food security, security stock size and its determination, total public and private storage capacity, security stock acquisition and release mechanisms, stock recycling policy, stabilization policy, the existing early warning system (EWS) and its capability, market structure, trade status, grain imports and importing organization, time required for importing grain, grain exports and exporting organization, food aid assistance, food aid managing organization, and the impact of the food security stock policy on producers and consumers [note: information on the impact of stock policy on producers and consumers was generally not available in most literature and project documents on food security].

In Appendix 1, organization charts for some of the national food security stock managing organizations in sub-saharan African countries are given. In Appendix 2, the cereals data/food balance sheets plus per capita cereals use is given for each sub-saharan country except Botswana. In Appendix 3, a simplified diagram of crop production, disposal, and inter-related activities in national early warning and food information systems is given.

The countries in sub-saharan Africa that are either not included in this inventory or have no food security policy that involves a food security stock includes Angola, Benin, Central African Republic, Cape Verde, Cote d'Ivoire, Equatorial Guinea, Gabon, Gambia, Guinea, Guinea Bissau, Liberia, Madagascar, Namibia, People's Republic of the Congo, Sierra Leone, South Africa, Togo, and Zaire.

A questionnaire asking for information on national food security stock policies and procedures was sent to each USAID mission in sub-saharan African countries. The questionnaire is given in Appendix 4. Responses to the questionnaires were submitted by USAID missions from Burkina Faso, Burundi, Ethiopia, Guinea Bissau, Kenya, Nigeria, Senegal, Swaziland, Tanzania, and Zimbabwe. The countries in the inventory are given in alphabetical order. [Note: References on the information given in the inventory are not cited in the inventory, but are given in the bibliography.]

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	ANGOLA	BENIN	BOTSWANA	BURKINA FASO
Food security stock objective	Not available	<p>-It is clear that an overall food security problem neither exists at present in Benin, nor is likely to occur in the medium term, as a result of improvements expected under structural adjustment. The food security situation in Benin is not urgent, in the sense that it is in the Sahel or Ethiopia. It is more chronic (mainly in the dry season), and relates to low purchasing power of the population, limited access to markets, weak commercialization and unacceptable levels of malnutrition amongst pre- and post-school children.</p> <p>-In 1990, the Government of Benin (GOB) agreed that there was no economic justification for the establishment of large and rarely needed strategic food stocks.</p>	The objective is to build and maintain the national capacity to deal with drought and other emergencies	<p>-To ensure cereal availability on the market every year and, in case of need, until the arrival of imports (commercial and concessional).</p> <p>-To maintain a ready stock for addressing emergency situations in food deficit areas involving the eight vulnerable groups (in 1989 totalled 4.8 million people).</p>
Food security stock managing organization	Ministry of Commerce & Trade	<p>-National Cereals Board (ONC) is a public organization which began operations in 1985 while linked to the Government (MDRAC).</p> <p>-CARDER is also involved in stock management.</p>	Botswana Agricultural Marketing Board (BAMB)	<p>-National Cereals Office (OFNACER), an institution having commercial functions (purchasing and selling grains, including food aid) in the cereals industry, manages the emergency stock of coarse grains (millet, maize, and sorghum).</p> <p>-Decisions about using the emergency stock are made based on the bilateral agreement between OFNACER and the Burkina Government.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	ANGOLA	BENIN	BOTSWANA	BURKINA FASO
Source of funding for the food security managing organization/sustainability		<p>-One-half of ONC's staff are paid by the the GOB and one-half are paid by ONC's renting out the Cotonou silos</p> <p>-In 1986, ONC, which is required to pay the loan on its facilities (asset value CFA 85.7 million), was unable to pay 96.7% of this debt.</p> <p>-ONC is unable financially to implement an effective food security stock management policy.</p> <p>-ONC's lack of funds to ensure proper treatment of stocks has led to losses.</p>	BAMB by law must break even financially	OFNACER has constant financial and budgetary problems. 100% of its operational funds come from donors. It cannot breakeven in its operations because its selling price is equal to its purchase price for grains. If not fully supported by donors, it would lose money and operate on overdraft.
-funding source for food security stock management activities of the organization			Food aid financial assistance has included USD 18.16 million over 5 years for 55,000 tons of grain. In 1986, food aid included USD 27.38 million for 80,000 tons of grain.	<p>-OFNACER self-generated funds are insufficient. West Germany has provided 90% and the EEC has provided 10% of existing reserve funds.</p> <p>-For maintaining the emergency stock, it was estimated in 1991 by GTZ-PAROC to be about MFCFA 128 million/annum.</p> <p>-OFNACER has no financial capacity for price support purchases</p>
General donor support for food security			Some technical assistance for EWS has been provided by agencies such as FAO and UNICEF and there has been some donor support for equipment.	-GTZ has supplied and installed storage facilities and has provided technical assistance for information systems for stock system management. Japan has also supplied storage facilities.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	ANGOLA	BENIN	BOTSWANA	BURKINA FASO
Stock size determination				<p>-The food security stock size determination has been made difficult because of the lack of production and market information plus no reliable information on the quantity of private sector storage.</p> <p>-Based on a study by GTZ-PAROC, the 50,000 mt for serving the vulnerable groups (about 4 million people) would be sufficient only for 24 days at 190 kg/capita/annum. The Government of Burkina Faso has proposed in the present 5-year plan that the 50,000 mt emergency stock is insufficient assuming imports don't arrive for four months. -As of December 6, 1991, the size of the stock (35,000 mt) was based on a three month requirement.</p>
Emergency stocks		restructured	6,000 mt (including 4,000 mt of sorghum, 2,000 mt of whole maize)	As of December 6, 1991, OFNACER had 35,000 mt of emergency stock (the stock has not been released in the last 4-5 years). Over the period 1979/80-1986/87, the average annual emergency stock level was 12,500 mt.
Stabilization stocks		In 1986, stocks totalling 2,400 tons had not been used effectively by the ONC because of poor market information. The stocks were so bad in 1986 that they were sold at 1/4 the cost.	2,000 mt	<p>-As of December 6, 1991, the stabilization stock was 30-35,000 mt. Over the period 1979/80-1986/87, the average annual stabilization stock level was 33,000 mt.</p> <p>-OFNACER is no longer responsible for holding stabilization stocks.</p>
Working stocks				Stabilization stocks are also used as working stocks for the population in deficit areas.
Carryover stocks from year to year			The beginning stock in 1989/90 was 9 million 90-kg bags of maize	
Total storage capacity				

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	ANGOLA	BENIN	BOTSWANA	BURKINA FASO
Public sector		-ONC inherited, in 1983, 37,300 tons of storage capacity (steel silos) spread throughout the country. The silos are unusable because they have not been adapted to local trading conditions, which are based on stocks held in sacks. ONC also has large silos (in poor condition) with less than 100,000 mt capacity in Cotonou. Overall, the capacities of ONC's facilities are too big for the country.	93,000 mt (tarpaulin covered storage available)	-OFNACER has 62 warehouses (located in the North (13,400 mt), East (10,750 mt), and Center (14,750 mt) of the country) with a total storage capacity of 38,900 mt. -According to GTZ-PAROC, the minimum capacity level is 50,000 mt, based on 100 warehouses at 500 mt capacity each.
Private sector		-The capacity of storage facilities of private traders has been estimated at 15,000 mt, most of which is used for the re-export of rice. -Storage facilities are inadequate at household, community, and enterprise levels. Producer households have limited household storage capacity.	No commercial storage except for the storage at the Lobatse Mills stores	Private storage capacity includes 30,000 mt (cereal banks) and 1.3-1.8 million mt (on-farm)
Management capability/pest control		-Neither CARDER nor the ONC have the specialized personnel to carry out the stock management operations. Stocks are poorly managed when kept in storage by ONC. As a result, stocks deteriorate regularly. -ONC has had difficulty carrying out the export functions, storage responsibilities (including grain loss prevention), and price stabilization activities. -ONC management, initially 10 people with 6 senior staff with a vague set of terms of reference), cannot manage the overabundant storage facilities, instead some of the capacity is rented out.		-About 80% of OFNACER's management staff have received formal training. OFNACER has its own qualified pest control agents and a complex sampling, analysis, and stock treatment scheme including a well equipped laboratory. -Bad quality in food aid imports has created storage problems.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	ANGOLA	BENIN	BOTSWANA	BURKINA FASO
Trigger mechanism for acquiring and releasing stocks				Emergency stocks are normally not used as stabilization stocks, but are used in the event of a catastrophe as recognized by the Government and the donors.
Recycling policy				One-third of the stock is recycled per annum.
Stabilization policy		-ONC has had a very weak and ineffective stabilization policy. ONC purchases from producers in order to guarantee them a minimum price. However, ONC is ineffective in ensuring a supply sufficient to stabilize consumer prices.	There is only a floor price (no ceiling price) for sorghum	OFNACER maintains a floor price for specific grains.
EWS/food security and market information system	Since 1990/91, Angola has had an Early Warning System	-ONC lacks market information integral to its operations. ONC, with the assistance of FAO's Early Warning Project, is being restructured to manage the proposed EWS to monitor supply variations. -Benin participates in the Global Information & Early Warning System on Food & Agriculture.	The success of Botswana's EWS, almost entirely funded by the national Government of Botswana, has been attributed in part to its strategic location within the Rural Development Unit of the Ministry of Finance and Development Planning. Such a location has facilitated access to key decision-makers and resources, and minimizes usual limitations of timeliness and lack of response. Also, since 1984, a coordinating EW Technical Committee has been maintaining the flow of information between ministries.	- OFNACER through SIM (Market Information System), established in 1986, collects weekly producer and consumer prices for paddy and rice from 27 urban/rural markets. World Bank has advised the government that OFNACER should continue to participate in the information system of the cereals market, which is composed of the national EWS, SAP, and FEWS. -Burkina Faso participates in the Global Information & Early Warning System on Food & Agriculture (FAO).

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	ANGOLA	BENIN	BOTSWANA	BURKINA FASO
Market structure/grain purchasers/total production marketed/market share of the food security organization		<p>-Foodgrain prices and foreign trade are to be deregulated as per the World Bank Structural Adjustment Program (1989-1992).</p> <p>-The food distribution system is virtually 100% in the hands of the private sector.</p> <p>-ONC and CARDER have purchased less than 6,000 mt of sorghum and maize annually.</p> <p>-ONC and CARDER have no coordinated purchasing policy especially in terms of prices. CARDER buys at its own prices and then expects reimbursement from ONC.</p>	Liberalized	<p>-Market liberalization started in 1987. All controlled prices were abolished on all local products, except rice where subsidized prices are still offered producers. Another exception is in remote areas not covered by the private sector where government still sells grains at fixed prices.</p> <p>-About 10% of the total grains produced are marketed commercially. OFNACER's agents purchase a percentage of the grains (30% millet, 20% maize, and 50% sorghum) direct from groups of producers. The World Bank has advised the government that OFNACER should buy/sell through competitive bidding process and/or market prices.</p> <p>-CGP purchases rice at subsidized prices</p>
Trade status		Benin has achieved overall self-sufficiency, and could become a net exporter. Domestic production over the last ten years has been, more or less, sufficient to meet national demand with the exception of rice and wheat.		Chronic food deficit country.
Imports		The bulk of food imports are destined for re-export, particularly to Niger and Nigeria.	<p>-If the grain is being imported from South Africa, the lead time is at most 6 weeks. Grain is usually imported from South Africa (primarily) and Zimbabwe (whole and meal maize)</p> <p>-Botswana imports about two-thirds of its national food requirement during normal years and 95% during years of severe drought.</p>	<p>-Import lead time from the USA averages three months. Within the sub-region, import lead time is as little as three to four weeks, although recently it took about 2 months to import from Benin. Grain is imported from USA, Europe, Africa</p>
Importing organization/sector		ONC controls all imports of grains.	BAMB has the exclusive authority to import sorghum; imports of wheat, maize, rice are done by licensed traders.	<p>-OFNACER imports millet, maize, and sorghum.</p> <p>-CGP has a monopoly on importing rice.</p> <p>-Private sector is not authorized to import.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	ANGOLA	BENIN	BOTSWANA	BURKINA FASO
Exports		-About 73,000 mt of varying crops are exported to neighboring countries. -1000 mt collected for aid to Cape Verde and the same amount for aid to Burkina Faso and Niger.		Burkina Faso has exported grains to Cape Verde.
Exporting organization/sector		ONC controls all grain exports. But because market (internal and external) information is lacking, ONC has no workable export operations.		-Limited to Marketing Boards. OFNACER can export millet, maize, and sorghum. -Private sector is not authorized to export.
Food aid assistance		-In 1988 food aid amounted to 16,000 mt. Of this, 10,600 mt was wheat, rice, and other cereals. -The source of food aid assistance has been USA, Italy, WFP -In 1985, 5,000 mt of maize was collected in triangular transactions (Benin-Holland-Niger/Burkina Faso) for Burkina Faso and Niger.	-Food aid declined from 23% in the 1960's to 8% in the 1970's, but rose again to around 17% in the 1980's. -Donors have supplied Zimbabwean maize, which is historically low in quality	-There is a lack of coordination among donor assistance and the Government. Donors assisting with both funds and food aid (for the security stock) include France, USA, Japan, EEC, Italy, and West Germany. -Food aid has been used to replenish the emergency stock. -There have been local purchases and triangular transactions coordinated through the EEC and the WFP
Food aid managing organization		ONC manages food aid donations.		-In 1981, many organizations were involved in the management of food aid. -World Bank has advised the Government that OFNACER should manage the food aid.
Food security stock policy's impact on consumers and producers				

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	BURUNDI	CAMEROON	CHAD	ETHIOPIA
Food security stock objective	Burundi has no plans for maintaining a food security stock. However, it has recognized the need for collecting agricultural production data.	Not available	The security stock is to be used in recognized nutritional emergencies caused by drought, flood, fire, predators, war or social disturbances which have deprived people of essential food resources or the means to acquire those resources.	A National Food Security Reserve (EFSR) was established to combat famine arising out of natural calamities. The primary purpose of the EFSR is to provide a readily available stock of basic cereals which can be used in a food emergency for initial relief activities amongst the vulnerable population until such time as other supplies can be mobilized. The secondary purpose of the EFSR is to provide loans (of grain) to recognized relief agencies.
Food security stock managing organization	Has no food security stock managing organization.	Office Cerealiere (OC)	<p>-The Action Committee for Food Security and Emergency Assistance (CASAU) and its sub-committee, the Food Security Stock Committee (CSSA), is composed of representatives of governmental ministries, foreign governments, and non-governmental aid and development organizations. CASAU assisted by the United Nations Drought Relief Organization (UNDRO) and FAO, are responsible for the development and administration of emergency food aid policy</p> <p>-The National Cereals Office (ONC), an autonomous state-owned enterprise, has responsibility for the technical management of the emergency stocks since 1989.</p> <p>-The Government of Chad (GOC) has a contract with USAID that specifies the rules and regulations for management and replenishment of food security reserves.</p>	In 1980, the Food Security Reserve Agency or Unit (FSU) was mandated to manage and operate the EFSR. The FSU is an autonomous entity with its own legal identity under the umbrella of the Relief and Rehabilitation Commission (RRC). As mandated, the FSU has necessary powers and authority to administer and maintain the integrity of the reserve.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	BURUNDI	CAMEROON	CHAD	ETHIOPIA
Source of funding for the food security managing organization/sustainability			Unless the ONC is allowed to sell some of the food aid and use the money to pay for its operations, it runs a deficit; 100% of ONC's funds for operating the agency are from donors.	The operations of the FSU are funded by the Government (90%) and by donors (10%).
- funding source for food security stock management activities of the organization		OC not financially viable (with self generated funds)	-100% from donors. It has cost about US\$504,000 per annum for ONC to maintain the emergency reserve (20,000 tons). -In 1986, ONC received CFA 1.2 billion from the CEE for price stabilization; since then there has been no donor financial support for stabilization.	Government funding is considered sufficient to cover the normal business costs of the agency, assuming donor food aid assistance remains at current levels.
General donor support for food security	USAID supports policy analysis and planning. WFP distributes food directly to schools and hospitals.		Donors include the Netherlands via the FAO Food Security Support Project; CEE, which has contributed \$EU 4 million; France, Japan, & Belgium through WFP; USAID through its monetization of donated grains.	-The Director of Operations of WFP sits on the Board of the FSU along with Government, quasi-Government, and NGO officials. -Technical Assistance on EWS has been given by UNICEF/CIDA and the FAO Norwegian funded projects.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	BURUNDI	CAMEROON	CHAD	ETHIOPIA
Stock size determination	No security stocks have been planned for.		The FAO Food Security Support Project mission which developed the draft of the decree establishing the national food security stock in 1989 did not arrive at the figure recommended (20,000 mt) by any analytical method but simply noted that it was the consensus of the GOC and potential donors.	-The emergency stock size depends on the local grain availability, and contributions made by the Government of Ethiopia and donors. -It has been determined that 180,000 mt would supply 3-4 months of food supplies to the vulnerable population. Given good production estimates two months before harvest to provide EW, such reserve would take care of 3-4 months of food needs for the population facing a crop failure before the arrival of emergency supplies. -However, the continuing widespread civil strife and an almost total breakdown of traditional coping mechanisms in Eritrea have raised the country's emergency relief requirements in 1991/92 to nearly one million mt of grain.
Emergency stocks	None	6,000 mt of grains	-The recommended emergency stock level is 20,000 mt composed of millet, sorghum, and maize (millet and sorghum preferred). The emergency stock was completely used up in 1991. Currently, ONC is receiving 15,000 tons of sorghum from the USA and has in storage approximately 5,000 tons of sorghum from the CEE.	-Actual emergency stock level as of the end of November 1991 was 40,000 mt wheat and 10,000 mt of maize. -Established in 1982 with an initial target of 60,000 mt of foodgrains to be built up over 4 years to 180,000 mt. In 1987, the target was raised to 204,600 mt following further assessment of the size of the vulnerable population. Such a target was the 1990 recommendation of the Government of Ethiopia.
Stabilization stocks	None	10,000-26,000 mt of grains	None	None
Working stocks	None		None	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	BURUNDI	CAMEROON	CHAD	ETHIOPIA
Carryover stocks from year to year	None		None	-Total carryover in 1990/91 was 10,000 mt maize and 30,000 mt wheat; in 1989/90 5,000 mt maize and 40,000 mt wheat; in 1988/89 70,000 mt wheat; and in 1987/88 92,000 mt of wheat. -Agricultural Marketing Corporation (AMC), the Relief and Rehabilitation Center (RRC), and NGOs had considerable carryover stocks of some 260,000 tons in 1986.
Total storage capacity				
Public sector	None		-The ONC's warehouse storage available for storage of food aid and food security stocks has been variously estimated at between 14,200 and 37,058 mt. A WFP document estimated storage capacity at 37,058 mt, of which 19,000 mt are under the title of security and stabilization stock. Of the remaining 17,658 mt, 12,500 mt are allocated to WFP. A 1990 EEC study estimated warehouse capacity at 14,200 mt. In another reference, namely, the Director of the Commercial Division, ONC has been said to have an estimated storage capacity of 21,000 tons.	-Total storage capacity of 210,000 mt at six major locations (Nazareth, Kombolcha, Shashemane, Dire-Dewa, Assab, and Addis Ababa).
Private sector	On-farm storage is equal to about one year's consumption of grain.		An insignificant amount of small, temporary storage facilities exist in the private sector.	None
Management capability/pest control	Not applicable to the public sector.		ONC has its own pest control unit. No person has received formal training in warehouse management. Many have received short-term training in various aspects of grain storage and marketing.	-FSU has 40% of its staff trained in warehouse management and storage of foodgrains, quality control, pest control, etc. -The Technical Committee (TC) of the FSU makes recommendations as to pest management needs of stocks managed by the FSU.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	BURUNDI	CAMEROON	CHAD	ETHIOPIA
Trigger mechanism for acquiring and releasing stocks	Not applicable		Emergency stocks are released to a disaster-stricken population when 10% of pre-schoolers within that population exhibit less than 80% weight/height ratios of norm. When such a decision is made by the CSSA to use emergency food reserves, a parallel agreement is made that the stock will be replaced by specified donors.	
Recycling policy	Not applicable		Nearly 50% of the planned food security stock level of 20,000 mt is used on average each year, thereby allowing a complete rotation of the stock every two years on average.	
Stabilization policy	Not applicable		ONC no longer implements a price stabilization program. Historically, ONC's price stabilization activities (including defending the floor and ceiling prices) have been ineffective, especially since ONC's price stabilizing quantities bought or sold in the market have been less than the quantity needed to stabilize prices. The only impacts of the stabilization activities have been localized and of a short duration.	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	BURUNDI	CAMEROON	CHAD	ETHIOPIA
EWS/food security and market information system	The Government of the Republic of Burundi (GRB) has created an agency called the Service d'Alerte Rapide et de Gestion d'Information Agricola (SARGIA) within the Ministry of Agriculture and Livestock for collecting agricultural information.	Cameroon participates in the Global Information & Early Warning System on Food & Agriculture.	-The EWS is managed through the combined efforts of the SAP, FEWS, ONC, and the Bureau of Agricultural Statistics. The primary elements of the EWS includes the SAP (the EWS funded by the European Development Fund) and USAID's Famine EWS (FEWS) programs, both programs having been established in 1986. The SAP monitors human health conditions and agricultural production and market conditions. At present, data from the SAP, a continuously operating information system collected by a team of 70 persons (data collectors, data collection supervisors, and administrative staff), is organized into a monthly bulletin that is disseminated widely among those who make the decisions regarding use of the emergency reserve. The FEWS representative in Chad gathers information from Chadian data collection services, the SAP and the ONC, compiles and publishes (every 10 days) this information in a bulletin. -The EWS can predict the relative insensitivity of a food emergency about one month before harvest. -Chad also participates in the Global Information & Early Warning System on Food & Agriculture.	-Ethiopia's Early Warning activities have been established in a special unit of its own, called the Early Warning and Planning Service (EWPS) of the RRC. Information is collected from a wide range of government sources by the RRC, which manages the EWS. -One problem of the EWPS is its centralist orientation, i.e., the information tends to gravitate (one-way flow) towards the central Government which confounds the horizontal coordination of data at local or district levels. -USAID FEWS covers Ethiopia. Ethiopia participates in the Global Information & Early Warning System on Food & Agriculture.
Market structure/grain purchasers/total production marketed/market share of the food security organization	The grain market is liberalized. The private sector purchases the grain.	The grain market is liberalized. OC purchases grain from the producers.	The cereals market is liberalized. ONC purchases local millet, sorghum, or corn by contract from farmers and by bid from merchants. About 15-20% of the total grain production is marketed commercially. In 1991, ONC's market share was less than 7%.	-With food aid playing such a dominant role in the grain market, it is probably not likely that the market is liberalized. -The FSU procures, through the AMD, not more than 5% (of total produced stocks) of wheat and/or maize.
Trade status			Chronic food deficit status.	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	BURUNDI	CAMEROON	CHAD	ETHIOPIA
Imports			<p>-Import lead time is 4-9 months. Food aid deliveries should normally require less than four months between the issuance of the order and the arrival of the grain. In 1991, however, the delay between ordering and delivery was approximately nine months.</p> <p>-Grain has been imported from USA, France, Nigeria, Niger, Cameroon</p> <p>-Imports totalled 22,000-40,000 mt in 1990/91</p>	<p>-Although it usually takes approximately 4 months to import, as much as 7 months may be necessary.</p> <p>-Grain has been imported from Canada, USA, Australia, EEC</p>
Importing organization/sector	Private sector can import grains after obtaining a license.		ONC has no importing authority. Private sector can import grain if it has a license.	-Neither the FSU nor the private sector has the authority to import grains. The Government of Ethiopia through especially WFP coordination does the importing.
Exports			Chad has no recent history of exporting grains.	Pulses are exported to adjacent countries.
Exporting organization/sector	Private sector can export grains after obtaining a license.		ONC has no authority to export grains. Private sector can export grains if it has a license.	The FSU does not have the authority to export grains. Licensed private exporters may export pulses only.
Food aid assistance	WFP distributes food directly to schools and hospitals.	WFP has locally purchased rice, millet, sorghum to be used for food assistance	<p>-USAID supports the ONC by reimbursing it for expenses incurred in accepting and storing USAID food aid. Besides US support, the ONC also receives monetary assistance or food commodities from the EEC, France, Japan, and Belgium.</p> <p>-USA Title III food aid was sold by ONC (who got 8% for their services) and revenues used for development programs administered by USAID and GOC</p>	Canada, WFP, the Netherlands, Germany, India have provided funds for general operations of the FSU and for relief operations and loans to NGOs.
Managing organization			ONC manages the food aid stocks when they arrive and either freely distributes the food aid stocks or monetizes the stocks.	The FSU stores and handles donated food aid (wheat and maize). FSU distributes grain free to targeted people only.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	BURUNDI	CAMEROON	CHAD	ETHIOPIA
Food security stock policy's impacts on producers and consumers			Producers and consumers are likely sharing approximately US\$728,000 in benefits from the rotation of approximately 7,000 tons of the security stock per year by ONC; while ONC's costs are about US\$ 500,000.	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	GHANA	KENYA	LESOTHO	MADAGASCAR
Food security stock objective	The Government intends to build food stocks in producing and drought-prone areas and improve village level storage capacity.	The security stock is to be used to ensure the availability of maize and other food grains at all times.	The Mountain Region Food Reserve (MRFR) is to be used to offset eventual food shortages arising from crop failure or the forced return of migrant workers or from bad weather affecting delivery of supplies from the lowlands.	Not available
Food security stock managing organization	-Ghana Food Distribution Corporation (GFDC), a parastatal organization, and Department of Policy Planning, Monitoring and Evaluation of the Ministry of Agriculture (MOA) are responsible for the country's stock policies. -Government stocks are solely owned by the GFDC.	National Cereals & Produce Board (NCPB), created in 1980, maintains the strategic reserve. NCPB does not have autonomy in decision making on the use of the security stocks. The Ministry of Supplies and Marketing plays a role in the decision making process.	Co-op Lesotho	SOMOLAC (Societe Malgache du Lac), a parastatal trading company, had (until 1983) a legal monopsony in rice purchasing. SINPA also has a mandate to purchase paddy.
Source of funding for the food security managing organization/sustainability		A performance contract, between the GOK and NCPB has been issued which segregates NCPB's functions which will need to be managed at NCPB's expense from those NCPB functions funded by the GOK. NCPB's debt servicing charges are crippling in the light of the existing capital deficit and the high level of operating deficits.		
- funding source for food security stock management organization		During fiscal 1986/87, GOV provided NCPB with Ksh 400 million for financing emergency (strategic) reserve.	Establishment and maintenance costs for the 18,000 mt reserve for one year range between USD 190,000-270,000 and for 20,000 mt USD 210,000-204,000.	
General donor support for food security				World Bank attempted to address the destabilizing effects of government policy in 1986 by inaugurated a small buffer stock. However, soon after initiating such, donors became disenchanted with the stock.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	GHANA	KENYA	LESOTHO	MADAGASCAR
Stock size determination	Not available	<p>-Taking into account the milling constraints, degree of deficit production, the significant consumer resistance to imported yellow maize during drought, and the financial losses incurred in exporting white maize, the Government of Kenya (GOK) has decided to retain locally produced maize within Kenya and to break the recurrent import/export cycle.</p> <p>-In 1987, Gov't decided to increase emergency (strategic) reserves from 4 to 8 million bags. In 1990, reserve requirements reached 8.5 million bags.</p> <p>-In September 1991, the emergency stock size was said to vary between 4.5-6.0 million 90-kg sacks of maize (5 months average consumption). The size of the stock varies by price support activities and perceptions of drought.</p>	The food security stock size is based on a 1977 FAO recommendation of two months grain consumption.	
Emergency stocks		Emergency and stabilization stocks are not separated.	FAO recommended in 1977 a permanent strategic grain reserve of 5,000 mt of maize and maize meal MRFR and 30,000 mt of maize of MRFR. At the end of 1985, Lesotho had a 18,000 mt reserve.	
Stabilization stocks		Emergency and stabilization stocks are not separated.		
Working stocks				
Carryover stocks from year to year			The 1989/90 marketing season began with a carryover by the Co-op Lesotho of about 9 million bags. No more recent information was available.	
Total storage capacity		-The determined size of the emergency reserve has a significant effect on whether or not surplus capacity exists in Kenya.		

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	GHANA	KENYA	LESOTHO	MADAGASCAR
Public sector	<p>-In the major grain producing areas, existing storage facilities (with about 17,500 mt capacity) are to be rehabilitated and new bulk and bagged storage facilities (with about 833,000 mt capacity) are to be constructed. In addition, rice storage and milling facilities in major producing areas are to be constructed.</p> <p>-The targeted date of completion of the installation of 150,000 mt of storage space and handling facilities by the MOA and GFDC was 1989. The facilities are to enable GFDC to purchase and store adequate stocks for buffer and food security purposes.</p>	<p>-NCPB has approximately a capacity of 12.9 million bags, private rented about 5.8 million bags, and private millers approx. 1.1 million bags, cumulatively 19.8 million bags.</p> <p>-The storage capacity is distributed between 76 depot stores: 10.3 ml bag capacity is conventional warehouse facilities; 1.56 ml bag capacity is conventional (modern) steel and concrete; 1.0 ml bag capacity is Cyprus bins. Useable installed storage capacity is equal to about 993,000 mt (11 ml bags). Largest concentration of capacity (48%) is located within the Rift Valley Province, the other remaining capacity spread evenly among the seven other provinces, with emergency reserves primarily in surplus production areas. NCPB has to rely on private storage capacity to a considerable degree.</p>	<p>Co-op Lesotho owns 20 dilapidated stores from which it supplies maize meal, grain sorghum, and wheat flour. Storage for the emergency reserve of 30,000 tons does not exist.</p>	
Private sector	<p>-Storage of foodgrains (maize, rice, guinea corn, and millet) is mostly done by farmers in specifically designed structures including granaries, barns, clay pots, etc.</p> <p>-In south Ghana, the private sector is very strong and holds most of the grain in storage.</p>	<p>Private rented capacity is about 5.8 ml bags, and private millers have a storage capacity of about 1.1 ml bags; on-farm storage accounts for about 62% of country's white maize production. Traditional storage facilities maintain maize well for 12 months or more. There is a degree of foodgrain stock carryover (on-farm).</p>		
Management capability/pest control	<p>GFDC has been renting storage facilities in south Ghana that have no rodent protection, with vents that are not controllable.</p>	<p>NCPB has good record of protecting its stocks from pests and the effects of climate.</p>	<p>Produce Marketing Corporation</p>	
Trigger mechanism for acquiring and releasing stocks			<p>The National Disaster Relief Committee has the duty of responding to food shortages. Generally the Mountain Grain Reserve (MGR) can be used as a price stabilizing force in the market.</p>	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	GHANA	KENYA	LESOTHO	MADAGASCAR
Recycling policy	One proposed policy in Ghana is to recycle Ghana's food security reserve stocks in possibly the Burkina Faso market.		MGR will be automatically rotated on a yearly basis by sales to commercial stores at competitive rates.	
Stabilization policy	-Price stabilization has been considered ineffective. Farmers have never been consulted about producer prices. -GFDC is to have sufficient storage capacity to maintain stabilization stocks to be used to help stabilize food prices throughout the year.	Statutory obligations ensure farmers a guaranteed outlet for their produce at gazetted prices with similar safeguards for stabilizing prices for consumers.		Floor prices and ceiling prices have been in place since 1985. Informal ceiling price regulations have persisted despite the fact that they had been eliminated by official decree.
EWS/food security and market information systems	-GFDC continually conducts farm gate surveys to review supply and price trends to guide purchasing assistants and the commissioned buying agents.	-Kenya has its own EWS located in a number of relevant government ministries. The Interministerial Forecasting Committee maintains the flow of information pertinent to the EWS between ministries. The EW system, however, is not considered very good by some. -Kenya participates in the Global Information & Early Warning System on Food & Agriculture.	Lesotho has a national EWS that is monitored by the Ministry of Planning through the National Early Warning Unit in close collaboration with the Meteorology and Bureau of Statistics.	Madagascar has no EWS although Madagascar participates in the Global Information & Early Warning System on Food & Agriculture.
Market structure/grain purchasers/total production marketed/market share of the food security organization	The grain market is liberalized in Ghana. GFDC buys 5-10% (less than 20,000 tons) of the maize produced in south Ghana using Government funds. GFDC's personnel purchase the foodgrains at 12 areas of operation nationwide.	Kenya has a liberalized maize market. NCPB purchases about 20% of the total maize produced. NCPB also produces wheat, millet, and sorghum.		-In 1985, the cereals market was liberalized. However, many of the state trading companies continued to regard floor prices as official prices, and maintained ceiling price regulations. The market during the mid to late 1980's has been destabilized by the lack of amending the role of the parastatals while claiming cereals market liberalization. -Farmers can sell to the Marketing Board at the floor price, however, when market prices are higher producers sell to the private traders.
Trade status				

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	GHANA	KENYA	LESOTHO	MADAGASCAR
Imports		-Grain has been imported from Argentina, Saudi Arabia. -The greatest volume of grain imports is for wheat. Next greatest is for rice.	-About 90% of foodstuffs are imported from South Africa. Over 6,500 mt (estimate) of maize are smuggled into Lesotho.	-Imports have tended to decrease since 1982. Imports have declined from 351,000 tons in 1982 to 60,000 tons in 1988. -The lead time for food aid is as much as 9 months.
Importing organization/sector		NCPB has the authority to import food grain. Licensed private traders have also been allowed to import grains.		The public sector manages grain imports.
Exports		Exported to the Middle East.		
Exporting organization/sector		NCPB has sole authority to export grains.		
Food aid assistance		The EEC has provided funds for general operations of NCPB.		SINPA and SOMACODIS, another parastatal, distributed rice from the buffer stock created with USAID and WFP assistance in 1986.
Managing organization		NCPB stores and handles the food aid grain.	The Food Management Unit, under the Office of the Government Secretary, is responsible for the management of donated foodstuffs. The Government/donor Food Aid Coordinating Committee meets monthly to review food security situation.	
Food security stock policy's impact on producers and consumers				

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
Food security stock objective	The role of the Strategic Grain Reserve (SGR) is to have grain stocks readily available in years when production falls short of demand, thereby reducing the probability of supply shortages. SGR's added role is to ensure relatively stable prices of maize both to the consumer and producer through the accumulation or release of stocks during periods of domestic surplus or shortfall, respectively.	The objective of managing the national food security stock (SNS) is to meet the needs of stricken populations with inadequate access to food. The SNS is used primarily for free, emergency distributions in at-risk zones identified by the Malian famine early warning system (FEWS) and approved by an interministerial committee and donors. (In 1990/91 (a modest food surplus year), about 1.78 million people were considered moderately vulnerable to food stress and another 71,000 extremely vulnerable. The vulnerable people receive free food in emergency situations.)	To maintain enough basic foods to cover emergencies during the average time required to obtain food supplies from external sources.	-Maize stocks were to be built up to cover a number of contingencies, primarily: delays in food aid shipments leading to stock-outs, or low stock positions; abrupt shortfalls in local production; abrupt increases in the accessibility of displaced people due to an easing of the war; or abrupt increases in displaced people due to an exacerbation of the war. -The Mozambican food security emergency is a continuous emergency, primarily caused by the destabilization war.
Food security stock managing organization	-The Agricultural Development and Marketing Corporation (ADMARC), set up in 1971, is responsible for procuring and maintaining the SGR and for ensuring adequate grain (mostly maize) supplies at stable prices under fluctuating production conditions. -The Food Security and Nutrition Unit (FSNU) was established in 1987 in the Office of the President and Cabinet to monitor and respond to Malawi's food security and nutritional needs besides deciding when the SGR stocks are to be used or replenished.	-OPAM (Agricultural Products Board of Mali) is the governmental organization responsible for managing the SNS. OPAM was created in 1965 with a monopoly on the marketing of cereals in Mali, its legal monopoly was rescinded by a 1982 law. OPAM currently has an agreement with the State which defines OPAM's role besides managing the SNS, including managing food aid and supplying deficit areas with food. -The COC (Comite d'Orientation et de Coordination), a Government of the Republic of Mali (GRM) organization, authorizes the use of the national food security stock. COC is assisted by CG (Comite de Gestion), a Management Committee composed of donors.	CSA (Food Security Commission), under the direct authority of the prime minister and the supervision of a supervisory council, manages both the national stabilization and emergency stocks.	-Food Security Department (FSD) of the Ministry of Commerce (MOC).

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
Source of funding for the food security managing organization/sustainability	<p>Although ADMARC is to be run on a commercial basis, it has been charged by the GRM to carry-out some non-commercial activities (without compensation) such as price stabilization, maintenance of pan-territorial prices, operating markets for developmental purposes, and distributing food relief aid. There has been instances where the GRM has not provided sufficient funding for ADMARC to carry out its non-commercial activities as efficiently as possible. With ADMARC's financial condition becoming a major concern, a Memorandum of Understanding between the GRM and ADMARC has been drawn up (with the technical assistance of the World Bank) to ensure that ADMARC's financial viability is maintained through the adequate funding of the non-commercial functions it performs on behalf of the GRM.</p>	<p>-In 1982, OPAM was no longer appropriated an operating budget from the State. At that time, OPAM began receiving support from FRMC. FRMC pays the cost of distribution of free food aid.</p> <p>-OPAM receives: a 10% commission on the food aid sales it handles, a 10% commission on the gross value of food security stock sales it manages, and a 10% commission on the estimated commercial value of stocks transferred for free distribution.</p>	<p>CSA has a provisional budget. CSA generates revenue by selling foodgrains.</p>	<p>-AGRICOM has had difficulty selling the stocks it is obligated to buy from farmers due to the ready availability of cheaper supplies in the form of food aid. The resulting cash squeeze in AGRICOM is unavoidable given the constraints on funding of parastatal deficits from the GOM Treasury.</p> <p>-A new Marketing Fund was to have been put in place by this time that should partly facilitate the operating funds for AGRICOM. In 1989, AGRICOM did not have adequate funding for its operations. Use of the Fund for the retention of local stocks for food security purposes are yet to be worked out.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
<p>- funding source for food security stock management organization</p>	<p>ADMARC is reimbursed by the GRM for its maintenance of the SGR and the silos. In 1990/91, ADMARC's expenses for maintaining the SGR were 1,062,555 (Kwacha), including a 10% charge above the total maintenance costs.</p> <p>-Lack of adequate working capital is undermining ADMARC's ability to guarantee the producer floor price. ADMARC has not been compensated for the cost of maintaining stabilization stocks.</p>	<p>In the absence of external funds, OPAM and the GOM cannot operate the food security system. Mali does not pay for the purchase of the emergency stock, nor even for the servicing of that stock.</p>		<p>-The MOC was supposed to grant the financial resources to cover the storage, handling, and replenishing of the FSR account. However, since MOC has not always made the necessary financing available, the maintenance of the FSR is not possible. Furthermore, the system is not self-sustaining for the reserve.</p> <p>-The Food Security Reserve's estimated costs for 1982, based on 60,000 tons of maize and rice, was US\$41.32/mt.</p> <p>-The actual costs that AGRICOM incurred for the 2,000 mt reserve in Nacala in the mid-1980s amounted to 9,454 million meticals (in March 1991, USD 1=1,038 meticals).</p>
<p>General donor support for food security</p>	<p>-Donors (particularly USAID and EEC) have provided the Government of the Republic of Malawi (GRM) with maize sufficient to reconstitute its SGR after it had been completely depleted in 1989. In the 1989/1990 and 1990/91 crop years, donors (WFP, Japan, Italy, and USA) supplied over 120,000 mt of grain for distribution to Malawians affected by floods and drought.</p> <p>-WFP has purchased annually (for the past three years) at least 30,000 mt of maize from the SGR for distribution to the Mozambican refugees. NGOs have also financed food grains for the refugees.</p> <p>-DANIDA has financed much of the work done by FAC on developing an EWS capable of forecasting crop production and maize stock trends in advance of supply problems.</p>	<p>-The main donor support is through the Cereal Marketing Restructuring Program (PRMC), set up in 1981, which includes a group of 10 major donors who have entered collectively into a policy dialogue with the GRM and pledged multi-year shipments of food aid in exchange for a major overhaul of cereals marketing policy.</p> <p>-West Germany, for the most part, built the warehouses for the SNS, as well as provided sustained technical assistance and training inputs, including a code of management of the SNS.</p> <p>-Donors have jointly made provisions for a counterpart fund obtained through annual sales of 50,000 mt of cereals.</p>	<p>In 1985, donors approved a plan to construct 38 hangars (no capacity mentioned) with counterpart funds.</p>	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
Stock size determination	The SGR, owned by the GRM, was established in 1981 at a target level of 180,000 mt of white maize representing at that time approximately three months of total national maize consumption. Since that time, the target level has remained at 180,000 mt principally because that target has been tested and has provided adequate national food security under average to extreme drought conditions.	The current stock level of 30,000 mt reflects to some degree a consensus among donors and the GRM that the maintenance of the emergency stocks at the target level of 58,500 mt is unnecessary under present Malian conditions, that include a capable EWS and an increased level of grain reserves held by the private sector.	The security stock size of 30,000 mt of foodgrains is estimated based on a delivery time of 2-3 months.	The Government of Mozambique (GOM) has been advised to suspend its consideration of the size of the Food Security Reserve (FSR) until 1993, when a thorough evaluation of the food reserve needs should be made.
Emergency stocks	-Malawi built up the SGR of 180,000 tons in the early 1980s. However, the SGR was run down in 1987/88 and 1988/89 to near zero when the needs of the Mozambican refugees were met to a great extent by the GRM. With donor assistance, however, the level of the SGR reached (at the close of the marketing year) 171,400 mt in 1989/90, 109,000 mt in 1990/91, and over 135,000 mt by December 1991.	58,500 mt, as recommended by FAO in the mid 1970's. The current (October, 1991) emergency stock level is 30,000 mt.	-The emergency stock level at the end of 1989/90 was 38,200 mt; at the end of 1990/91 it was 12,347 mt (9554 mt wheat, 1647 mt rice, 146 mt sorghum). No emergency stocks were released from storage in the past two years.	-60,000 mt (FAO 1977 recommendation), of which 25,000 mt each of wheat and maize, and 10,000 mt of rice. Mozambique does not currently meet the necessary preconditions (assured grain supply, suitable long-term storage, appropriate reserve management capability, etc.) for the successful implementation of a FSR. -To hedge against unmet pledges from donors, additional minimum reserves (volume unspecified) should be considered besides the 60,000 mt.
Stabilization stocks	-ADMARC, the principal purchaser of maize and supplier of maize and cream of maize, maintains the majority of the marketed surplus of maize in Malawi as a working/stabilization stock. -Until non-price factors affecting consumption and production and until the private trading sector becomes more viable, ADMARC must maintain large working/stabilization stocks and cover a wide geographical area in order to sell maize in adequate quantities to stabilize prices.	None	-Stabilization stock at the end of 1990/91 was 8,068 mt (7293 mt wheat, 24 mt rice, 751 mt sorghum).	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
Working stocks	-ADMARC sells its working stocks of maize and cream of maize year-round at a fixed price at its retail shops located throughout the country. -For other information see stabilization stocks.		CSA maintains a minimum commercial stock required for normal market operations.	
Carryover stocks from year to year		The 1990 agreement provided that OPAM would not maintain any carryover stocks other than those dedicated to the SNS.		Excessive carryover stocks have been identified in some provinces.
Total storage capacity				
Public sector	The GRM owns the SGR storage complex (the only facility where the SGR is stored) in Lilongwe. The complex has 36 concrete silos with a capacity of 180,000 mt of maize. ADMARC's warehouse capacity is substantial and spread throughout the country. Its warehouses are used not only for the working/stabilization stocks but also for storing everything from agricultural inputs to many types of packaging materials.	135,000 mt, distributed over approximately 100 warehouses.	-CSA has 72,000 mt storage capacity in 70 warehouses, 26,000 mt capacity in open air storage, and 40 centers for supplying deficit zones with rice. -CSA has two sacked-grain storage facilities with a capacity of 1640 cubic meters.	In 1990, AGRICOM, a GOM enterprise under the control of the Ministry of Internal Commerce, had about 118 warehouses, with estimated capacity ranging from 123,500-142,000 mt. This storage capacity was not designed for longer-term food security purposes. Some of the capacity is hired. Ownership and control of some of this capacity is in flux.
Private sector	Almost all private sector storage remains at the farm level. Private traders who trade large cereal quantities have had no tradition of crop storage to minimize losses. Storage is seen as very risky due to crop deterioration and governmental policy changes, along with supply and demand changes in the market.			Many of the rural stores constructed by the government in the late 1970's and early 1980's were destroyed by rebel forces. Both the lack of capital and the high risk hinder private sector expansion into rural trading and distribution.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
Management capability/pest control	ADMARC is a tightly run organization that is managed quite efficiently as compared to many other parastatals set up in a similar way in other sub-Saharan countries. ADMARC is technically very effective in maintaining the quality of maize in storage. Many ADMARC employees have been trained in pest control techniques in England, Australia, and the US. ADMARC has reduced staffing levels and instituted managerial changes to increase individual accountability and performance. ADMARC maintains a permanent, three-person training department which coordinates periodic training of its employees on various of ADMARC's many activities.	As a result of donor support, OPAM's management of the SNS exhibits a high degree of technical competence. OPAM has its own stored grain treatment capability.	-CSA assures technically correct storage and distribution measures, however, no lab facilities exist.	Losses of food aid (mainly through theft) during the first stage from reception in the ports to first central warehouses or silos has been on average between 5% to 10%.
Trigger mechanism for acquiring and releasing stocks	When the level of stocks in the SGR is below the target, the FSNU initiates the request to the Office of the President and Cabinet (OPC) that local stocks of maize be procured by the GRM from ADMARC. The GRM prefers to acquire maize stocks for the SGR in good production years for use if necessary in poor production years. SGR stocks are released when the FSNU decides there is an emergency need (1) to supply needy rural dwelling Malawians who have lost crops due to drought or floods, (2) to fill the commercial gap and to stabilize prices, and (3) to fill food aid requirements of the Mozambican refugees.	Stock is (1) distributed free in areas identified by the CNAUR/SAP, approved by a joint meeting of the COC and the FRMC donors' group, and authorized by letter from the MAT (Government Territorial Administration), (2) sold in the market as proposed by OPAM and approved by joint meeting of the COC and the FRMC donors' group, and (3) purchased and sold by OPAM through competitive bidding when rotating or replenishing stock.	-CSA purchases surplus production from surplus regions at guaranteed prices, and guarantees supplies of basic foods to consumers at reasonable prices. -The security stock is only used in emergencies decided by the government and immediately replaced by calling the international community.	Releases and replenishments to the food aid stocks have not been well documented.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
Recycling policy	<p>Recycling of the SGR is done through the course of ADMARC's commercial and/or non-commercial maize transactions. For instance, ADMARC, in 1990, bought 77,000 mt of maize from the SGR for commercial sales and replaced the same amount back into the SGR at harvest time (1991). In recent years, the stocks in the SGR have also been recycled when WFP borrowed 30,000-60,000 mt per year and later replaced the stock with fresh stocks.</p>	<p>Theoretically, the policy in Mali is to recycle about one-third of the food security stock per year. In practice, the quantity of security stock released each year of food shortages closely approximates over a span of years the one-third stocks targeted for recycling per year.</p>		
Stabilization policy	<p>-In July, the Pricing Unit of the MOA recommends to the National Crop Pricing Advisory Committee the maize prices (including the producer floor price, depot delivered price, consumer price, and the maximum retail price) for the next crop/marketing year. The Committee then settles on the prices and announces the prices publicly in September.</p> <p>Floor prices have been differentiated by market level in order to increase margins and to encourage private agents to undertake assembly and transport functions. ADMARC, considered buyer of last resort, does not vary its buying price at different times of the year.</p> <p>-Generally, wherever ADMARC has in place a market, consumers have access to maize that is reasonably priced. However, as a result of ADMARC having to close hundreds of depots in recent years, some vulnerable groups in areas without markets have been adversely affected by higher maize costs.</p>	<p>The policy was abandoned in 1987.</p>	<p>The stabilization policy is based on guaranteed and remunerative prices to farmers for paddy and stabilized retail prices for consumers. The strategy of the CSA is to continuously supply the market with enough food supplies to satisfy the demand at a pan-territorial price.</p>	<p>-Although the Ministry of Trade considers there a need for price stabilization interventions, it has also been stated that maintaining reserve stocks for price stabilization purposes is not feasible until the GOM establishes a price-monitoring system.</p> <p>-AGRICOM adopted a minimum producer pricing policy in 1989 in order to act as a residual buyer. However, implementation of the policy has been erratic.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
EWS/food security and market information system	<p>-The National Early Warning System (NEWS) is a joint effort of the GRM and the FAO/DANIDA EWS Project. NEWS, based in the Planning Division of the Ministry of Agriculture (MOA) in Lilongwe, works closely with MOA, the National Statistics Office, the Ministry of Health, ADMARC, et.al. In January, March, and June of each year, representatives from the GRM and ADMARC compare their crop estimates and make a coordinated projection of the upcoming crop. Projections in January (3-4 months in advance of harvest) have typically been extremely accurate. NEWS issues a quarterly bulletin intended to provide information on the current and projected food security at the national and household levels.</p> <p>-FSNU is responsible for analyzing existing data and collecting new data where necessary to assess the impact of existing and proposed GRM policies and programs on food security related issues.</p>	<p>-The Early Warning System (SAP) is housed administratively within the National Committee for Emergency Action and the Rehabilitation of At-Risk Zones (CNAUR), to whom SAP makes recommendations to, but is financed by international donors through the PRMC. SAP, established in 1986) monitors human and agricultural conditions in "at-risk" regions. Highly trained Europeans manage the system (as it is funded by the European Development Fund). OPAM contributes to the market information database by collecting weekly rice producer and consumer prices from 58 urban/rural markets.</p> <p>-USAID's Famine Early Warning System (FEWS) also established in 1986 operates in Mali. The FEWS representative in Mali gathers information from Malian data collection services, compiles the data, and publishes the information at ten-day intervals.</p> <p>-Mali participates in the Global Information & Early Warning System on Food & Agriculture.</p>	<p>- CSA collects wheat and rice producer and consumer price data about every 10 days from 41 markets. CSA evaluates the annual food deficit and proposes means for covering it.</p> <p>-USAID's FEWS covers Mauritania. USAID Food Needs Assessment Project is active in Mauritania, however, the use of this Project by the GOM is questionable.</p> <p>-Other information sources include the System d'Alerte Rapide and the Government's Agricultural Statistics.</p>	<p>-The GOM does not have a price-monitoring system in place. The FSD, in collaboration with various departments within the Ministry of Agriculture, should have by 1992 improved their data base on agricultural production to evaluate the extent of production shortfall risk so that an evaluation of foodgrain reserve requirements can be made for each province.</p> <p>-AGRICOM has very limited capacity to predict marketed production before the marketing season has begun.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
<p>Market structure/grain purchasers/total production marketed/market share of the food security organization</p>	<p>-The cereals market has been only partially liberalized. Malawi Government has resisted full liberalization and complete subsidy removal on developmental grounds and the donors are in agreement with this at least to some degree. Liberalization must be slow since most area is not covered by the private sector. Malawian traders continue to face shortages of transport, finance, and information, and have been unprepared for liberalization.</p> <p>-ADMARC buys between 40 to 90 percent of the total marketed surplus. When the maize crop is poor, ADMARC does not buy so much maize because many producers can get a better price from private traders. When the maize crop is good, producers sell the majority of their marketed surplus to ADMARC at prices the same or higher than the private sector.</p> <p>-The total production marketed depends on the total production any given year. Since 90% of the population lives in rural areas, small producers generally keep that amount of maize sufficient to meet the needs for the household for up to a year.</p> <p>-ADMARC is the major supplier of maize to the consumer. Although the Pricing Unit has provided a margin between the producer price and the ceiling price, there has been limited involvement of the private sector in marketing the marketed surplus of maize.</p>	<p>Liberalized - prices are unregulated; private sector is being encouraged through working capital loans and rental access to OPAM's warehouses.</p> <p>-On average, approximately 15-20% of the total crop is marketed.</p> <p>-OPAM has handled only about 10-15% of marketable surplus (or only 2-3% of total production) per year.</p>	<p>The grain market is partially liberalized. CSA purchases grain from the producers.</p>	<p>-To a great extent liberalized. The Economic Rehabilitation Program (ERP) implemented in 1987 was designed to promote growth based on Mozambique's abundant agricultural resources through a program of liberalization. Although the government relinquished direct administrative control of much of the agricultural production and marketing systems, it still is committed to the centralized distribution of consumer goods and government guaranteed markets for small holder production. Both donor preferences and war conditions have contributed to a heavy emphasis on price reform as the principle vehicle for government policy reform.</p> <p>-Prices (for small holder produced grain, etc.) are set centrally by the National Price Commission and the National Planning Commission.</p> <p>-Distribution of some staple foodgrains will continue in order to ensure minimal levels of supply to all areas in the absence of an efficiently operating trading system.</p> <p>-AGRICOM is obliged to buy all crops offered to it at the stated government price.</p> <p>-AGRICOM purchases maize near Mabuto then distributes in the city.</p> <p>-About 20% of the cereals produced pass through channels for which quantities marketed are recorded.</p> <p>-AGRICOM procures only 8% of total marketings. Throughout the 1980's, AGRICOM has been trying to withdraw from the</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
Trade status	In the 1980's, Malawi had been a net exporter of maize up until the influx of the Mozambican refugees in 1986/87. Since then, Malawi's local production and food aid (donor) assistance have been combined in some years to meet the maize needs of both the Malawian population and the Mozambican refugees in Malawi.	Though cereals production in Mali has dramatically increased on average since the early 1980's, Mali has used those more recent years of cereal surpluses as the time to add to its food security stocks not to export.		
Imports	<ul style="list-style-type: none"> -Much of the maize that has been imported in the past five years has been earmarked for the refugees or has been used to replenish the SGR. -Unless supplies are readily available within the region, e.g., from Zimbabwe, lead time in importation may be substantial (up to 6 months), especially now that access to Malawi via Mozambique is no longer possible. -In case of climatic disasters affecting a large part of the sub-region such imported grain may not be available and transport time from suppliers on other continents may increase seriously as several countries try to import their grain through the same limited port facilities (Darben and Dar-es-Salaam) which are expensive to use. -Grain has been imported from Zimbabwe, USA, EEC 	<ul style="list-style-type: none"> Lead time for imports are about 3-4 months. -Grain has been imported from Europe, North America, and neighboring countries 	<ul style="list-style-type: none"> Commercial imports in 1991 amounted to much more than food aid imports. An import tariff is put on imports of some grains. -Commercial imports in 1991 were 200,000 mt (including 70,000 mt wheat). 	<ul style="list-style-type: none"> Getting donor approval for market food aid requests can often take up to three months. In that case, the lead time for importing grains can easily take 6 months if not longer. -About 78% of the marketed grain supplies were imported in 1988, much of this in the form of food aid. Since the ERP was implemented, grain imports have amounted to more than 85-90% of total marketed supplies.
Importing organization/sector	The GRM and the donors coordinate the importation of maize. Because the Mozambique war has cut off Malawi's direct access to maize from neighboring countries or via the Mozambican port, maize is now very expensive to import, consequently, donors have played an important role in keeping the SGR stocks at/near the target level.	Imports are unregulated except that licenses are required. There are occasional restrictions on rice imports.	CSA imports necessary quantities of grains (other than rice) to cover the food deficit. Private sector is authorized to import. More than 60% of the wheat imports were made by 2 people in 1991.	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
Exports	In the early 1980's, Malawi exported maize to neighboring countries affected by serious drought.	Mali has not exported grains in recent years.		
Exporting organization/sector	The FSNU makes the initial recommendation to the OPC for export of maize. Exports are coordinated with ADMARC.	Exports are unregulated except that licenses are required.		
Food aid assistance	Malawi started to appeal for food aid donations in 1986 in the wake of massive resettlement of refugees in Malawi and mealy bug infestation in the Northern Region Districts. In 1987/88, USAID, the EEC, the Netherlands, the United Kingdom, WFP, and other donors donated over 70,000 mt of imported, emergency food aid; Germany and Japan donated 10,000 mt and 2,900 mt of imported, commercial food aid. In 1988/89, over 37,000 mt of imported emergency food aid and over 58,300 mt of imported, commercial food aid was donated. Since the 1987/88 crop year, imported, emergency food aid has averaged about 23,000 mt per year from donors, while, Japan has donated 5,000 mt of commercial food aid in 1990/91.	-Donors (USA, Germany, France, Canada, Belgium, CEE, Netherlands, and PAM) support the food security system by providing a counter-part fund obtained through the annual sale of 50,000 mt of cereals jointly contributed. -Germany has supported OPAM with funds for the reserve. -The majority of the food aid has been purchased in sub-Saharan African countries, often substantial amounts were purchased locally. In 1990, all US food aid was purchased locally, while 85% of WFP's was locally purchased.	-In 1990, food aid from the EEC, France, Germany, Japan, USA, and WFP amounted to 53,100 mt of foodgrains; in 1987-1990, food aid has ranged from 51,000-63,000 mt. -Food aid in the form of food for work in 1990/91 amounted to 3692 mt (2178 mt wheat, 1357 mt rice, and 157 mt sorghum); free distributions amounted to 587 mt (83 mt wheat, 266 mt rice, and 238 mt sorghum).	-WFP supplied 5,000 mt for the FSR in 1984, but stopped further delivery of the second installment because the GOM had not replenished and allocated funds in the special FSR accounts and because of poor reserve management. -Estimated Relief Food Aid requirements for 1990/91 were put at 200,000 mt of maize and 23,000 mt of beans. USA and the European countries have been major donors of food aid. -With some donor countries (Canada, Australia, and Italy), the GOM has had 3-year agreements, with other countries only one year. -Food aid for the market is larger than relief food aid. -Market food aid stocks have been separated from emergency or relief food aid. -Food aid for sale to the market is basically balance-of-payments support to Mozambique. Donor countries are reluctant to engage in this form of food aid since accountability of the stocks is a problem. -In 1989, considerable surpluses of food crop were purchased from Mozambique, where relief aid was also being distributed. Donors purchased 2,450 mt of maize from AGRICOM in 1989. Donors have, however, remained relatively passive when it comes to local purchases, etc.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	MALAWI	MALI	MAURITANIA	MOZAMBIQUE
Managing organization	<p>The National Disaster Preparedness and Relief Committee was established in 1987 to coordinate relief activities (both for Malawians and for refugees) in the country. To carry out the decisions of the National Disaster Preparedness and Relief Committee, the Food Aid Relief and Rehabilitation Unit (FARRU) in the OPC was established. ADMARC was appointed to handle storage and fumigation of the food aid stocks. FARRU has typically handled (physically) food relief for free distribution.</p>	<p>OPAM</p>	<p>CSA determines the food deficit and the imported foodgrain needs and also handles the food aid.</p>	<p>-The monitoring of the flow of emergency food aid and links with the donors are mainly through the National Commission for Emergency. -The Directorate of Internal Marketing in the Ministry of Trade estimates annually market food aid. The FSD makes the request to the donor community. -AGRICOM has been warehousing agent for market food aid. In 1988, AGRICOM stored about 50% of market food aid. Releases and replenishments have not been well documented. In some areas, food aid was provided based on earlier anticipated needs, then when the needs didn't materialize, surpluses along with local supplies resulted. -NOVO, a local gov't organization with port facilities, has a system of distributing food aid in main cities.</p>
Food security stock policy's impact on producers and consumers	<p>ADMARC does not vary its buying price at different times of the year. This generally works as a subsidy for farmers in the northern region far away from marketing centers.</p>	<p>The benefits of food distribution are not evenly shared across the population but rather concentrated. Certainly, the freely distributed food has localized positive impacts at least equal to the commercial value of the food. Consumers purchase cereals (in 1991, about 7,500 mt) at below-market prices. A practice being reduced under pressure from donors and World Bank. -If food security stocks were not distributed each year, producer prices might increase 5-10%. The negative impact of supplying the market with food security stocks may be calculated given the amount of grain that is sold commercially multiplied by the revenue lost due to the lowered price.</p>		

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	NIGER	NIGERIA	RWANDA	SENEGAL
Food security stock objective	<p>-The landlocked position of the country mandates that food security stocks be maintained to meet emergency needs. The large fluctuations in national production (caused by droughts) have made Niger increasingly dependent upon trade and supplies at the national level to meet aggregate needs.</p> <p>-The objective of the reserve stock is to be able to face unpredictable events that interrupt normal conditions of foodgrain supply.</p>	<p>The emergency reserve is meant to address a famine or serious food emergency in which there are clear indications of an impending acute food shortage and extensive suffering.</p>	<p>The food security reserve is meant to provide a short-term supply of grain for meeting food emergency situations and chronic food shortage until the grains can be imported.</p>	<p>Security stocks are to be held to stabilize the market using locally produced grains.</p>
Food security stock managing organization	<p>The Office des Produits Vivriers du Niger (OPVN), under the Ministry of Promotion of Economic Development, physically manages the reserve stock and the sales of food aid. This is done under a performance contract with the Government of Niger.</p>	<p>The Food Management Unit (FMU) of the Federal Government maintains the strategic grain reserve and handles grain storage and marketing functions including reserve stock procurements in rural areas at harvest times and overseeing the grain supplies especially to the urban centers in times of shortages.</p>	<p>GREMARWA, within the National Office for Development and Marketing of Food and Livestock (OPROVIA), serves as the effective managing organization for constitution, maintenance, and rotation of the Government of Rwanda's (GOR) food security stock.</p>	<p>Decisions regarding the stocking and use of stocks are made jointly by the Board of Directors of the Food Security Commissariat (CSA) and the FCCAA (donors and the Government of Senegal (GOS)). CSA distributes emergency food and tries to develop an emergency reserve.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	NIGER	NIGERIA	RWANDA	SENEGAL
Source of funding for the food security managing organization/sustainability	<p>-In the past, OPVN was not been able to purchase all quantities offered at official prices due to delays in funding and logistical constraints. Government of Niger's contribution specified in the present frame agreement has not been forthcoming.</p> <p>-The Mixed Working Commission (MWC) made up of donor and government representatives, was to be set up to oversee the financial management of the different funds set up by OPVN, along with other financial matters critical to OPVN. Until now, however, it has not been formed.</p>	<p>80% of the funding for operations of the FMU come from the Government of Nigeria and 20% from donors. At the current levels of funding by the Government and the donors, operating the agency is permanently sustainable.</p>	<p>Historically, the GOR, US, WFP, and the Swiss financed GREMARWA's foodgrain buying funds, operating funds, and buildings and materials. Virtually all of GREMARWA's assets have come from donor and GOR contributions. Because GREMARWA is not financially stable at this time, continued contributions by donors, particularly USAID and WFP, is expected.</p>	<p>-CSA generated about 4.05%, GOS provided 37.79%, and donors provided 58.16% of the agency's operational funding requirements. GOS funding is considered by CSA to be insufficient to cover the normal business costs of the agency; operations are sustainable with donor food aid. Real progress has been achieved in CSA's managing capability, through USAID's assistance (through Cabinet Mayore WADE/Price Waterhouse) in restructuring CSA. With more help, CSA will be able to function without the financial assistance provided currently through donor food aid.</p> <p>-CSA and CPSP are to be merged.</p> <p>-Estimates of government storage capacity costs in facilities of 1,000-2,000 mt capacity are considerably lower than private sector storage costs on a per ton capacity basis.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	NIGER	NIGERIA	RWANDA	SENEGAL
<p>- funding source for food security stock management organization</p>	<p>-OPVN is to purchase grain for the reserve through competitive bidding and is expected to recover its cost through properly timed sales and purchases of grain. -The State/Donors frame agreement requires that each food security activity have its own and/or allocated resources to cover the operating costs directly involved and that all marketing and distribution activities performed by OPVN be financed by a margin covering all service costs. The frame agreement provides for establishment of a revolving fund for the food security reserve, an Aid Support Fund to cover the cost of purchasing and distributing cereals distributed free of charge, including purchase of the renewable part of the reserve or of the reserve itself, and a reserve fund. -Germany has supplied funds for the reserve.</p>		<p>-In the early 1980s, the cost to GREMARWA (with USAID and WFP assistance) for maintaining the reserve stocks (8,000 mt) was estimated at USD 1,829,000. -The GOR has recognized that the establishment of a food security stock has social benefit implications that would bankrupt a commercially viable organization. Thus, GOR's selection of GREMARWA as management agent for the food security stock will require the GOR to subsidize that element of GREMARWA's operations.</p>	<p>-Germany has provided funding for the reserves.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	NIGER	NIGERIA	RWANDA	SENEGAL
General donor support for food security	<p>-To facilitate communication between donors and the local institutional parties involved, a State/Donors frame agreement has been instituted, but was not operational as of Spring, 1991. The frame agreement includes autonomous financing of aid and food security activities, both necessary to maintain a national reserve.</p> <p>-FAO's Food Security Assistance Scheme supported by contributions from the Federal Republic of Germany led to the construction in 1975 of 114,500 mt of storage capacity for OPVN. Additional storage facilities have been installed by GTZ bringing the total to 220,000 mt, of which 106,000 mt of storage capacity are suitable for long-term storage.</p>		<p>USAID/Rwanda, through its FSM-2 project was to have improved GREMARWA's harvest information system and to have installed a functioning grain quality control lab.</p>	<p>As a part of the FCCAA, donors are involved in the decision to use the security stocks.</p>
Stock size determination		<p>-The security stock size depends on donor donations (as per agreements signed with donors), expected production, and imported grain prices.</p> <p>-The Federal Government stores a maximum of 5% of the total grain output in the country as a grain reserve. (In 1975, the Federal Government's intention was to create a food grain reserve of 250,000 mt over the period 1976-80 for consumer price stabilization, emergency reserves, for regional food security purposes, and to absorb marketable surplus. The states within Nigeria have made additional provisions for approximately 350,000 mt).</p>	<p>The 8,000 mt reserve recommendation was arrived at by calculating probable at-risk populations in times of crop failures and determining the amount of food necessary to last until the next harvest or until international relief efforts could be mobilized. Current bean storage constraints limit the proposed security stock of haricot beans to 2,000 mt.</p>	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	NIGER	NIGERIA	RWANDA	SENEGAL
Emergency stocks	80,000 mt is authorized, however, in the spring of 1991 the reserve stock stood at only 50,000 mt of sorghum and millet.		FAO's recommended food security reserve is 8,000 MT (5,000 mt of sorghum and 2,000 mt of haricot beans).	-Emergency stock size is based on the estimated annual cereals deficit; also varies depending on the donors (contributions), the surplus that can be marketed, price of local and imported cereals, and availability of funds. -One recent report indicated that the emergency stock size was approximately 7,500 mt of local cereals.
Stabilization stocks	None	-State governments target the level of stabilization stocks at about 10% of the total grain output in each of the areas of coverage.		Size varies from 500 to 23,000 mt. Variables impacting the size include the market price and the level of private stocks.
Working stocks				
Carryover stocks from year to year		-The total carryover stock in the years 1987/88-1990/91 has been 7,000 mt wheat and 2,000 mt of maize.		
Total storage capacity				In 1990, storage capacity was 84,000 mt, of which 30,000 mt is stored in four different regions (Diourbels, Thies, Kaolack, Tambacounda), the rest is spread over the country in individual warehouses of 1000-2000 mt capacity.
Public sector	-In 1990, 258,000 mt of storage capacity (24 warehouses and 87 delivery point centers). Niger has a particularly well conceived storage system. Nearly all facilities have the recommended features for storage of foodgrains. -RINI's storage capacity is sufficient for 7,200 mt of paddy and 1700 mt of white rice.	(1988) National Grains Production Company (NGPC), a federal parastatal established in 1975, and NGB have a storage capacity of about 5,500,000 mt. The Fourth National Development Plan (1981-85) called for the construction of N 5 million worth of silos and N 10 million of additional depot complex. Storage is unsuitable in some cases for strategic reserves. NGPC has mainly concrete warehouses which are not suited to strategic reserves. Infrastructure for storing the strategic grain reserve are not in place.	As of 1981, GREMARWA had 10,000 mt storage capacity.	In 1990, CSA's storage capacity was 84,000 mt (including 68 warehouses).

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	NIGER	NIGERIA	RWANDA	SENEGAL
Private sector	Household grain supply stocks have often been, in the past, equivalent to as much as two year's consumption in rural households.			<p>-The mean size of private sector storage facilities is about 100-200 mt.</p> <p>-Of 243 merchants surveyed in 1987, 39% of the assemblers and 79% of the wholesalers reported that they store grain. A standard procedure has been to turn volumes over rapidly soon after harvest (when volumes are high), and then to store beginning five or six months after harvest when volumes are lower and the hungry season (scudure) approaches.</p> <p>-Cereal banks are to be started soon.</p>
Management capability/pest control		-The management skills needed for operating the strategic grain reserve at NGB still need to be developed. The FMU has to go to commercial pest control operators.	GRENARWA stores its locally purchased beans and sorghum under controlled conditions. Its storage practices utilize the latest available technology and are satisfactory. Bean losses when they occur are generally due to a decline in quality/consumer acceptability of the beans substantial.	<p>-CSA has a qualified technical staff (76% of the technical management staff have received formal training (in USA) in storage and pest control) and the means of protecting stocks. CSA's fumigation specialists train CSA employees and the Price Equalization and Stabilization Fund (CPSP) people.</p> <p>-Actual storage practices at CSA's storage facilities vary in terms of quality. At Thies, practices were excellent with good stacking, sanitation, rodent and insect control. At M'Bour, practices were inadequate with sanitation and insect control measures insufficient to maintain the stored grain quality. For long-term storage (about three years) storage techniques, particularly pest control measures, will need to be upgraded.</p> <p>-Capacity utilization rates at CSA's facilities are low.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	NIGER	NIGERIA	RWANDA	SENEGAL
Trigger mechanism for acquiring and releasing stocks	The criteria for use of the food security stock are not well defined. In 1990, a part of the emergency stock was used for free distributions, but the funds allocated for replacement stocks (from wheat sales) are not yet available.	-The strategic grain reserve is used to cover periods of economic emergency. -Release from the buffer stock is done during periods of relative scarcity.		Emergency stocks are released in the event of catastrophes (natural or human caused).
Recycling policy	An annual rotation of 1/3rd is envisaged in order to maintain the nutritional quality of the stock.	Grains are recycled through the existing commercial grain marketing channels.	GRENARWA has had difficulty in finding sales outlets when it decides to turnover its beans. Beans become unacceptable after about 8 months in storage.	
Stabilization policy	-No stabilization policy is in place. The recent policy is on a decentralized approach in which village level grain storage (grain banks) assume greater importance. OPVN no longer has a mandate to stabilize prices.		GRENARWA intervenes in the marketplace to stabilize producer and consumer prices on haricot beans and sorghum. GRENARWA releases its stored beans and sorghum in food deficit areas as demand, evidenced by higher prices, increases. GRENARWA has not been marketing enough beans (i.e., 15% or more of total beans marketed) to stabilize market prices nationwide.	-Part of the stabilization stocks can be used as emergency stocks, but the stabilization stocks must be rebuilt as soon as possible. The stabilization policy, however, is unclear at this time as there are reports indicating that there are no floor or ceiling prices as the market has been liberalized. -In Senegal, the entire population has been impacted less by government policy than by the fact that government policy is vague and variable. -Establishing official prices for cereals is a tradition dating back to independence. For locally produced grain, it is not clear whether producer prices are intended as a floor or a fixed price. In 1988, the President of Senegal announced, three months before the planting season, the official grain prices. -CFSP supervises the distribution of imported and local rice, imported sorghum, and the marketing of imported wheat, to consumers.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	NIGER	NIGERIA	RWANDA	SENEGAL
EWS/food security and market information system	<p>-Niger participates in the Global Information & Early Warning System on Food & Agriculture.</p> <p>-Ministry of Agriculture and Stockraising officials develop estimates of food needs with the support of three projects: CILSS/DIAFER, FEWS, and the FAO.</p> <p>-The EWS is deficient in several areas, including the problem that neither the populations vulnerable to food problems nor the strategies or adjustment mechanisms they use are known.</p> <p>-SIM has bi-monthly publications for restricted groups.</p> <p>-Rice and bean producer and consumer price (at 44 urban/rural markets) data are collected weekly.</p>	<p>-The National Early Warning Unit of the FMU regularly collects data on the estimated acreage planted, crop yield, food supply/demand situation, etc. Quarterly Food Security Bulletins, monthly updates, and regular Farming Weather Briefs are prepared.</p> <p>-Nigeria participates in the Global Information & Early Warning System on Food & Agriculture.</p>	<p>-Rwanda has no EWS, however, FAO has suggested an EWS be organized in order to reduce in the future the size of the security stock.</p> <p>-GRENARWA's food supplying activities have been hampered by the lack of an effective survey and information mechanism to accurately determine regional production.</p>	<p>-Rice and bean producer and consumer prices (in 40 rural, semi-urban, and urban markets) are collected weekly by the Market Information System (SIM).</p> <p>-Le Systeme de suivi des Zones et Groupes a Risques alimentaires (ZAR) monitors the food security situation (production, nutrition, etc.) of vulnerable groups.</p> <p>-Senegal participates in the Global Information & Early Warning System on Food & Agriculture.</p> <p>-Other sources of information include USAID/DISA/ISRA.</p>
Market structure/grain purchasers/total production marketed/market share of the food security organization	<p>Producer prices for traditional grains and consumer prices have been liberalized since 1987/88. The market for agricultural commodities has been substantially liberalized. The importation and exportation of traditional crops has been liberalized and free from taxes since 1987. Only rice and wheat flour are subject to import tariffs.</p> <p>-RINI, the Government organization charged with purchasing rice from cooperatives, offers a support price for paddy producers.</p> <p>-Only about 25% of the total grain produced is marketed commercially.</p>	<p>The grain market is liberalized. The FMU of the Federal Government purchases (through a tendering process) white corn (about 4,000 mt) and white corn meal (about 2,000 mt) from mills and suppliers.</p>	<p>-The grain market is liberalized.</p> <p>-GRENARWA purchases beans and sorghum at harvest.</p> <p>-GRENARWA markets approximately 8-10% of total beans sold commercially.</p>	<p>-The grain market has been liberalized since 1980, except for rice prices, which are fixed.</p> <p>-From 1960/61 to 1984/85, state and parastatal marketing agencies were able to purchase, on average, only 2.08% of the national millet/sorghum production, with a maximum of 13.5% purchased in 1978/79. In 1985, target purchases of CSA were 40,000 mt, including 32,000 mt of millet and 7500 mt of corn.</p> <p>-Currently, CSA purchases (predominantly from small producers) 90% of the millet, 8% of sorghum, and 2% of the maize.</p> <p>-CSA markets its grain stocks primarily in the 'scudure', the period from June to September.</p>
Trade status				

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	NIGER	NIGERIA	RWANDA	SENEGAL
Imports	Lead time for importing is 2-6 months depending on whether the source is sub-regional or overseas.		Beans enter in from Zaire when traders are able to use Rwanda's relatively hard currency to purchase beans cheaply at black market rates.	-Millet, sorghum, and maize have been imported from Mali and the USA. -At the sub-regional level, lead time is about 15-30 days after the order is made. On the international market, lead time is about 1-2 months after ordering.
Importing organization/sector		Importing of grain is done by the licensed private sector.		-CFSP is responsible for commercial imports of rice and sorghum, and licensing wheat imports. -If a license is obtained, the private sector can import grain.
Exports				-Grain has not been exported in significant quantities (officially) since about 1980. -Millet has been exported to Mauritania as part of a triangular transaction financed by WFP.
Exporting organization/sector		Exporting of grains is done by the licensed private sector.		-Private sector can export once the fairly easy process of obtaining a license is followed.
Food aid assistance	-Requests for aid have not been well coordinated. Distribution problems have resulted from communication problems between the Government and donors. -Japan has provided 2000-3000 mt of rice, which was sold through bids and also distributed free. -In 1990, 2,000 mt of food aid was used as food for work, other distributions were made free. -The majority of the 37,800 mt of food aid in 1990 was purchased in sub-Saharan African countries, 16,000 mt was purchased locally. -In 1991, upon the approval of the donors, the Government of Niger distributed (free) cereals for emergency purposes	Food aid from Japan, the EEC, and other donors have been used for general operations and procurement of security stocks. -Food aid assistance has been provided in the form of triangular transactions and through local purchases.		-A steering committee of government ministry representatives, CSA representative, WFP, and EEC people, meets monthly to discuss food aid needs. -Japan, Germany, WFP, the EEC, and the US have provided food assistance in recent years. -In 1989, food aid amounted to 35,000 mt, which was sold at market price and also distributed free. Food for Work has also been provided. -Projected food aid needs for the year 2000 are 100,000 mt/year. -CSA either sells the food aid at the market price or distributes it free.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	NIGER	NIGERIA	RWANDA	SENEGAL
Managing organization	The Service des Aides aux Populations (SAP), a Government organization, is responsible for planning, organizing, and supervising free distribution of food. Once the quantities to be distributed by department are determined, the SAP notifies the OPVN which makes the physical distribution.	The FMU stores and handles donated food aid, and distributes the food free of charge to schools and targeted people.		CSA manages food aid assistance while CPSP, having its own storage facilities, may supervise the distribution of food aid (rice, wheat, and sorghum).
Food security stock policy's impact on producers and consumers	-At times, farmers had to transport grain long distances to reach cooperative markets only to discover that official (OPVN) purchases had been suspended. -The 1991 policy aims at maintaining a certain level of protection for domestic farmers by means of a tariff on imported rice.		GRENARWA has had a notable impact in reducing consumer prices for: those consumers who bought directly from its warehouses at lower prices; those consumers who bought in the markets where GRENARWA released its stocks; and non-government (coops, community centers, schools) and government (prisons, military). -Since all bean production is by peasant small-holders, these producers may benefit from the floor prices guaranteed by GRENARWA.	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	SIERRA LEONE	SOMALIA	SUDAN	SWAZILAND
Food security stock objective	To hold adequate stocks of grain to cover both normal marketing operations and reserves to guard against unforeseen emergencies, such as, delays in the delivery of imported rice.	The Food Security Reserve (FSR) is to be used in the case of an unforeseen food emergency such as drought, flood, inordinate delays in the receipt of imports, and influxes of refugees.	To serve as a buffer between the identification of a famine and the arrival of food aid to cope with the major relief effort required.	-No food security stock is needed since maize can be procured from South Africa (since Swaziland belongs to the South Africa maize supply program) without supply disruption or distribution problems in Swaziland. There is no reason to suppose that a crisis situation could exist unknown since Swaziland is small and the communication system is good. -Furthermore, there is already a form of food security practiced within the rural household where maize, surplus to household needs, tends to be released gradually into the market, and for small farmers, often not until the size of the subsequent harvest is determined.
Food security stock managing organization	Sierra Leone Produce Marketing Board (SLPMB)	-The Food Security Committee (FSC) of the Government of Somalia (GOS) is responsible for the decisions relative to the release of stocks from the reserve based on the recommendations made by the Food Security Technical Committee. -The Food Security Unit (FSU), located within the Agricultural Development Corporation (ADC), manages and maintains the food security reserve.	Food Security Unit (FSU) within the Ministry of Agriculture. The FSU is nominally responsible for monitoring food policy and advising on food security programs.	-There is no institution or agency in charge of food security stocks. -The Swaziland Government's National Maize Corporation (SMC) ensures that the maize mill buys maize first from Swazi farmers prior to securing it from any other source. SMC maintains the miller's stock of approximately 2000 mt of maize.
Source of funding for the food security managing organization/sustainability				
- funding source for food security stock management organization		Donor support is required. The accounting operations of the FSR are done using a Deposit Account and a Ledger Account.	-The recurrent costs of famine relief stocks are high, estimated in 1988 to be SL 10.00 or approximately 40% of original purchase price. Recurrent costs are to be paid for by local funds.	The cost of storing a maize buffer stock (to be met entirely by Government), held for up to two years, with a finance charge on the stock up to 27% per year is uneconomic when compared with the cost of buying maize from South Africa.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	SIERRA LEONE	SOMALIA	SUDAN	SWAZILAND
General donor support for food security		-WFP is the Government/donor coordinator. -Federal Republic of Germany financed the start-up of the Crop Monitoring Unit in the MOA.	The Food Aid National Administration (FANA) is nominally responsible for coordination of food distribution by aid donors and NGOs. USAID works through a CIDCO, jointly owned by USAID and the Government of Somalia.	In 1981, FAO recommended that the emergency reserve initially be established by donations in cash or kind from external sources, the cash contributions to be used for local purchases of grain where possible.
Stock size determination		-FAO's 20,000 mt food security reserve (FSR) recommendation was based on the absence of reliable statistical data concerning the scale of possible emergencies and the high cost to Government of maintaining the FSR. -The large farmer's storage behavior on carryover foodgrain stocks needs to be coordinated with national FSR policies, including stock size determination.		Although no food security stock policy is in place, FAO has recommended an emergency reserve stock of 3,000 mt of white maize (to be stored at to-be-constructed storage facilities at Matsapa), which combined with SMC's and the private sector's commercial stocks, would provide sufficient reserves for a 3 month period should there be a disruption in supplies in the commercial market.
Emergency stocks		-FAO's 1986 recommendation: 20,000 mt (13,000 mt maize and 7,000 mt sorghum) to be held in four strategic locations, including 10,000 mt in Mogadishu, 6,000 mt in Hargeisa, and 2,000 mt each in Kismayo and Galcaio. Rehabilitation of the storage facilities at each of these locations is needed to bring them to the minimum standard for long-term storage.	-A national stock is not important, instead, a regional strategy on emergency stocks for Sudan is needed. -The Agricultural Bank of Sudan (ABS) planned to hold back a national buffer stock of 400,000 mt of sorghum in 1988 as a buffer stock until the next harvest.	None
Stabilization stocks			Following the famine of 1984/85, the Government of Sudan (GOS) intervened, via ABS, to support the producer price by buying less than 25% of the crop of mechanized farmers. In 1985/86, the support price at the depot was SL 35 or 40 per sack; in 1986/87, the price was maintained at SL 35 per sack.	None
Working stocks				SMC has commercial/operational stocks.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	SIERRA LEONE	SOMALIA	SUCAN	SWAZILAND
Carryover stocks from year to year		On a household basis, sample wide average stocks of maize were reduced to 1.5 quintals per household by the end of the Gu growing season in 1987 (which was a normal growing season).	Since 1985/86, ABS has had carryover stocks of 6 million sacks in 1986/87 and 11 million sacks in 1987/88.	None
Total storage capacity				
Public sector	<p>-About 94,000 mt of storage capacity for milled rice or some 66,000 mt of paddy storage capacity. Storage facilities for about 63,000 mt of milled rice (equivalent to about 44,000 mt of paddy) are of adequate quality. The remaining facilities are useable for emergencies only.</p> <p>-The Western Area (Freetown) possesses sufficient food storage capacity, both at dockside and at the other locations on the peninsula. Available suitable storage capacity within the other three provinces is limited.</p>	<p>-Over 350,000 mt capacity. ADC, with a well established network of procurement centers and storage facilities throughout Senegal, has an estimated 180,000 mt of storage capacity, with 91 shed-type (concrete-walled and floored) warehouses of 164,670 mt capacity and 17 underground pits of 18,500 mt capacity. Most all ADC facilities need repairs to get to desired standards for medium- to long-term storage. With the grain market liberalized, it is unlikely that ADC's storage requirements will exceed existing available capacity.</p> <p>-Ente Nationale per il Commercio (ENC) has 120,000 mt capacity.</p> <p>-The port of Mogadishu has some 45,000 mt of storage capacity some of which is used for holding transit grains.</p>	-ABS maintains about 300,000 mt of storage capacity (about 1/2 in silos and 1/2 in warehouses). Most storage facilities are of poor quality with the exception of the Gedaraf and Fort Sudan silos. Since 1985/86, ABS has moved into full-scale marketing and storage operations.	SMC has storage facilities (total capacity of 16,000 mt) at strategic locations of the country to provide grain storage for operational and commercial stocks.
Private sector	Local traders buying from small farmers store paddy in bags in small warehouses with a maximum capacity of about 40 mt.		There is no national data on storage of grains by the private sector.	There is significant on-farm storage capacity. Plans were made to establish grain storage tanks at 13 locations to provide 600 mt of storage capacity to cooperatives in maize surplus and deficit areas.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	SIERRA LEONE	SOMALIA	SUDAN	SWAZILAND
Management capability/pest control		Some 70 storekeepers and ADC management staff have been trained in basic pest management techniques. Pest management procedures have been termed inadequate due to the lack of insect and rodent control measures. The general standard of the Mogadishu port storage facilities was better than that of both ADC and ENC. ENC warehouse management was significantly lower than that of ADC. Warehouse management at the Mogadishu port is poor, although a pest control unit has been created.	Management inadequacies prevail in stock acceptance, pest control, and stock turnover practices. Stock loss rates of 20% per annum are not uncommon, improved management could reduce losses to about 2%.	
Trigger mechanism for acquiring and releasing stocks				
Recycling policy		Reserve stocks are recycled at least every 12-18 months.		
Stabilization policy	<p>-Government fixes a minimum procurement price at the producer level, and a maximum consumer price at the retail level. Such procurement prices are not enforced, as producer prices may vary seasonally and regionally. In some cases, producers indebted to a trader may only receive less than 50% of the minimum procurement price.</p> <p>-Average consumer prices, which also vary seasonally and regionally, have been above fixed consumer prices because of short supplies.</p> <p>-SLPMB has not timed their announcement of their farmgate procurement price before planting.</p>	<p>-ADC competes with the private sector in purchasing grain. To some extent ADC has been acting as a producer price support agency. The requirements and implications of a comprehensive producer price support program and the procedures by which ADC should operate are not clearly understood.</p> <p>-ADC sells/distributes grain in deficit areas inadequately serviced by the private sector.</p> <p>-Government policy towards consumer prices is unclear. No decision has been made as to how ADC's stocks are to be released into the market.</p>		The Government's guaranteed minimum price of maize (announced before planting) is based on the costs of production. Government has guaranteed a ready market through the cooperatives and the SMC.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	SIERRA LEONE	SOMALIA	SUDAN	SWAZILAND
EWS/food security and market information system	<p>-Within the Ministries, data collection systems are not fully developed and the information which is available is not sufficiently comprehensive for detailed analysis and, therefore, of limited value.</p> <p>-Sierra Leone participates in the Global Information & Early Warning System on Food & Agriculture.</p>	<p>-The systematic collection of statistical data is not well developed in Somalia. The limited information that is available, is unreliable and inconsistent on a year-to-year basis. There is no historical farm level price series available in Somalia.</p> <p>-A Crop Monitoring and Early Warning Unit, established in 1980, operates within the Ministry of Agriculture. The Unit prepares Food Outlook, which describes the general crop prospects. However, the work of the Unit is constrained by the lack of adequate field statistical data on production.</p> <p>-Somalia participates in the Global Information & Early Warning System on Food & Agriculture.</p>	<p>-The EWS in the Relief and Rehabilitation Commission (RRC) assembles and publishes data on rainfall, crop production, cereal prices, population and migration.</p> <p>-The Ministry of Agriculture and Natural Resources collects market price data, and estimates crop production and costs.</p> <p>-USAID's FEWS covers Sudan. Sudan also participates in the Global Information & Early Warning System on Food & Agriculture.</p>	<p>-Lack of a reliable time series on area and production prevents a reliable projection of domestic maize production. The Government of Swaziland (GOS) has given priority to the established EW Unit (in the Ministry of Agriculture & Cooperatives) to provide forecasts on changes which are occurring in production, prices, and availability of supplies.</p> <p>-Swaziland participates in the Global Information and Early Warning System on Food and Agriculture.</p>
Market structure/grain purchasers/total production marketed/market share of the food security organization	<p>-The grain market is liberalized.</p> <p>-ADC purchases domestic grain. About 25% of the total grain production is marketed commercially.</p>	Liberalized since 1983		The grain market is liberalized.
Trade status				
Imports	The time lag between placing a rice international import order and the discharge of the rice in Freetown is about 45 days.		Import time varies from 2 to 6 months depending primarily on how much donor coordination is needed.	<p>-Swaziland, a net importer of maize, has had a decreasing level of imports in the mid to late 1980s.</p> <p>-The lead time is less than one month, if the maize is procured from South Africa.</p> <p>-Swaziland imports from South Africa, Kenya, and other countries of the SADCC region to meet commercial demand, particularly in the urban areas.</p>
Importing organization/sector		Since 1981, commercial imports have been handled by private traders with ENC, a parastatal, handling the distribution of concessional imports.		SAC
Exports				

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	SIERRA LEONE	SOMALIA	SUDAN	SWAZILAND
Exporting organization/sector			In 1986, ABS intended to export sorghum but was prevented from doing so by the Government, which wanted ABS to hold all its stocks (approximately 600,000 mt) until the harvest size was known.	
Food aid assistance		-All the foodgrain requirements of the refugees in Somalia are met by concessional food aid. -Between 60-84% of the foodgrain imports (during the early to mid 1980s) were supplied on concessional terms by donors.	FSR stocks are replenished by food aid.	National food aid programs provide about 5,500 mt of cereal products (every year) under regular programs to vulnerable groups.
Managing organization		-Since 1981, ENC has handled the storage and distribution of all concessional food aid. -In 1984, ENC, in cooperation with USAID, introduced a system of annual auctions whereby a proportion of the PL 480 imports are sold to private traders.		
Food security stock policy's impact on producers and consumers				

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
Food security stock objective	<p>-Objectives include adequacy of supply, stability of supply and prices and access to supplies in case of national crop failure or disaster.</p> <p>-The security stock is also to be used in chronic food shortage regions include the coastal, central, and lake regions.</p>	No information was available.	<p>-The food security stock is to be used in years of general or isolated food shortages to ensure adequate supplies of maize meal for rural and especially urban dwellers.</p> <p>-The security stock is also to be used to provide some measure of protection for low income consumers against grain price risks. In recent years, about 365,000 people in four different provinces (Southern, Western, Eastern, and Lusaka), have been short of food typically from August until January and have needed food aid from donors and the GRZ.</p>	<p>The purpose of the minimum reserve stock is to provide an operational concept for identifying the point at which imports must be ordered if food security is to be maintained. The principal risk in Zimbabwe against which a food security stock should be held arises from production variability, which in turn depends primarily on the incidence of drought. Since 1950, there have been only 8 years when the GMB has been in net maize deficits, an average of 2 deficit years per decade.</p>
Food security stock managing organization	<p>-The Food Security Unit (FSU) in the Ministry of Agriculture and Livestock Development (MALDC) is in charge of the strategic grain reserve (SGR). Decisions are made by the Board of Trustees composed of four Government of Tanzania (GOT) officials.</p> <p>-The National Milling Company (NMC) is responsible for procuring, maintaining, and rotating the SGR.</p>		<p>-Up until December 1991, the Zambian Federation of Cooperatives (ZCF), in operation since 1976, has been responsible for the maize security reserve. However, since the reserve was totally depleted in 1991, and no replenishment has taken place since then, there is some consensus among those directly and indirectly involved in the establishment of food security policy that a new Government of the Republic of Zambia (GRZ) controlled body or a contracted company (underwritten by the GRZ on a cost-plus basis) be named to be responsible for the national maize reserve.</p>	<p>-The Grain Marketing Board (GMB), with a Board of Directors consisting of private businessmen and a non-voting GOZ representative, is responsible for storing all the grains in Zimbabwe at the national level.</p> <p>-Autonomy to the GMB in deciding on security stock size and release is currently (as of December 6, 1991) under discussion.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
Source of funding for the food security managing organization/sustainability	NMC's financial position remains highly illiquid. The NMC and cooperatives continue to operate on overdrafts covered by subventions from the state. NMC losses represented 4% of GDP in June 1988.		-The ZCF is self-financing but at this time is collapsing financially. The Cooperative Unions have low levels of capitalization and few, if any, financial reserves to cover losses. When losses arise, the Unions invariably turn to the GRZ for increased subsidies. Funding requirements for ZCF and the Cooperative Unions to purchase the maize crop is very likely to continue to increase in real terms. With the GRZ continually delinquent in funding ZCF, ZCF is likely to remain mired in a financial predicament.	-Under the Grain Marketing Act, the GMB is required to break even on its trading operations. Should the GMB make a trading loss, then the deficit is written off by Government at the end of each financial year. Government has written off only a portion of the annual net deficits each year as they have occurred. Inflation has been a significant factor in the rapid rise in GMB's net trading deficit in current prices. Wheat and corn have run net trading deficits in most years from 1981-1989. Trading deficits are recovered from the Government. Trading of grain is funded by short-term borrowing. Capital projects only are funded from the GOZ and donors. The average funding during the three years (1987/88 to 1989/90) was 10.2% (GOZ loans), 8.6% (donor aid), and 81.0% (trading deficits recovered from GOZ). The permanent sustainability of GMB's operations depends on GOZ budgetary considerations. -A central problem continues to arise from the conflict between social/developmental objectives set by the Government of Zimbabwe (GOZ) and principles of sound financial management.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
<p>-funding source for food security stock management organization</p>	<p>-The GOT funds 100% of the operational requirements for the SGR, which is owned by the GOT and is not part of the working stock of the NMC. -In 1990, the GOT budget included BMS 3 million for administration and BMS 4.5 million for buying grain for the SGR. The maintenance of the SGR is constrained by limited government budgetary resources. Although the FSU is able to breakeven from its SGR operations, its funding level is insufficient to cover the normal business costs of the agency.</p>		<p>There has never been sufficient funding to allow ZCF to purchase 2.5 million bags of maize. In 1991, only 1 billion Kwacha was obligated by the GRZ to ZCF for purchasing 2.5 million bags of maize for the reserve. At 800 Kwach per bag, the funding from the GRZ was only sufficient for purchasing about 1 million bags, moreover, the costs of transport and handling would add to the shortfall in the funding. Recent evidence shows that the Government is facing serious budgetary constraints in financing the purchasing and the managing of the maize reserve. -Funding for relief food purchases is provided by GRZ and donors through the Contingency Planning Unit and the Relief Coordination Unit at the Ministry of Agriculture & Cooperatives which purchase food from Cooperative unions, and later sells the maize to famine relief victims at a charge (sometimes subsidized).</p>	<p>-At a minimum the cost of the reserve stock can be related to the incremental inventory cost (approximately Z 23.4 million at current short-term interest rates of 12.5%) plus a pro rata allocation of GMB handling costs. -There is no budgetary provision to protect the GMB from the financial consequences of uneconomic levels of stock holding. -With respect to producer price stabilization, there is a need to identify the net costs incurred and make appropriate provision for covering them. The maize surpluses resulting from the existing guaranteed price supports contribute significantly to the GMB's net losses. -In terms of consumer price stabilization the principal cost relates to the reserve stocking requirement which is required to assure the GMB's ability to maintain its gazetted prices without introducing rationing procedures. Arrangements for the financing of the reserve stock thus directly contribute to meeting the costs of stabilization of maize consumer markets.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
General donor support for food security	The Dutch Government has provided assistance since 1990/91. USAID supports the EWS with Title I funds.		Donors have supported Zambia with storage facilities, food aid, and technical assistance. Germany has donated and constructed 84 storage sheds and 23 depots along the rail-line. Japan has donated and constructed 12 brick walled storage sheds and is planning to construct another twelve. In 1987/88, 55,500 mt of maize and over US\$1 million for purchasing maize from Zimbabwe was donated by 7 different donors. USAID, FAO, the Netherlands, the British, Swedes, and the Norwegians have provided the bulk of the technical assistance to Zambia.	Support from DANIDA (Dutch), KEW (German), USAID, CIDA (Canada), EEC, and the Netherlands Government has come mainly for capital projects like depot construction and ancillary equipment. EEC has funded technical assistance including development of information systems, and has funded exports of maize through triangular transactions.
Stock size determination	Stabilization and SCR stocks (limited to 150,000 mt of maize, sorghum, millet, and rice) are physically integrated. From 1981-86, GOT had no stocks. From 1986/87 until 1989/90, food security stocks were increased to 176,056 mt. Since late 1989/90, the stocks have been reduced by 80,000 mt and released in 13 of 20 regions.		-For some years, the GRZ has had a policy of trying to maintain about a three-month security stock of maize, i.e., a maize reserve of about 2.5 million 90-kg bags (225,000 mt), for urban consumers.	-The size of the Maize Reserve Stock (MRS) is related to the level of maize production, the length of the lead time, the level of demand to be met during the lead time, and the strength of the preference for local as opposed to imported supplies. -In communal areas, the amount of MRS to be retained depends on the supply/demand conditions, which would vary with the quality of the harvest.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
Emergency stocks	-The SGR, established in 1978, is to be maintained at 100,000 mt in four warehouses.		The largest maize reserve held in Zambia in recent years has been 700,000 bags (63,000 mt). In 1991, ZCF received funds from the GRZ to purchase maize for the security reserve. However, within a few months after receiving the funds, all the funds were used to transport maize to ZCF storage and then on to the mill. No maize was purchased and kept in storage as a security stock.	The Government of Zimbabwe (GOZ) has yet to articulate an explicit reserve stocking policy and the current practice of GMB management is precautionary rather than statutory. By any standards, this constitutes a large reserve for food security, greater, for example, than that required in respect of import lead time except in the most unusual circumstances. In each drought case in the 1980s, food supplies (white and yellow maize) could have been assured, assuming a 5 month import lead time, by a minimum reserve stock of 400,000 tons.
Stabilization stocks	Stabilization stocks were to be maintained at 50,000 mt.		None	The stabilization stocks are not separated from the emergency stocks.
Working stocks			ZCF and the Cooperative Unions (Provincial, District, and Primary Societies) maintain a working stock of maize, with its size dependent on the actual purchases made by the Cooperative Unions.	
Carryover stocks from year to year	1990/91 137,700 mt maize, 51,800 mt rice 1989/90 127,000 mt maize, 22,200 mt rice 1988/89 172,500 mt maize 7,000 mt rice			-Large fluctuations in the level of carryover, which are largely accounted for by variations in the levels of intake and domestic sales, represent the essential background against which stock policy has been and continues to be formulated. Carryover stocks have been, in 1990/91, 649,954 mt maize, 6654 mt rice, and 307,038 mt other; in 1989/90, 1,165,609 mt maize, 5696 mt rice, and 282,998 mt other; in 1988/89, 949,189 mt maize, 14,454 mt rice, and 337,656 mt other; and in 1987/88, 762,334 mt maize, 3289 mt rice, and 342,708 mt other.
Total storage capacity				

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
Public sector	<p>-Government has a total storage capacity of 80,000 mt, 10,000 mt at Dar es Salaam, 20,000 mt at Arusha, 20,000 mt at Arusha, and 30,000 mt at Dodoma.</p> <p>-NMC has a storage capacity of 50,000 mt.</p>		<p>Available storage capacity for grain is 12.5 million 90-kg bags of which 1.2 million are in silos, 3.6 million in covered sheds, and 7.7 million on concrete slabs with tarpaulin covers (hardstandings). This capacity is not sufficient when marketed production and carry-over stocks are high. Also, the location of storage facilities is an additional problem, as storage is mainly concentrated in or near consumption areas.</p>	<p>In 1990, the GMB had a total of 4,839,000 mt of storage capacity, including silos (528,500 mt), sheds (136,000 mt), and other (4,175,000 mt), including hardstandings. The GMB has 74 warehouses located all over the country.</p>
Private sector	<p>Private traders lack adequate storage capacities.</p>		<p>-Although there is currently very little on-farm storage of maize for later sale to the Cooperatives, there is substantial on-farm storage of maize for use on farms and/or for local sales.</p> <p>-Private traders have no incentive to store maize since (ZCF) maize prices are pan-seasonal.</p> <p>-Mills have storage facilities for 2 to 3 weeks supply of maize but this is seldom used since the mills can keep interest charges low by processing maize as it is received from the Cooperatives.</p>	N/A

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
Management capability/pest control	<p>-About 22% of the management staff of FSU have received formal training. FSU has trained fumigators.</p> <p>-NMC is responsible for maintaining the SGR according to proper warehousing practices. NMC has some skills in grain storage, however, qualified management is still a problem. The SGR Manager in the FSU is in direct control of SGR stocks throughout the country.</p> <p>-There has been some storage problems with some grain that was stored 5 years.</p>		<p>In general, the record of the current grain storekeepers within the Cooperative system is not good relative to grain quality maintenance. A high percentage of maize (as much as 20 percent) is said to have been lost in recent years. Grain inspection at purchase or receipt is absent from the Zambian system. Notwithstanding the many people trained in fumigation techniques, grain quality maintenance is not done in most cases. Provincial cooperatives in Eastern and Copperbelt maintain teams of pest control specialists and equipment. ZCF has a Commercial Services Division which, among other services, fumigates grain. Employees with the ZCF Commercial Services usually respond to calls of infestation that have already caused much damage.</p>	<p>The GMB, with about 5207 employees, is a relatively efficient managed organization with long-established high standards of both physical grain management and financial controls. It is a model grain marketing board in this respect. The GMB has pest control and fumigation teams.</p>
Trigger mechanism for acquiring and releasing stocks	<p>-In the event of an emergency food crisis, the Board of Trustees of the FSU notifies the NMC and the FMO and provides specific instructions to the FSU to release SGR stocks.</p> <p>-Stocks are also released as buffer stock to stabilize prices.</p>		<p>-The acquisition of reserve stocks by ZCF has been hampered by insufficient funding by the GRZ to ZCF. Even though local production of maize was good in 1991, the maize reserve was not built up.</p> <p>-Other problems that have kept maize reserves from being acquired have been the exceedingly high storage losses and the high cost of maintaining the reserve. Although in recent years, Zambia may have been in the enviable position of having produced maize surpluses or at least supplies of maize approaching self-sufficiency, export opportunities along with reserve building opportunities have been wasted as grain has been lost particularly with the onset of the rainy season.</p>	<p>Stocks are acquired mainly to avoid having to import grain during times of drought.</p>
Recycling policy			None	

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
Stabilization policy	<p>-Policy includes stability of prices to producers through a system of price support purchases in regions. Central Government no longer sets a floor price; each District, however, may set a floor price. Government will set an indicative producer price for maize grain.</p> <p>-Producer price buffer stocks are purchased particularly in remote regions bordering Zambia, Malawi, and Mozambique where the GOT is the buyer of last resort. The function of last resort buying has for a long time been weak.</p> <p>-The stabilization stock is not used to depress consumer prices. There are no ceiling prices set.</p>			<p>Producer and consumer prices are set (fixed) for maize on the basis neither of costs nor what the market will bear.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
EWS/food security and market information system	<p>-The Early Warning and Crop Monitoring Unit (with technical assistance from the Dutch Government, FAO, and USAID), incorporated under the FSU in 1982, submits periodic reports (including production, market prices, supply, demand, imports) to the Food Security Officer. FSU's maize production estimates are considered to be unreliable. As a result, private traders face major difficulties in operating efficiently because of an ineffective information system.</p> <p>-Tanzania participates in the Global Information & Early Warning System on Food & Agriculture.</p>		<p>-In Zambia, the Crop Forecasting and Early Warning Unit (CFEWS), attached to the Planning Division of the Ministry of Agriculture and Cooperatives, is responsible for estimating crop production, marketed surplus for maize, and import needs. (CFEWS issues a quarterly Food Security Bulletin that provides an in-depth balance sheet for maize, wheat, rice, and sorghum.) Crop estimates are given by the CFEWS, in coordination with the Early Warning Coordinating Committee, to the National Committee on EW (NCEW) which meets twice each year to concur on the maize supply situation.</p> <p>-Since Zambia invariably has sufficient domestic maize stocks available in the country through at least the end of December and more typically through March, and with the CFEWS capable of projecting the existing commercial maize stock level in October, the lead time for importing maize in most maize deficit years should be about five months.</p>	<p>-The existing EWS is receiving technical assistance from the Dutch Government.</p> <p>-GMB makes crop forecasts and collects data on international markets.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
<p>Market structure/grain purchasers/total production marketed/market share of the food security organization</p>	<p>The grain market is liberalized. The GOI procures (on a quota basis for big and small farmers) maize, paddy, and sorghum, and appoints agents to deliver the maize at SGR godowns.</p> <p>-Even before liberalization, official marketing channels handled only a rather small portion of the theoretical available production surplus for marketing.</p> <p>-The public sector markets about 30% of total grain marketed.</p>		<p>-Maize meal prices have been liberalized as of December 1991. ZCF and the Provincial and District Cooperatives are responsible for purchasing maize (as the buyer of last resort) and interprovincial marketing of maize. The Cooperatives' fixed prices for maize as well as the guaranteed floor prices of wheat, sorghum, millet, and rice are pan-seasonal and pan-territorial.</p> <p>-Maize sold into commercial channels is stored in commercial storage facilities (largely in the hands of ZCF and the Cooperative Unions) for later transfer to processors, mainly millers.</p> <p>-With the recent freeing of maize meal prices, however, more of the maize will be purchased by the private sector now and in the future as compared to in the past when the maize meal price to the consumer was heavily subsidized.</p> <p>-The principal retailers are state-owned shops which carry the maize meal as directed by the GRZ. Maize meal is usually a breakeven proposition for the retailer and at times it has been unprofitable.</p>	<p>-The grain market is not liberalized. There are no profit incentives for the private sector to engage in spatial arbitrage in trading grains.</p> <p>-Under the terms of the Grain Marketing Act, the GMB is charged with buying and selling any controlled product which is delivered to or acquired by it. In Area A (commercial farming areas) of the country, producers can only sell controlled products to the GMB or retain them on-farm for their own use. In Area B, mainly the communal areas where small peasant farms are the norm, producers can freely trade controlled products. In Area B, GMB is still primarily that of buyer only with the vast majority of purchased grain sold directly to the large urban mills and stockfeeders. There has been a massive increase in the number of producers selling to the GMB. Products intended for sale and taken out of Area B into Area A can only be sold by the GMB.</p> <p>-The GMB purchases at a fixed price 100% of the maize, about 85% of the wheat, and 100% of the other grains.</p>
Trade status			Zambia has the capability of being a maize surplus producing country if its maize policies and market reforms can be worked out.	Generally a maize surplus country.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
Imports	<p>-FSU is authorized to import grains. Grain has been imported from the United Kingdom.</p> <p>-It takes a maximum of three months for imports to reach the country.</p>		<p>-For imports from the subregion, the lead time is about 2 months. If imports must come from overseas, the lead time can be as much as 6 months.</p> <p>-In recent years, imported maize has come from Zimbabwe and South Africa.</p> <p>-Zambia imported 13,000 mt of maize from Zimbabwe and 150,000 mt of maize from South Africa in 1991. No maize was imported during the years from 1988/89 to 1990/91.</p>	<p>-The Government has adopted a policy of triangular transaction, involving the importation of both wheat and rice for the export of maize.</p> <p>-There are few historical instances of maize imports from the past two decades, so the import lead time cannot be observed directly. It has been considered to be between 3 to 5 months, although the lead time is heavily dependent on actions which the Government itself must take to permit and facilitate grain imports.</p> <p>-Wheat is imported from the USA, Australia, and Canada.</p> <p>-Rice import requirements are estimated to be 15,000 mt per annum, coming mainly from Malawi and Bangladesh.</p>
Importing organization/sector	<p>FSU, authorized to import grains, estimates and controls import requirements, generally, for rice and wheat. The private sector may also import grains if it has an import license.</p>		<p>Although ZCF is the only legally empowered agency to import maize and maize products, the 150,000 mt of maize that started arriving in November from South Africa was negotiated for by the National Milling Company and hauled directly to Provincial Cooperative Union storage facilities.</p>	<p>GMS imports grains. The private sector must get permission and a license in order to import grain.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
Exports			<p>-There is little prospect for exporting maize outside the Southern Africa region since transport costs to major world maize markets are high and Zambia's maize production sector is not sufficiently competitive to compensate for these costs.</p> <p>-Export permits were granted in 1989/90 for roller meal, mealie meal, white maize, and maize meal to be exported to Zaire. Annual import requirements to Shaba (in Zaire) range from 50,000 to 100,000 mt annually. Shaba smuggles mealie meal (up to 30,000 tons annually) from Zambia. The late payment to maize producers from the Cooperative is reported to have encouraged cross border trade in maize.</p>	<p>-50% or more of the maize exports have been to SADCC and other Southern African countries, other maize exports to Nicaragua, Zaire, Malaysia, Cape Verde, and Iran; millet exports have been to Burkina Faso, and South Africa.</p>
Exporting organization/sector	FSU controls all grain exports. The private sector may export if they obtain an export license.		The ZCF is the only legally empowered agency to export maize and maize products, under the Marketing Act on Controlled Products issued in August 1989. ZCF may authorize the private sector to export upon issuance of an export license. Licensed exporters of maize must buy the maize from ZCF must sell the maize at the price ZCF is charging its customers.	<p>-GMB is under instruction to sell surplus grain 'to best advantage' but this is limited by the export opportunities available in the SADCC region.</p> <p>-The private sector must get permission and a license in order to export grain.</p>

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
Food aid assistance	<p>-In recent years, donors have added physical stocks of 77,000 mt of maize and wheat. Also, donors have included funds to ship in the grain.</p> <p>-Food aid accounted for an average of 68% of total cereals imported between 1979-80 and 1986-87. As a result of foreign exchange constraints, food aid has been an important factor in guaranteeing food security in Tanzania over the last twenty years. Food aid has been utilized to cushion the likely adverse affects of shortfalls in cereal supplies especially in the Dar es Salaam area.</p>		<p>-In 1987/88, 55,500 mt of maize and over US\$1 million for purchasing maize from Zimbabwe was donated by many different donors, including Zimbabwe, USA, Canada, Australia, Canada, Italy, Kenya, and the EEC</p> <p>-The USA, the Netherlands, Canada, and the EEC have provided over US\$1 million to Zambia for purchasing of maize from Zimbabwe.</p>	<p>-Food aid assistance has occurred only once (wheat under PL480) since independence.</p>
Managing organization			Relief Coordination Unit of the Ministry of Agriculture	GMB handles donated food aid.

TABLE 7

Inventory of National Food Security Stock Policies and Procedures

Country	TANZANIA	UGANDA	ZAMBIA	ZIMBABWE
Food security stock policy's impact on producers and consumers			<p>-Government policy regarding the subsidized price of inputs and the subsidized price of maize has changed each year and made it difficult for producers to follow the signals. At times of surplus production of maize, ZCF and the Cooperative Unions have not been able to purchase all the maize available from the producers, leaving some producers with no means to store the grain and undoubtedly high losses of the grain.</p> <p>-Producer prices for the 1991/92 crop of maize have been increased to 1200 Kwacha/90-kg bag. This price is subject to change, as it is linked to inflation and the export parity price. Producers are responding to this higher price by significantly higher plantings in 1991/92.</p> <p>-The price of mealie meal has been heavily subsidized by the GRZ. A coupon program is in place which provides urban consumers with important food subsidies to urban consumers, (in 1991, coupons covered approximately 48% of the cost of the roller meal, a type of mealie meal).</p> <p>In December 1991 mealie meal prices were decontrolled. The impact of this will undoubtedly be significantly higher prices. Attempts to contain subsidies on maize meal in 1986 proved unacceptable to urban dwellers and there was rioting in protest against increases in the price of maize meal.</p>	<p>-In the case of rural consumers, a large proportion of security stocks, rather than being retained in the communal areas to meet the needs of deficit households, have been delivered to the GMB and distributed to urban areas.</p> <p>-Rural consumption is constrained by the fact that official retail maize meal prices plus transport charges usually exceed average local maize market prices. The existence of massive grain stocks in urban centers is unable to assure food security in grain deficit rural areas because the distribution system is not adequately geared for grain backflows into such rural areas.</p>

SECTION IV

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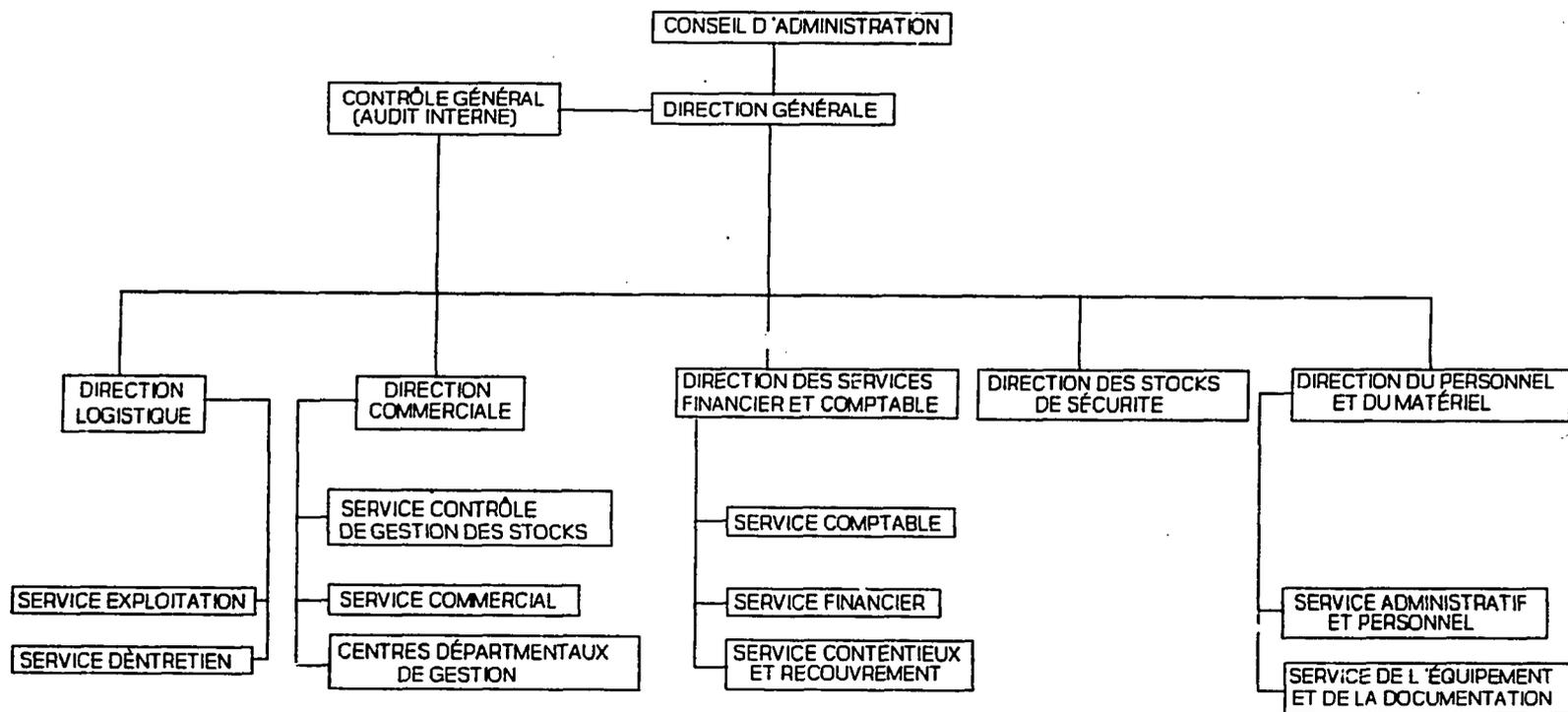
Zambia, Government of the Republic of, Evaluation of the Performance of Zambia's Maize Subsector, 1990.

Zambia, Government of the Republic of, National Preparedness Plan, 1986.

APPENDIX I

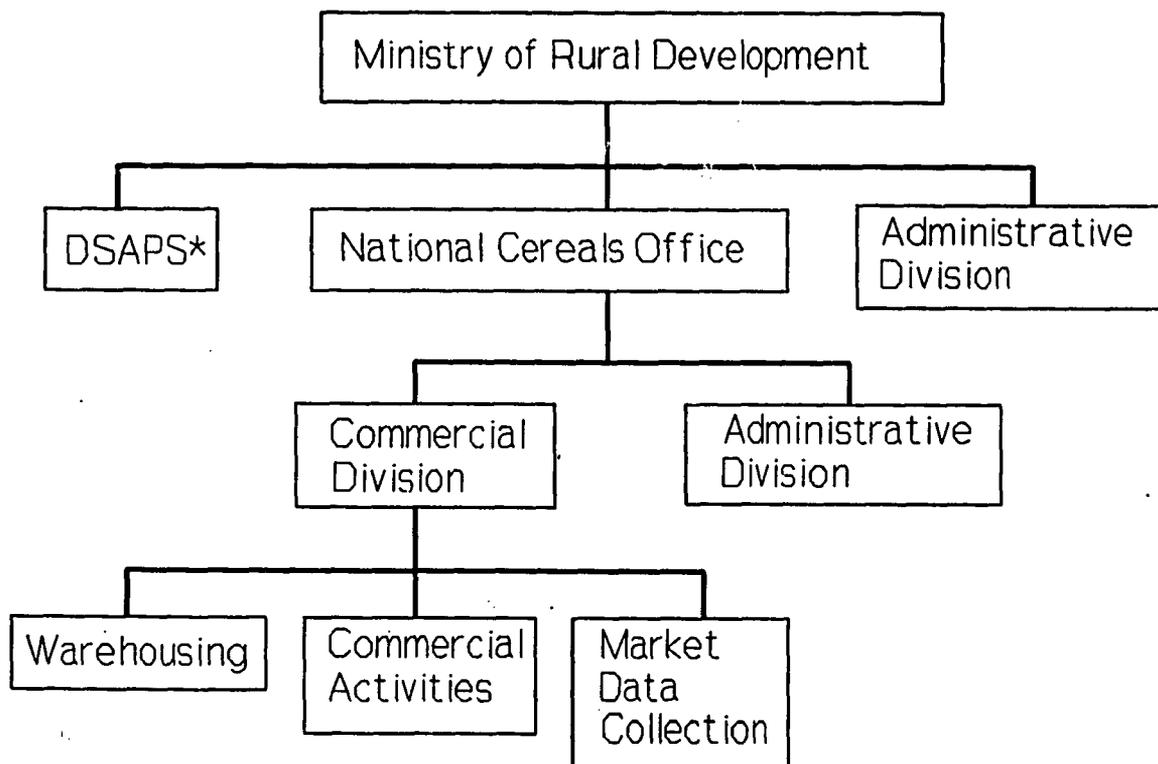
ORGANIZATION CHARTS FOR AVAILABLE FOOD SECURITY MANAGING ORGANIZATIONS

ORGANIGRAMME DE L'OFNACER (BURKINA FASO)



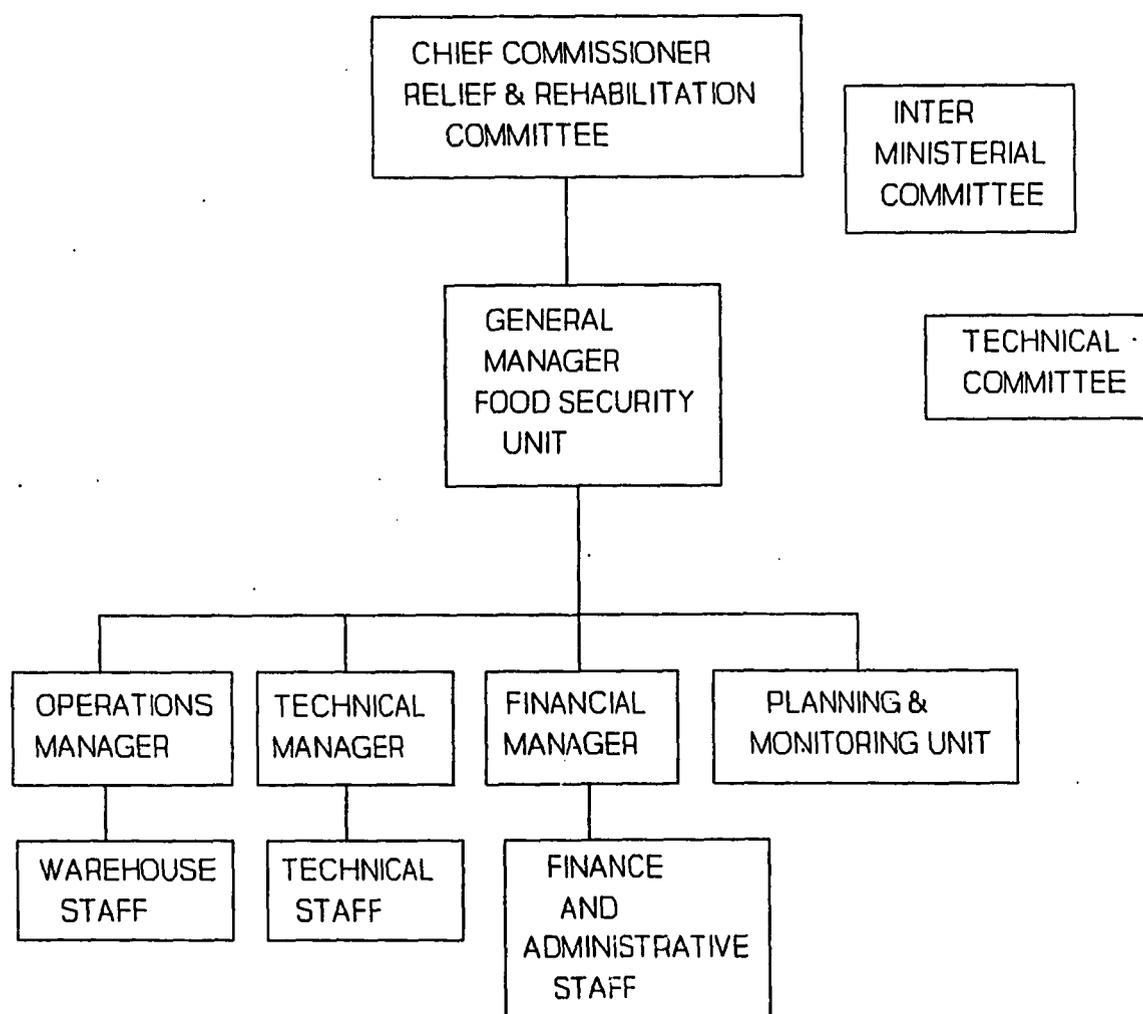
Document de référence

POSITIONING OF THE NATIONAL CEREALS OFFICE (CHAD)

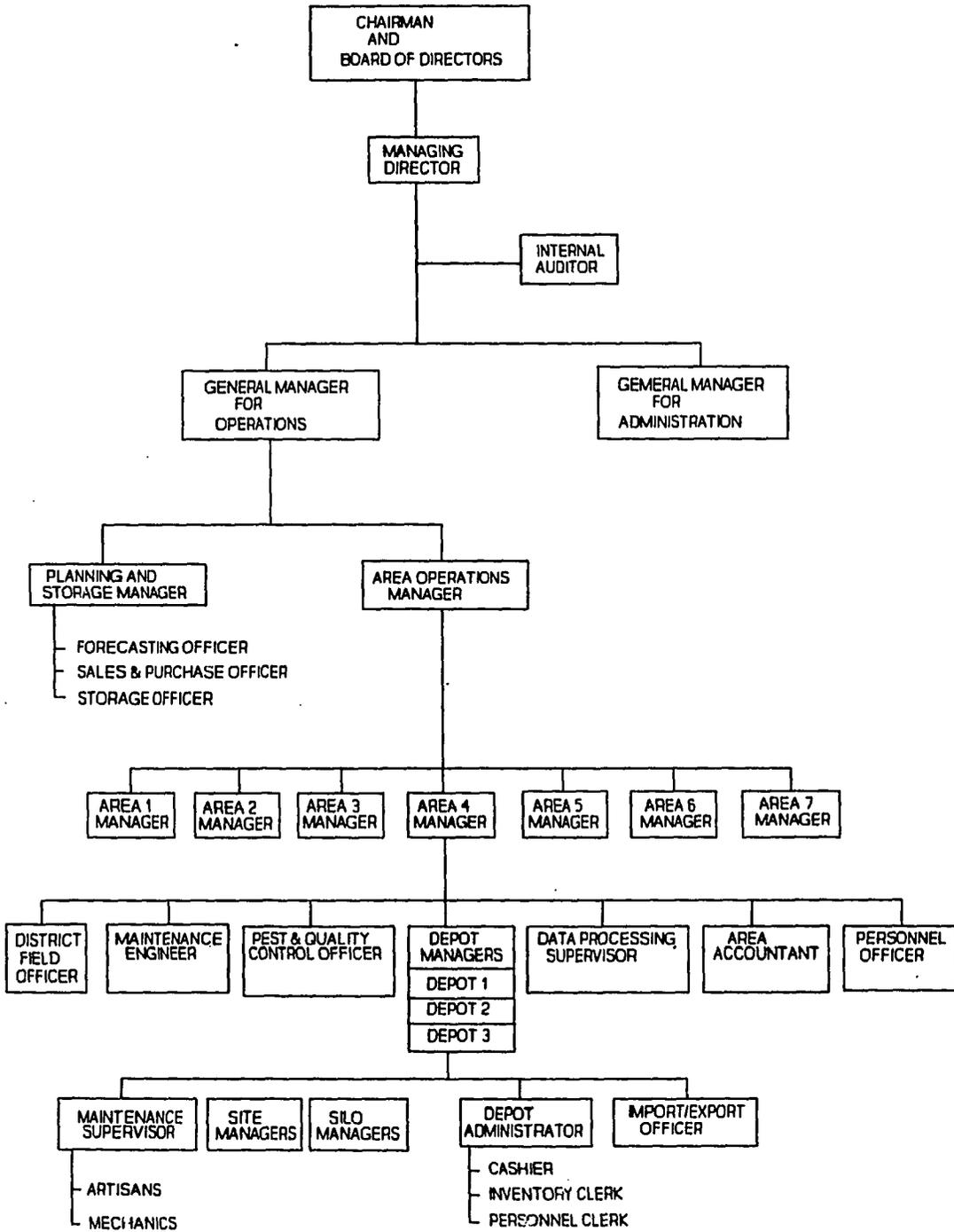


* Direction for Food Security to Disaster Stricken people

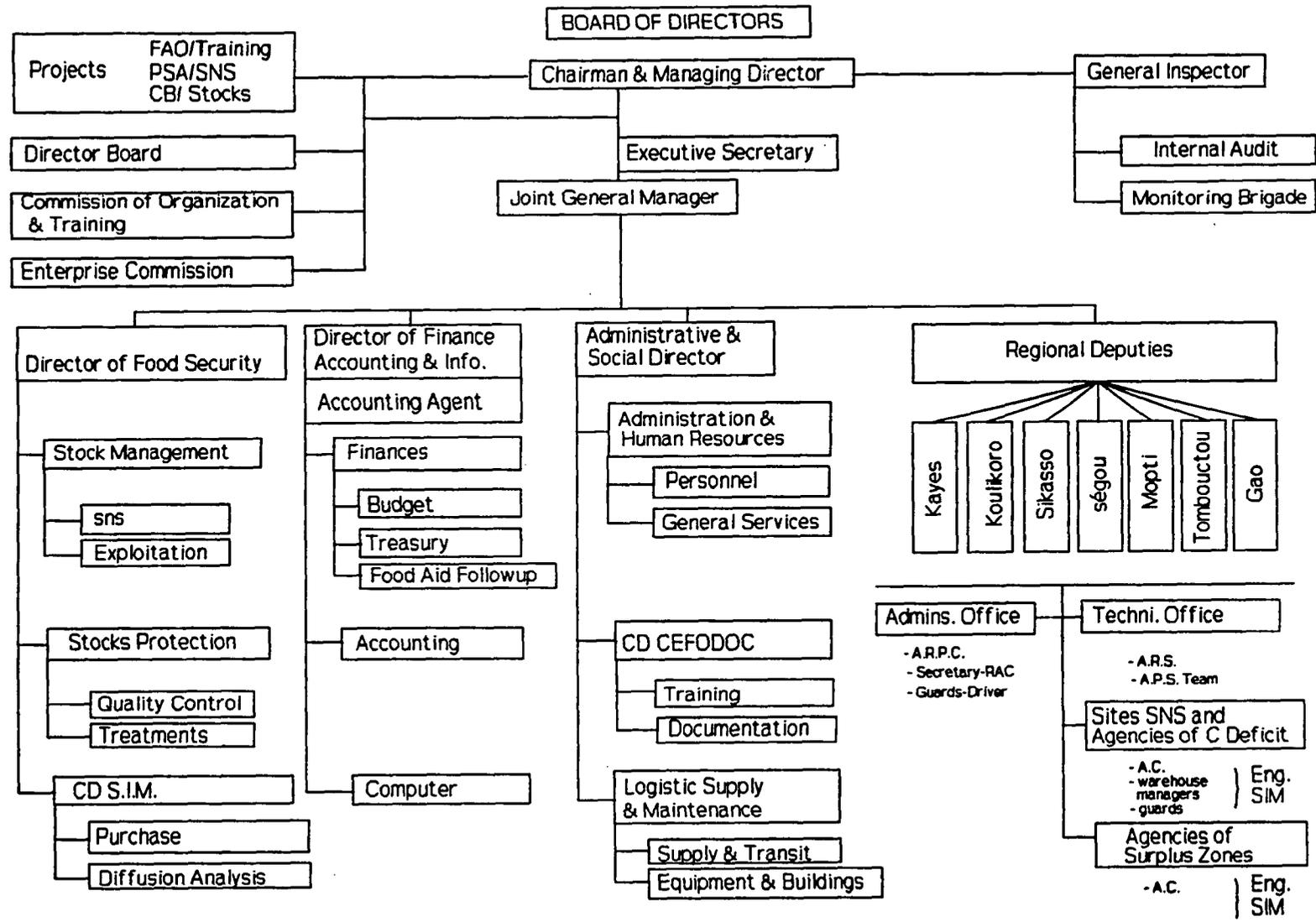
ADMINISTRATION AND MANAGEMENT OF THE FOOD SECURITY RESERVES (ETHIOPIA)



ORGANIZATIONAL STRUCTURE FOR THE NATIONAL CEREALS AND PRODUCE BOARD (KENYA)

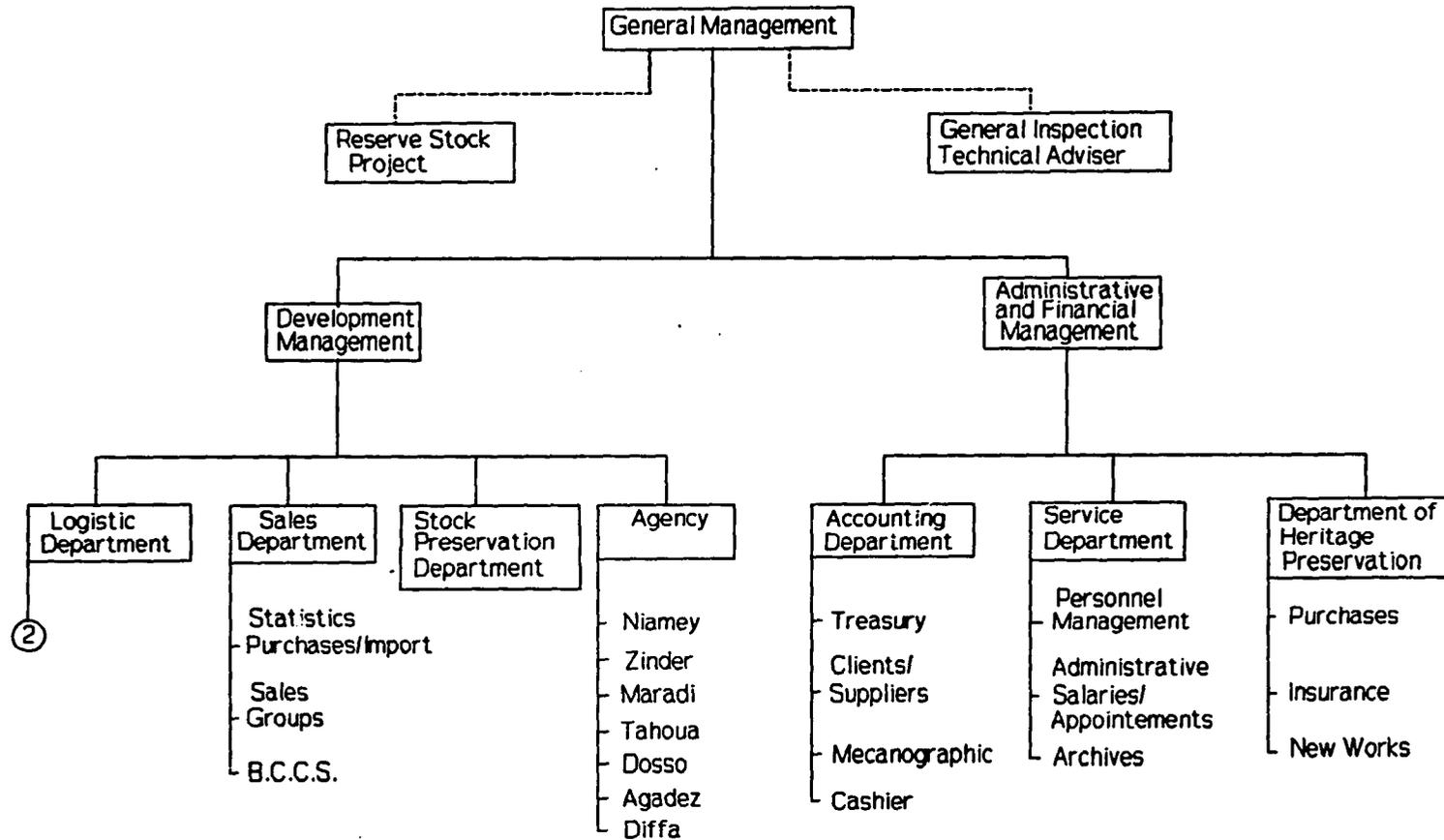


ORGANIZATIONAL STRUCTURE FOR THE AGRICULTURAL PRODUCTS BOARD OF MALI (OPAM)

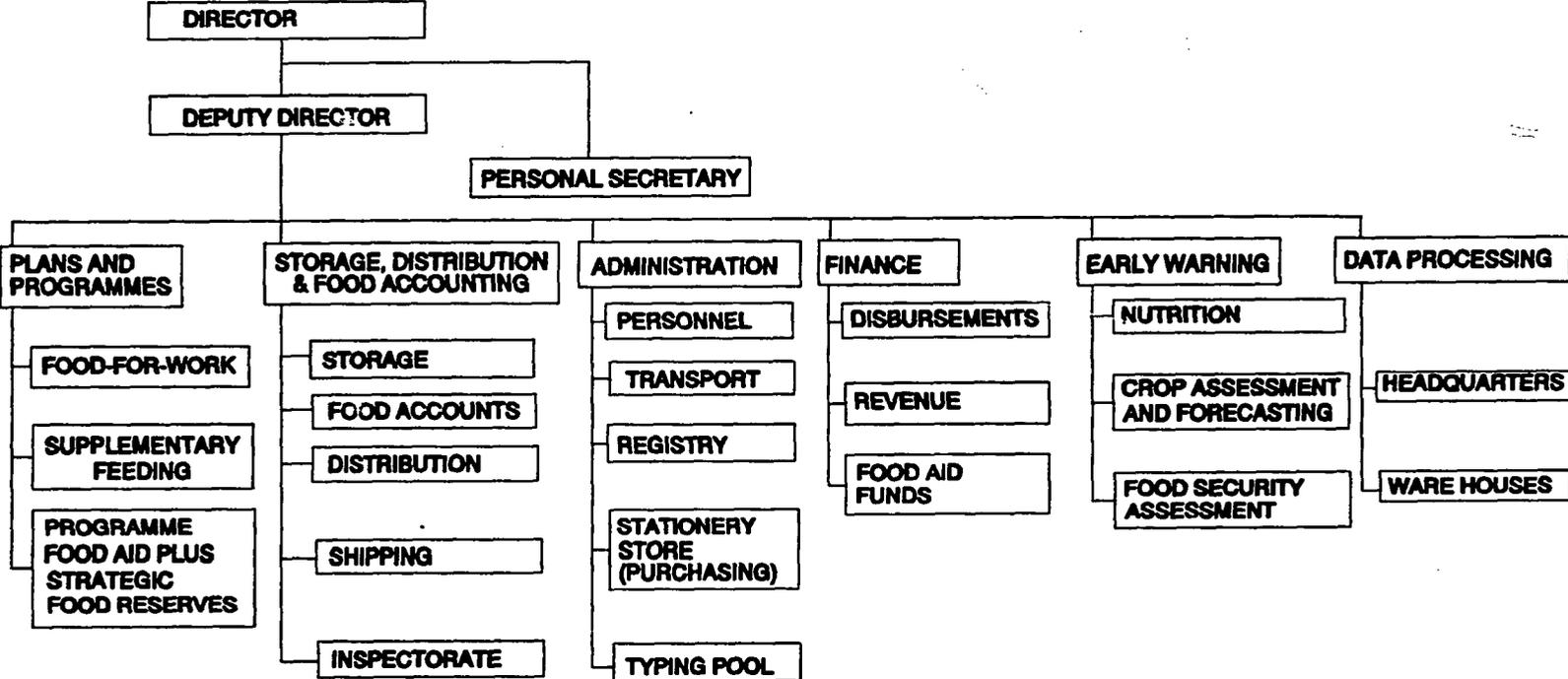


115

ORGANIGRAMME DE L'OFFICE DES PRODUITS VIVRIERS (NIGER)

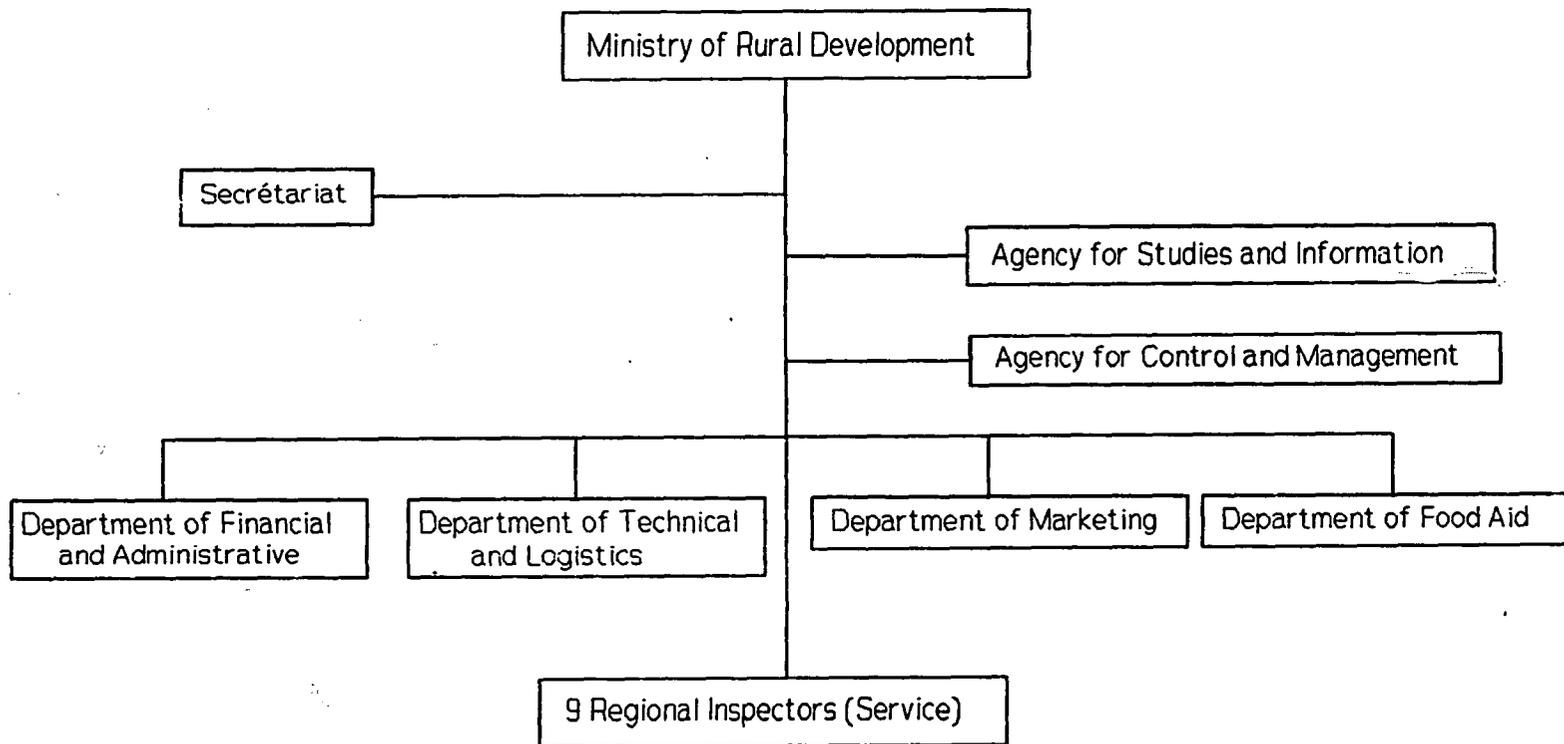


ORGANISATIONAL CHART - FOOD MANAGEMENT UNIT (NIGERIA)

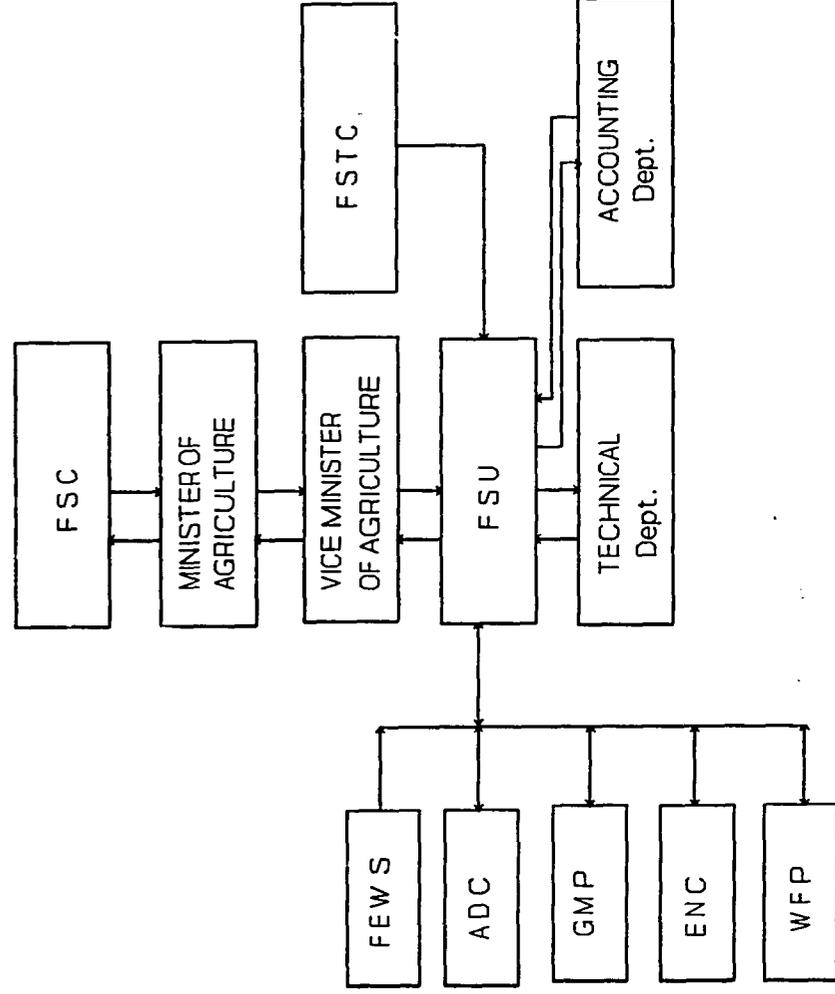


117

ORGANIGRAMME DU COMMISSARIAT A LA SECURITE ALIMENTAIRE (SENEGAL)



ORGANIZATIONAL CHART OF FOOD SECURITY RESERVE (SOMALIA)



FSC = Food Security Committee

FSU = Food Security Unit

FSTC = Food Security Technical Committee

FEWS = Famine Early Warning System

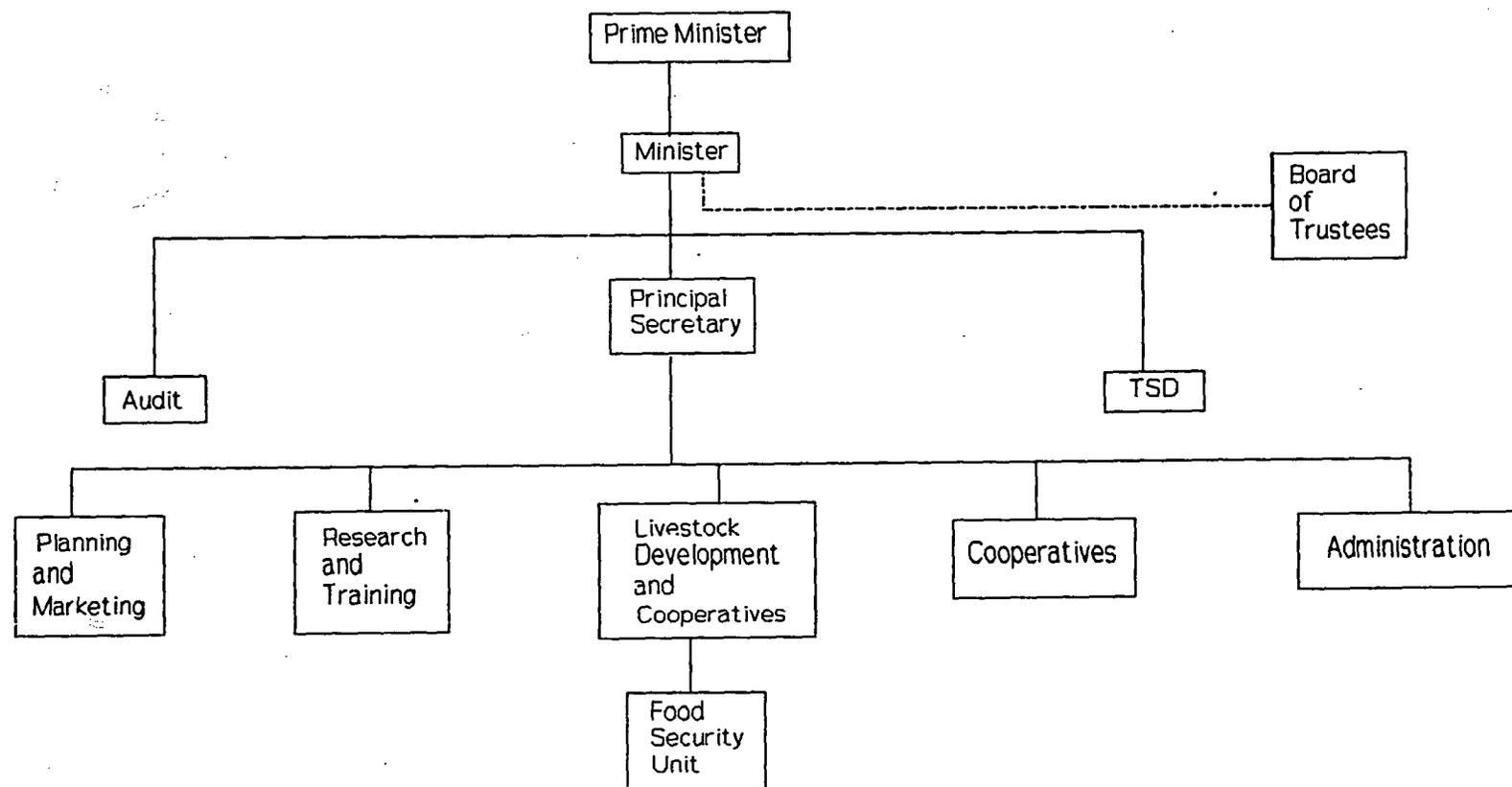
ADC = Agricultural Development Corporation

GMP =

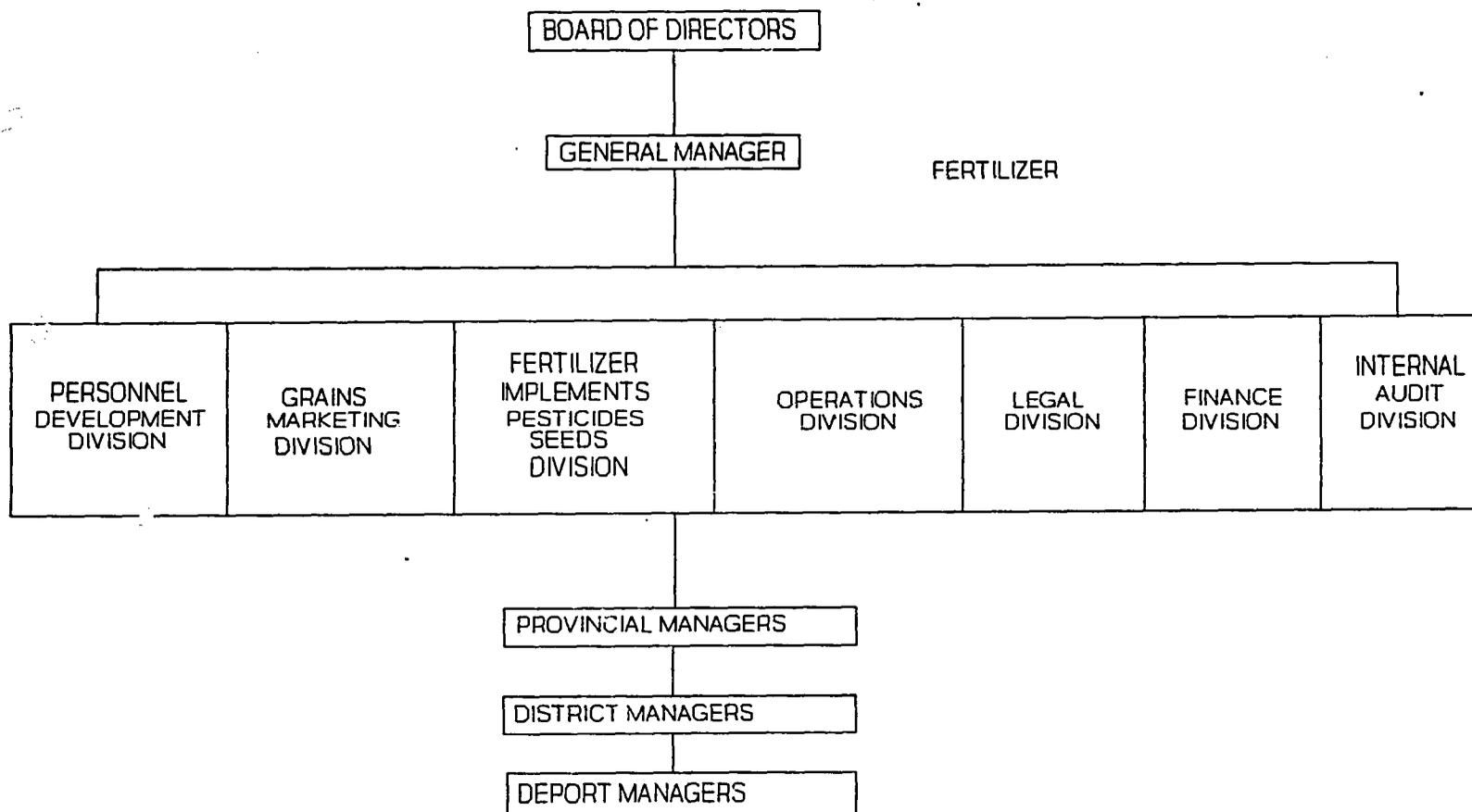
EMC = Ente Nazionale per il Commercio

WFP = World Food Program

TANZANIA MINISTRY OF AGRICULTURE FOOD SECURITY UNIT



NATIONAL AGRICULTURAL MARKETING BOARD OF ZAMBIA ESTABLISHMENT CHART

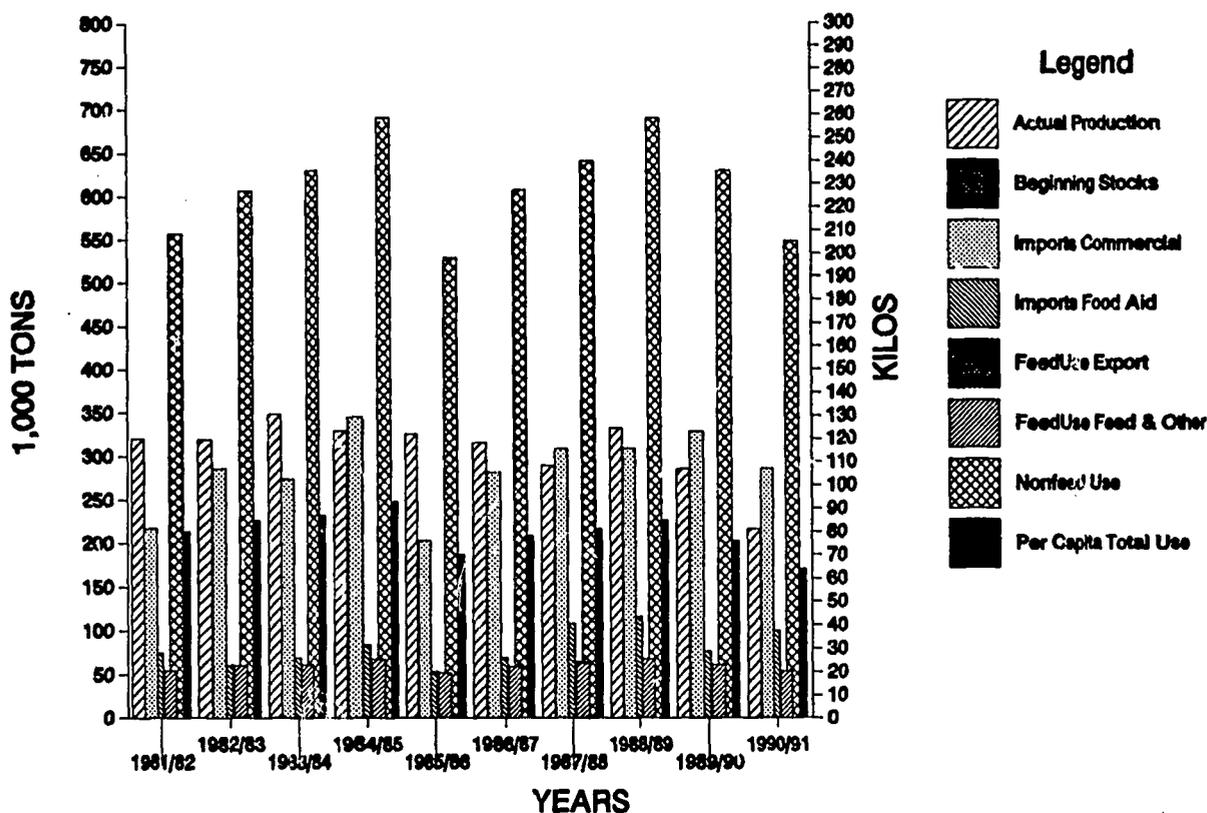


121

APPENDIX II
CEREALS DATA BY COUNTRY

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ANGOLA MAJOR CEREALS DATA



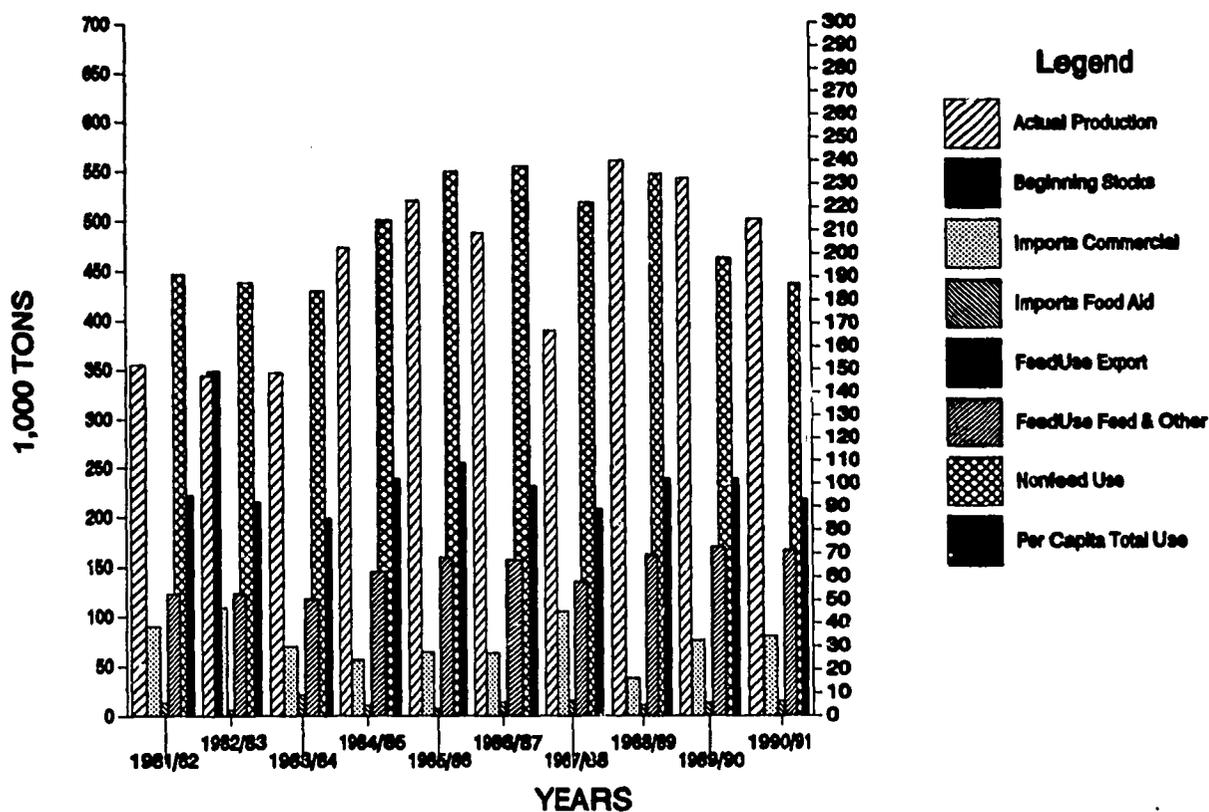
ANGOLA MAJOR CEREALS DATA^{1,2}

Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
1981/82	321	0	217	75	0	55	557	80
1982/83	319	0	286	61	0	60	606	85
1983/84	348	0	274	69	0	62	629	87
1984/85	329	0	345	84	0	68	690	93
1985/86	325	0	203	53	0	52	528	70
1986/87	315	0	281	69	0	59	606	78
1987/88	289	0	308	108	0	64	640	81
1988/89	332	0	309	116	0	68	689	85
1989/90	285	0	328	77	0	62	628	76
1990/91	216	0	285	100	0	54	547	64



¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.
² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

BENIN MAJOR CEREALS DATA



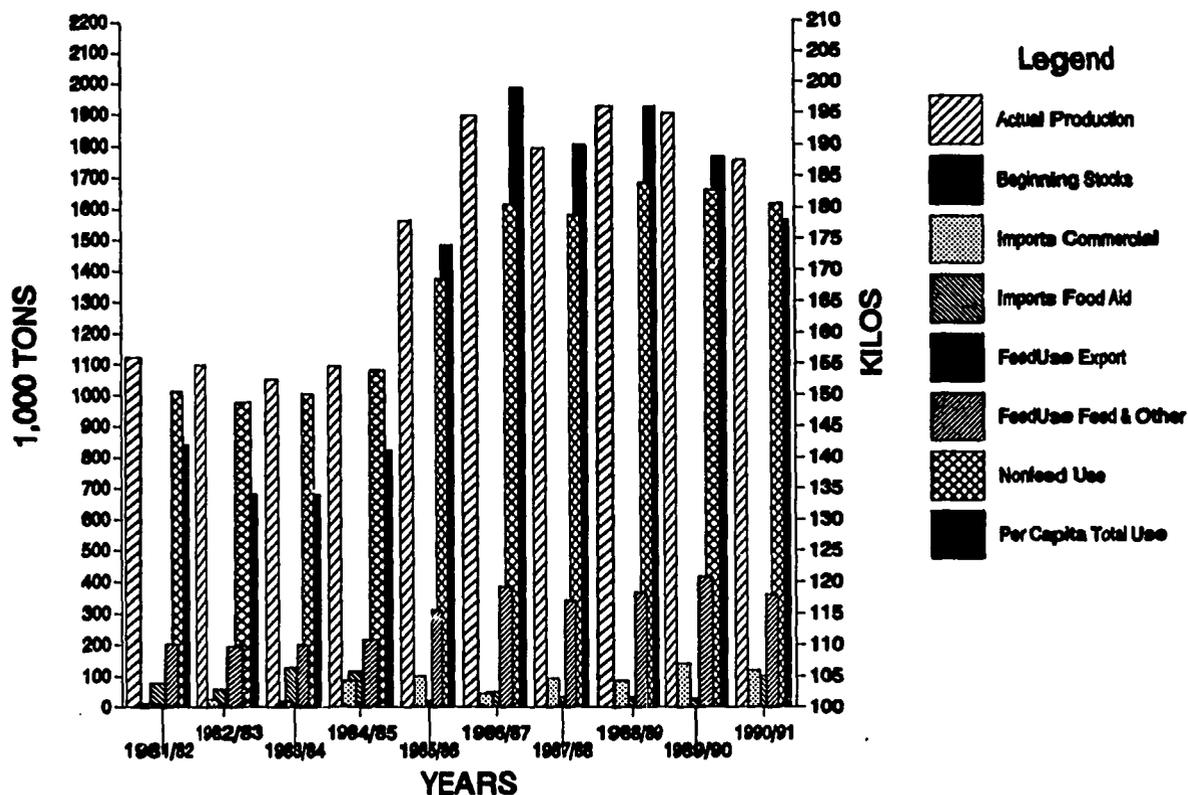
BENIN MAJOR CEREALS DATA^{1,2}

Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	Feed and other		
-----1,000 Tons-----								
1981/82	355	0	90	14	0	123	446	95
1982/83	344	0	109	6	0	123	438	92
1983/84	347	0	70	21	0	118	429	85
1984/85	473	0	56	11	0	145	530	102
1985/86	520	0	64	8	0	159	549	109
1986/87	488	0	63	14	0	156	555	99
1987/88	389	0	105	16	0	135	518	89
1988/89	560	0	38	11	0	162	547	102
1989/90	542	0	76	13	0	169	462	102
1990/91	501	0	80	15	0	166	436	93

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

BURKINA FASO MAJOR CEREALS DATA



BURKINA FASO MAJOR CEREALS DATA^{1,2}

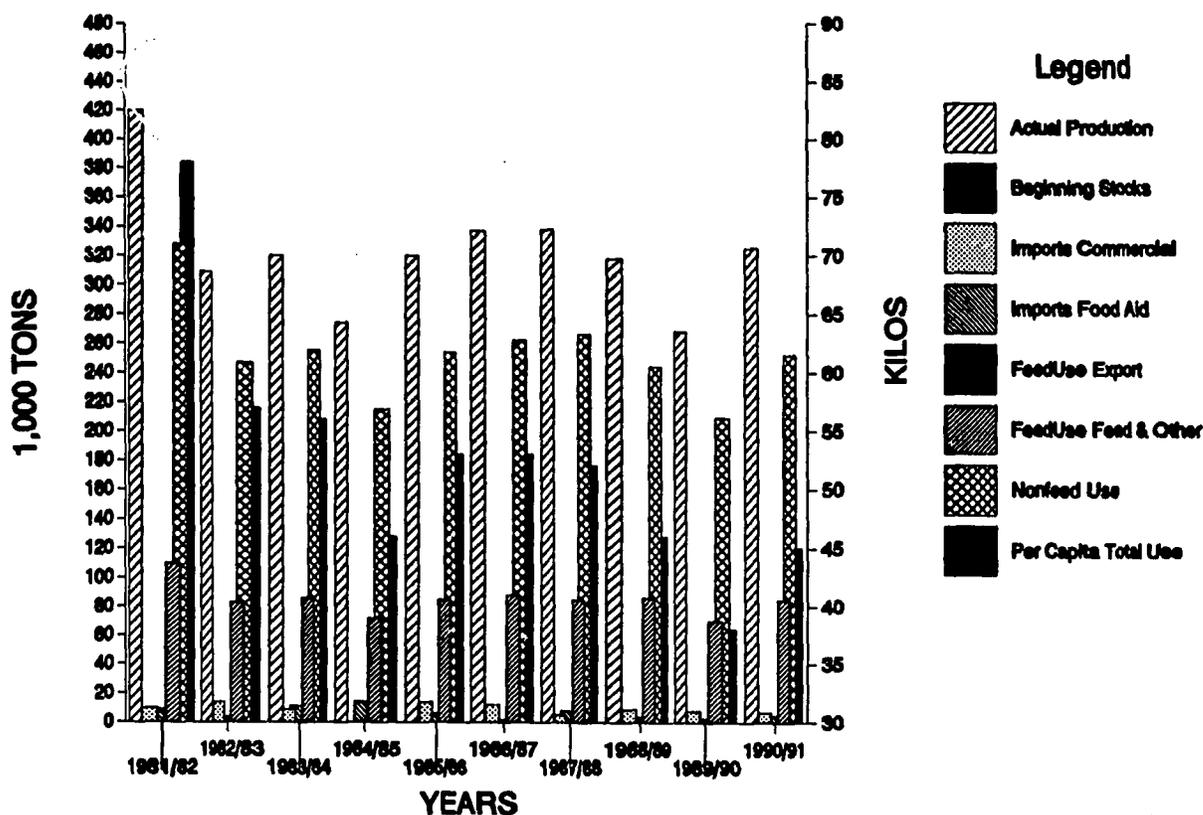


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	Feed and other		
	-----1,000 Tons-----							Kilos
1981/82	1124	0	11	78	0	202	1011	142
1982/83	1098	0	25	57	0	195	975	134
1983/84	1051	10	20	128	0	201	1003	134
1984/85	1091	5	85	116	0	216	1077	141
1985/86	1559	4	101	22	0	310	1371	174
1986/87	1892	5	45	48	0	382	1609	199
1987/88	1789	0	93	35	0	341	1576	190
1988/89	1924	0	86	35	0	366	1679	196
1989/90	1900	0	141	30	0	415	1656	188
1990/91	1750	0	119	103	0	359	1613	178

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

BURUNDI MAJOR CEREALS DATA



BURUNDI MAJOR CEREALS DATA^{1,2}

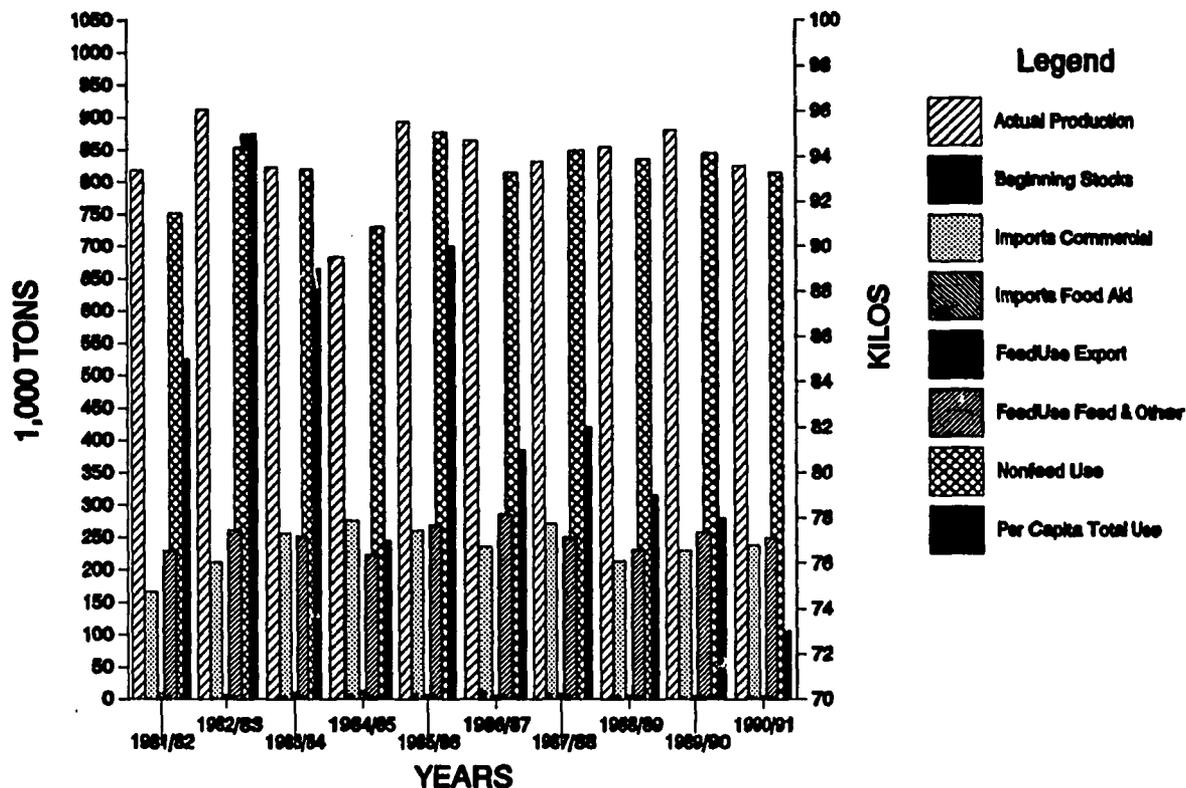
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
	-----1,000 Tons-----							
1981/82	420	0	10	9	0	110	328	78
1982/83	309	0	14	7	0	83	247	57
1983/84	320	0	9	11	0	86	255	56
1984/85	274	0	0	14	0	72	215	46
1985/86	320	0	14	6	0	85	254	53
1986/87	337	0	12	2	0	88	262	53
1987/88	338	0	5	8	0	85	266	52
1988/89	318	0	9	4	0	86	244	46
1989/90	268	0	8	3	0	70	209	38
1990/91	325	0	7	5	0	85	252	45

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



CAMEROON MAJOR CEREALS DATA



CAMEROON MAJOR CEREALS DATA^{1,2}

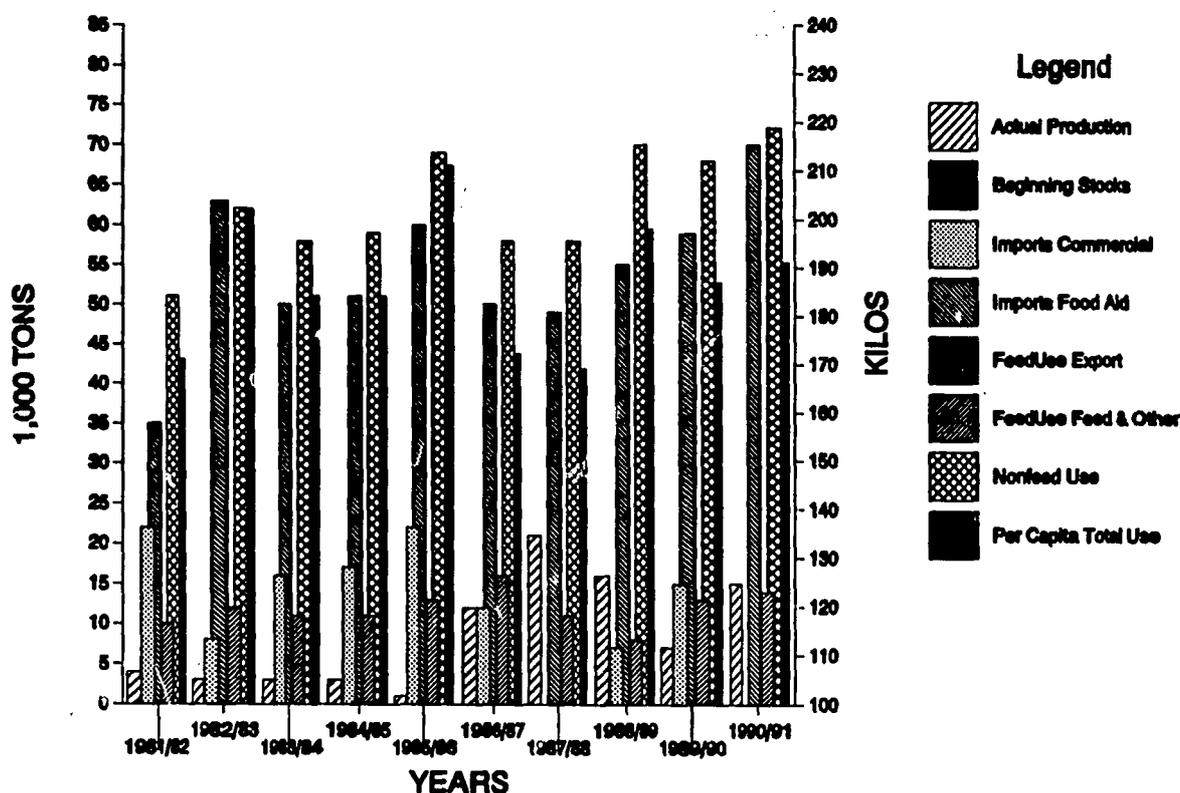


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
	-----1,000 Tons-----							Kilos
1981/82	818	1	167	9	5	229	751	85
1982/83	912	1	211	7	5	261	854	95
1983/84	823	4	256	11	5	251	820	89
1984/85	883	7	276	14	5	223	730	77
1985/86	894	8	260	6	5	268	877	90
1986/87	865	12	235	2	5	285	815	81
1987/88	832	7	270	8	5	250	849	82
1988/89	855	5	213	0	5	230	836	79
1989/90	880	3	229	0	5	258	845	78
1990/91	826	4	237	3	4	249	815	73

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1981.

CAPE VERDE MAJOR CEREALS DATA



CAPE VERDE MAJOR CEREALS DATA^{1,2}

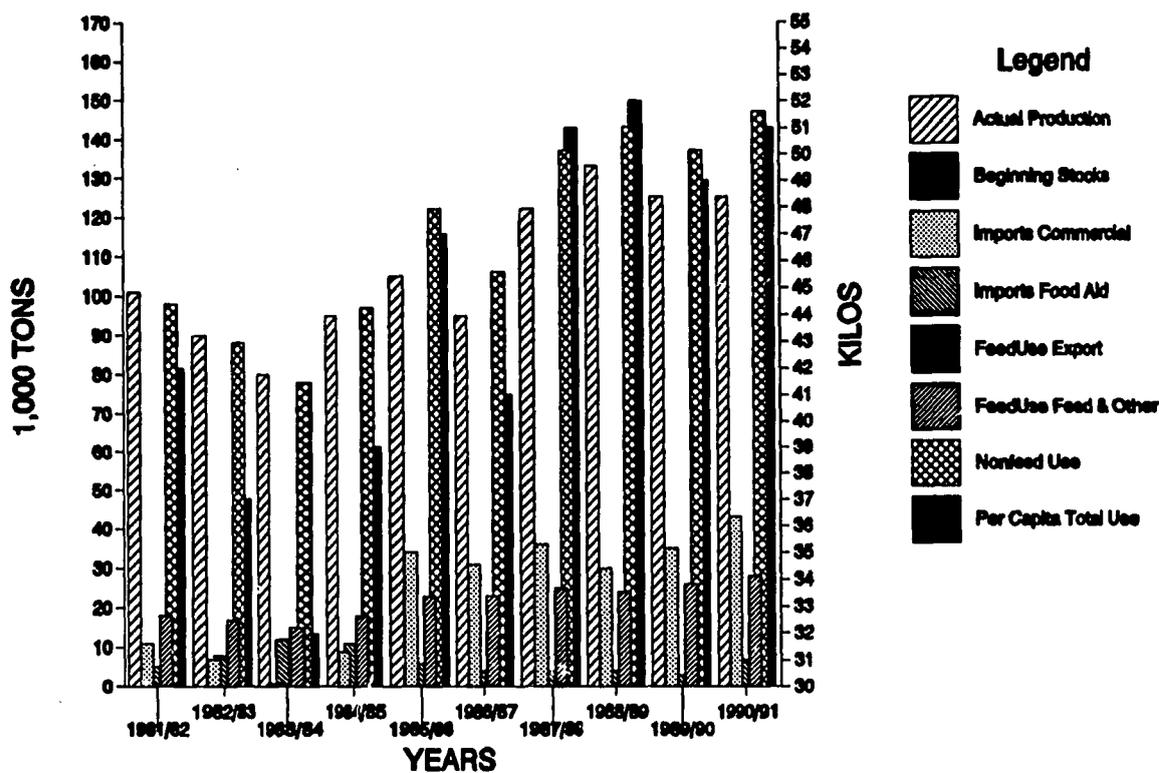
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	Feed and other		
-----1,000 Tons-----								
1981/82	4	0	22	35	0	10	51	171
1982/83	3	0	8	63	0	12	62	202
1983/84	3	0	16	50	0	11	58	184
1984/85	3	0	17	51	0	11	59	184
1985/86	1	0	22	60	0	13	69	211
1986/87	12	0	12	50	0	16	58	172
1987/88	21	0	0	49	0	11	58	169
1988/89	16	0	7	55	0	8	70	198
1989/90	7	0	15	59	0	13	68	187
1990/91	15	0	0	70	0	14	72	191
-----1,000 Tons-----								Kilos



¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

CENTRAL AFRICAN REPUBLIC MAJOR CEREALS DATA

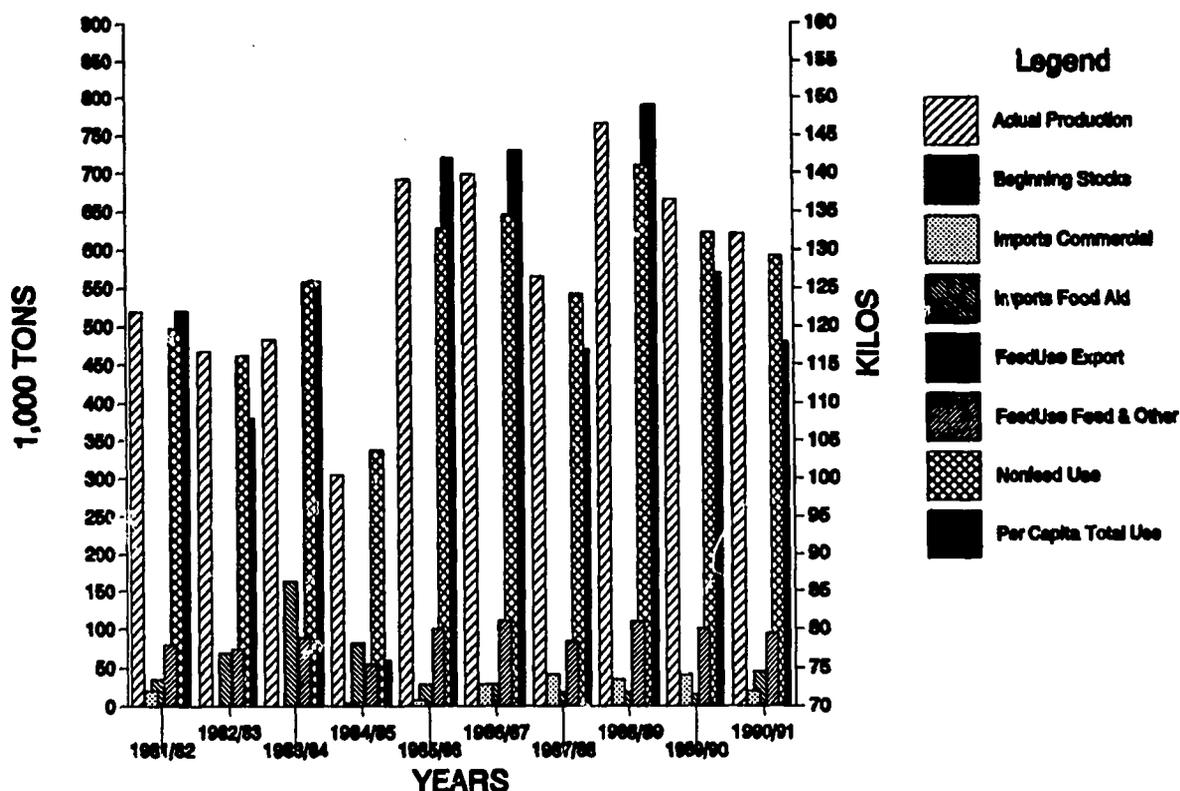


CENTRAL AFRICAN REPUBLIC MAJOR CEREALS DATA^{1,2}

Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use	
			Commercial	Food Aid	Export	Feed and other			
			-----1,000 Tons-----						Kilos
1981/82	101	0	11	5	0	18	98	42	
1982/83	90	0	7	8	0	17	88	37	
1983/84	80	0	1	12	0	15	78	32	
1984/85	95	0	9	11	0	18	97	39	
1985/86	105	0	34	6	0	23	122	47	
1986/87	95	0	31	4	0	23	106	41	
1987/88	122	0	36	4	0	25	137	51	
1988/89	133	0	30	4	0	24	143	52	
1989/90	125	0	35	3	0	26	137	49	
1990/91	125	0	43	7	0	28	147	51	

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.
² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

CHAD MAJOR CEREALS DATA



CHAD MAJOR CEREALS DATA^{1,2}

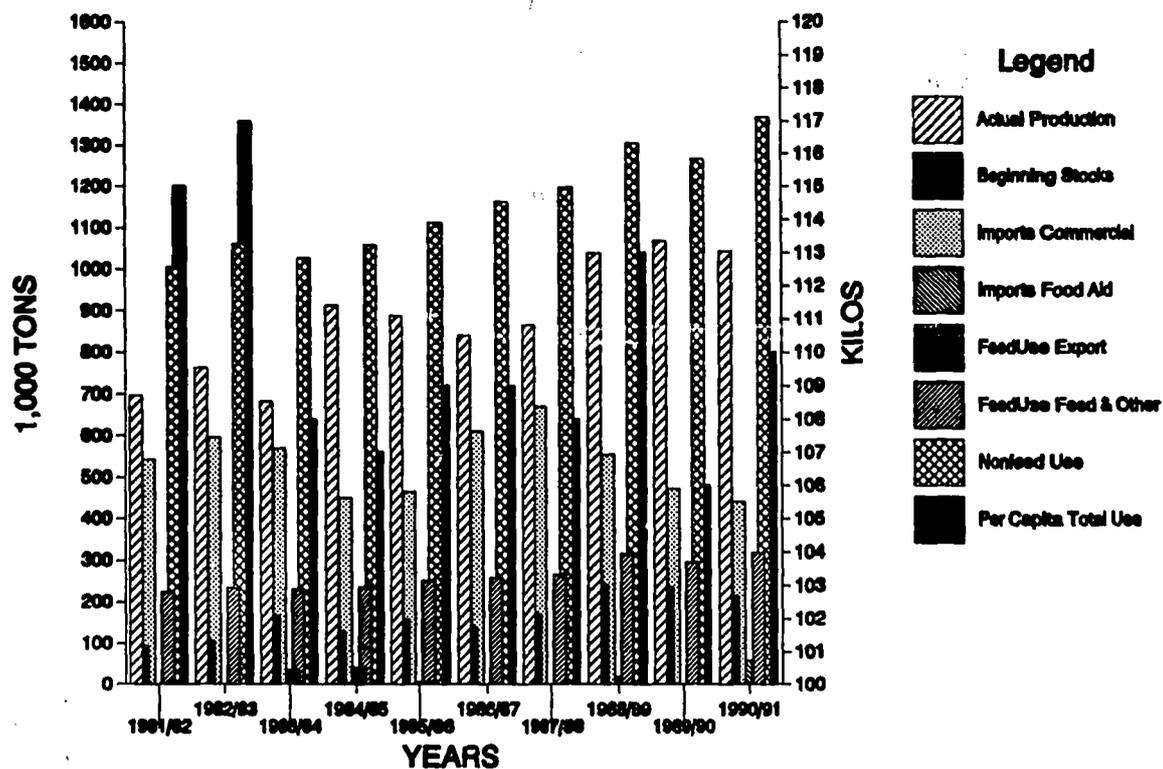


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	other		
-----1,000 Tons-----								
1981/82	519	0	21	36	0	79	497	122
1982/83	467	0	0	69	0	74	462	108
1983/84	483	0	0	163	0	89	557	126
1984/85	305	0	5	82	0	54	337	76
1985/86	692	0	8	29	0	100	628	142
1986/87	699	0	29	29	0	111	645	143
1987/88	565	0	42	19	0	84	542	117
1988/89	765	0	35	19	0	110	710	149
1989/90	666	0	41	16	0	100	623	127
1990/91	621	0	20	45	0	94	592	118

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

COTE D'IVOIRE MAJOR CEREALS DATA



COTE D'IVOIRE MAJOR CEREALS DATA^{1,2}

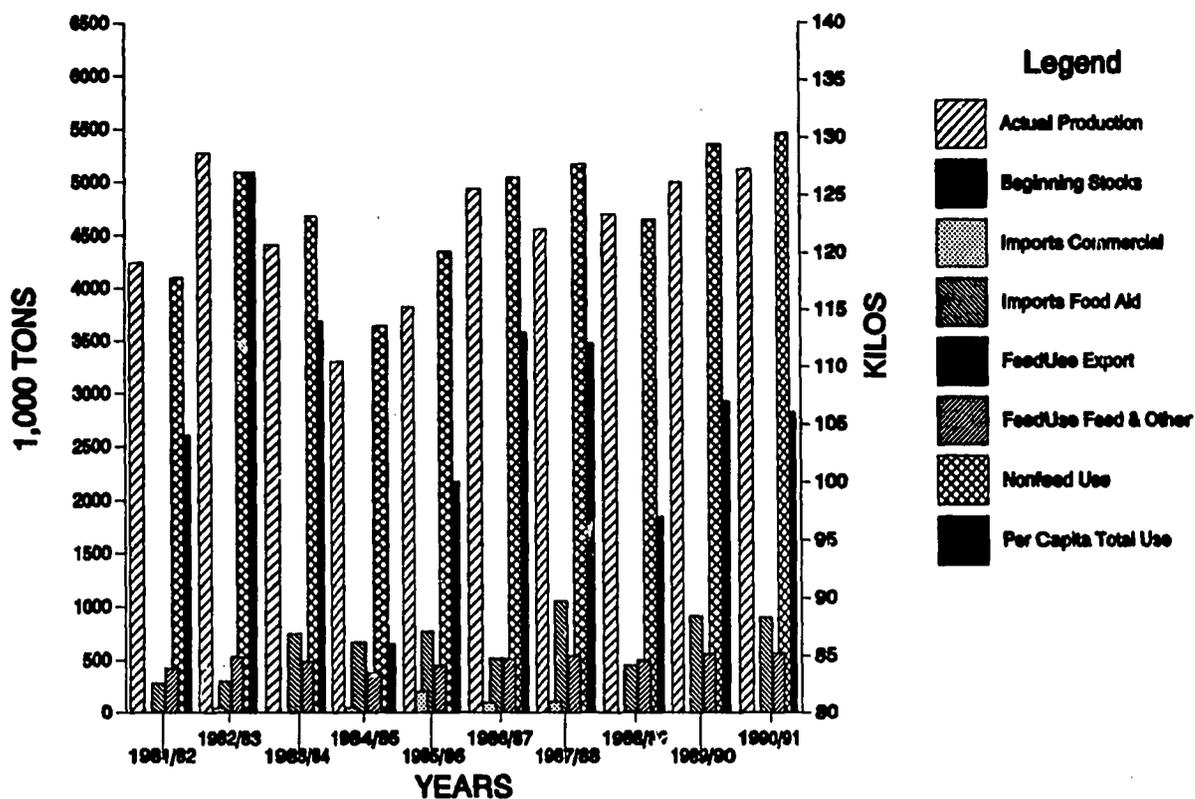


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
	-----1,000 Tons-----							Kilos
1981/82	697	94	542	1	0	223	1005	115
1982/83	763	106	595	0	0	235	1062	117
1983/84	683	167	570	0	35	230	1026	108
1984/85	913	129	450	0	41	236	1058	107
1985/86	888	157	464	1	6	252	1112	109
1986/87	841	140	610	0	1	258	1162	109
1987/88	866	170	669	1	1	266	1196	108
1988/89	1039	243	554	19	0	314	1305	113
1989/90	1067	237	472	0	0	296	1266	106
1990/91	1043	214	441	59	0	319	1369	110

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

ETHIOPA MAJOR CEREALS DATA



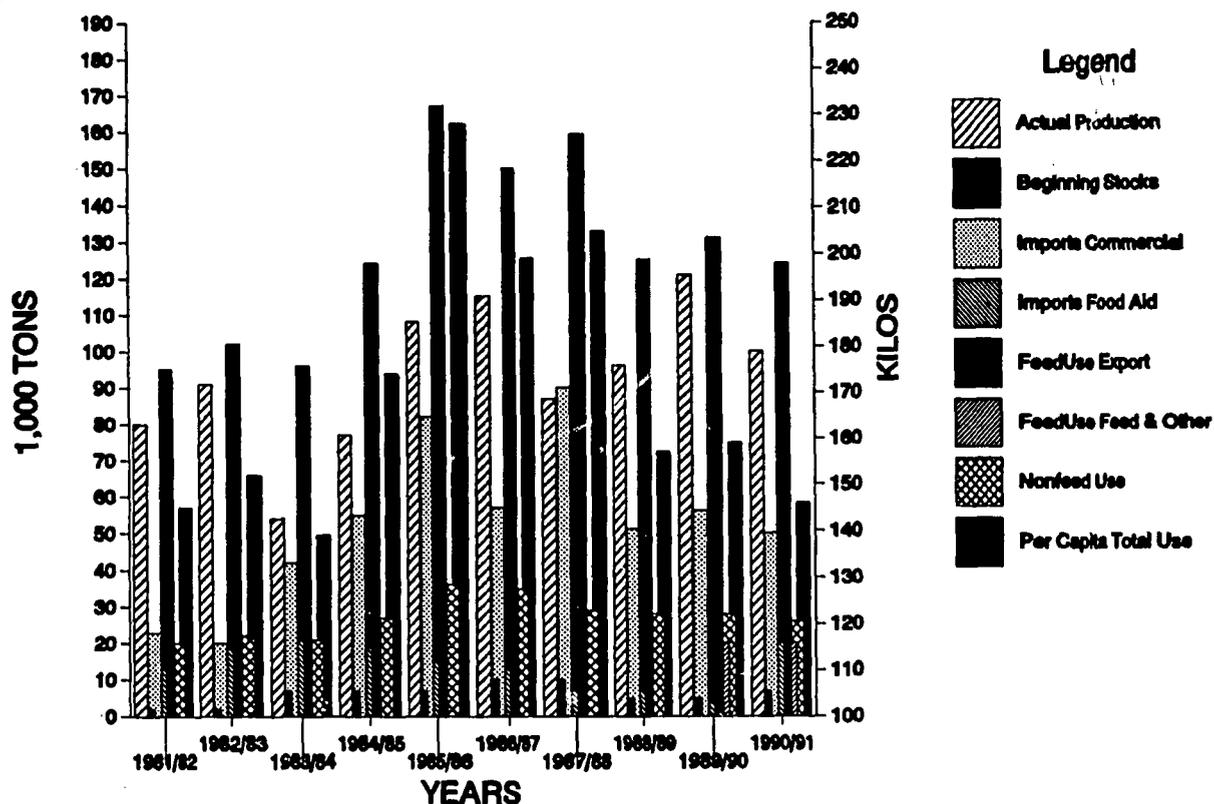
ETHIOPA MAJOR CEREALS DATA^{1,2}

Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use	
			Commercial	Food Aid	Export	and other			
			-----1,000 Tons-----						
1981/82	4240	0	0	278	0	426	4092	104	
1982/83	5277	0	44	301	0	530	5092	127	
1983/84	4414	0	2	750	0	487	4679	114	
1984/85	3300	0	49	667	0	378	3638	86	
1985/86	3820	0	203	770	0	452	4342	100	
1986/87	4937	0	95	514	0	509	5037	113	
1987/88	4556	0	104	1052	0	543	5169	112	
1988/89	4692	0	0	446	0	493	4645	97	
1989/90	4992	0	0	912	0	556	5348	107	
1990/91	5121	0	0	900	0	567	5454	106	



¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.
² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

GAMBIA MAJOR CEREALS DATA



GAMBIA MAJOR CEREALS DATA^{1,2}

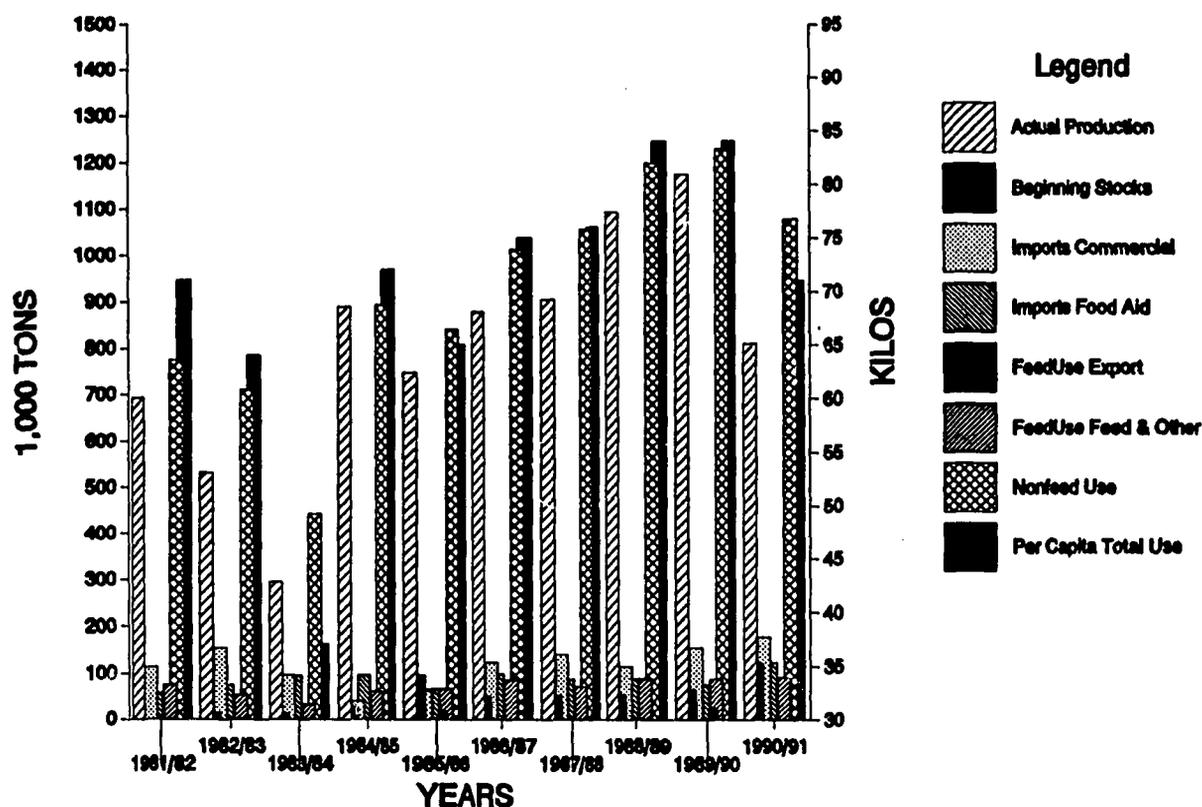
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
-----1,000 Tons-----								
1981/82	80	2	23	13	95	0	20	145
1982/83	91	2	20	19	102	0	22	152
1983/84	54	7	42	21	96	0	21	139
1984/85	77	7	55	19	124	0	27	174
1985/86	108	7	82	15	167	0	36	228
1986/87	115	10	57	13	150	0	35	199
1987/88	87	10	90	7	159	0	29	205
1988/89	96	5	51	7	125	0	28	157
1989/90	121	5	56	4	131	20	28	159
1990/91	100	7	50	20	124	20	26	146



¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

GHANA MAJOR CEREALS DATA



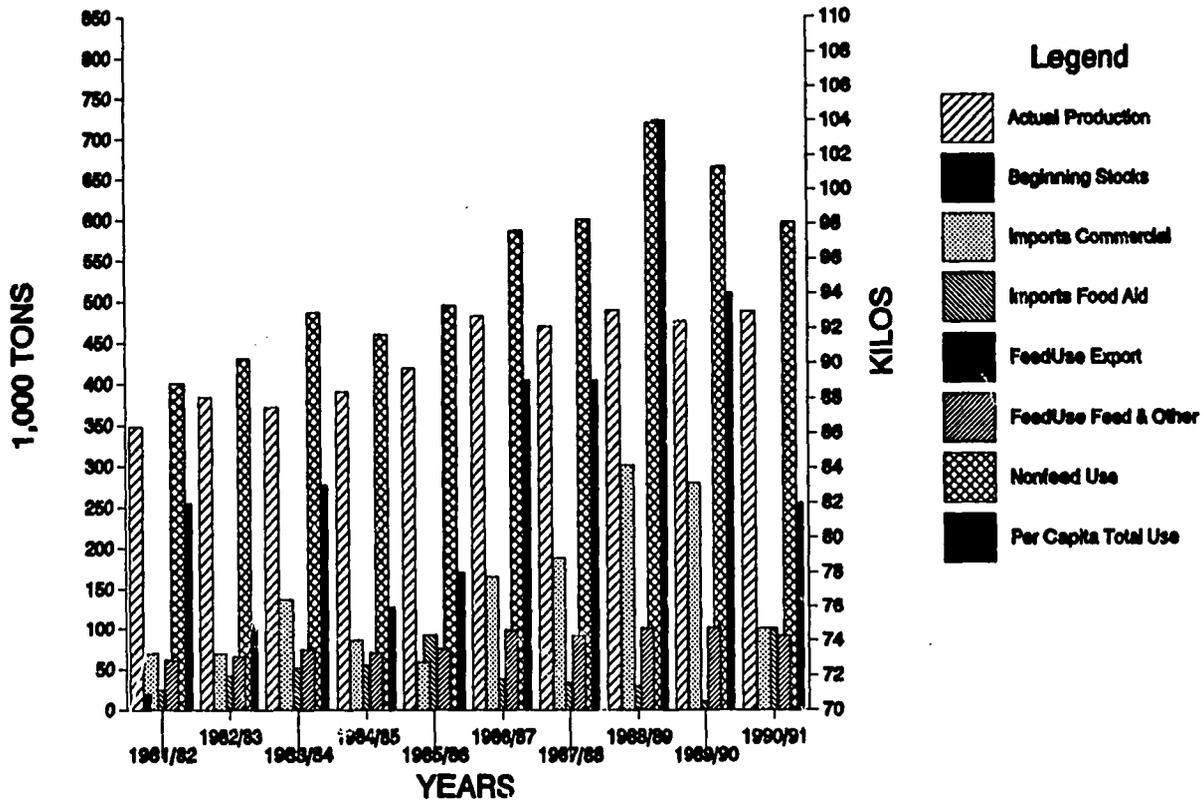
GHANA MAJOR CEREALS DATA^{1,2}

Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	Feed and other		
-----1,000 Tons-----								
1981/82	693	0	113	58	0	75	774	71
1982/83	532	15	155	75	0	54	710	64
1983/84	295	13	97	96	0	33	442	37
1984/85	890	26	40	96	0	62	894	72
1985/86	748	97	63	66	17	67	841	65
1986/87	877	50	124	100	0	86	1013	75
1987/88	905	52	140	88	0	72	1057	76
1988/89	1095	55	116	88	0	90	1199	84
1989/90	1176	65	155	77	25	88	1230	84
1990/91	811	120	178	123	0	92	1079	71



¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.
² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

GUINEA MAJOR CEREALS DATA



GUINEA MAJOR CEREALS DATA^{1,2}

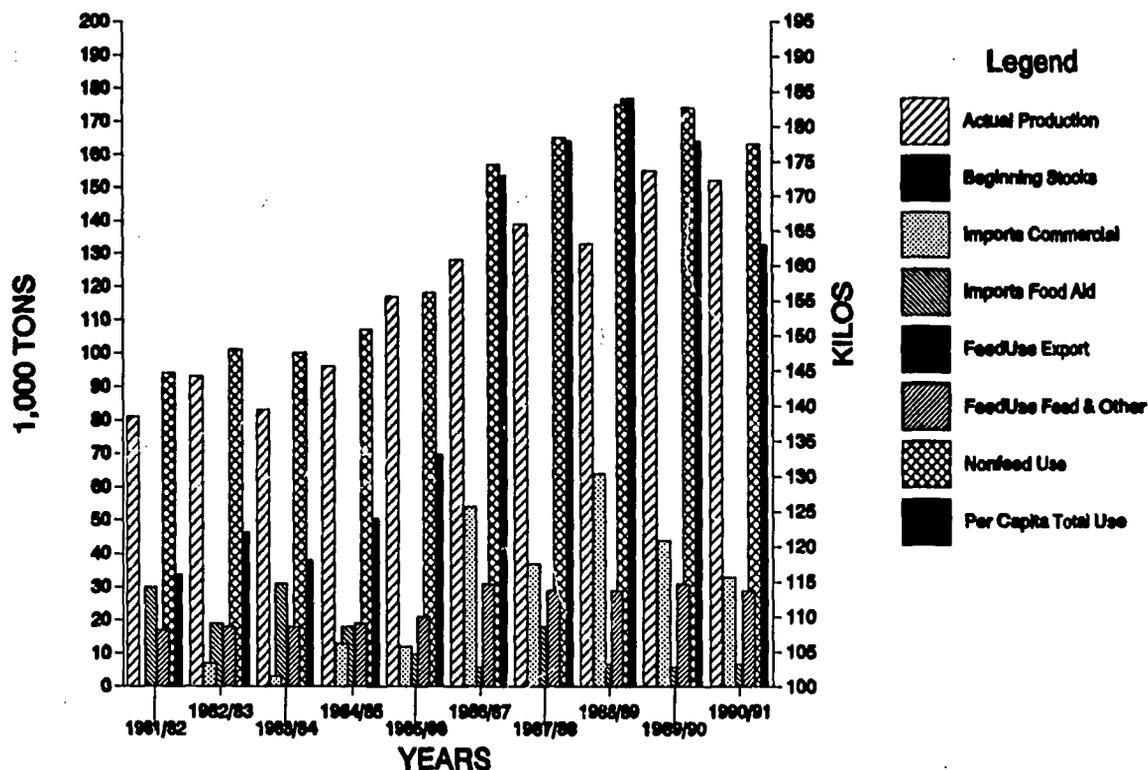


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use	
			Commercial	Food Aid	Export	and other			
			-----1,000 Tons-----						
1981/82	348	20	69	25	0	61	401	82	
1982/83	384	0	69	43	0	65	430	75	
1983/84	372	0	137	52	0	74	486	83	
1984/85	390	0	85	55	0	70	460	76	
1985/86	418	0	59	92	0	75	495	78	
1986/87	482	0	165	39	0	98	587	89	
1987/88	470	0	188	34	0	91	601	89	
1988/89	489	0	301	30	0	100	719	104	
1989/90	476	0	279	11	0	101	665	94	
1990/91	488	0	100	100	0	91	597	82	

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

GUINEA-BISSAU MAJOR CEREALS DATA



GUINEA-BISSAU MAJOR CEREALS DATA^{1,2}

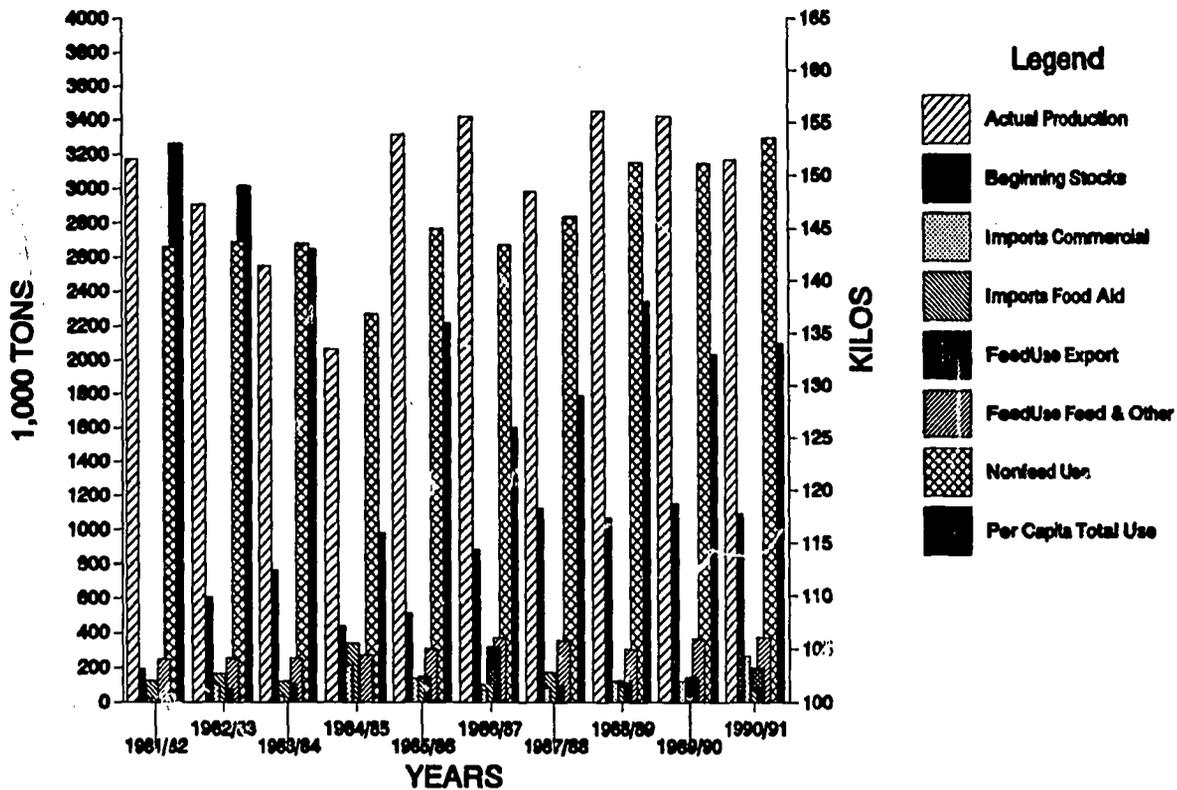
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
	-----1,000 Tons-----							Kilos
1981/82	81	0	0	30	0	17	94	116
1982/83	93	0	7	19	0	18	101	122
1983/84	83	0	3	31	0	18	100	118
1984/85	86	0	13	18	0	18	107	124
1985/86	117	0	12	10	0	21	118	133
1986/87	128	0	54	6	0	31	157	173
1987/88	139	0	37	18	0	29	165	178
1988/89	133	0	64	7	0	29	175	184
1989/90	155	0	44	6	0	31	174	178
1990/91	152	0	33	7	0	29	163	163

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



KENYA MAJOR CEREALS DATA



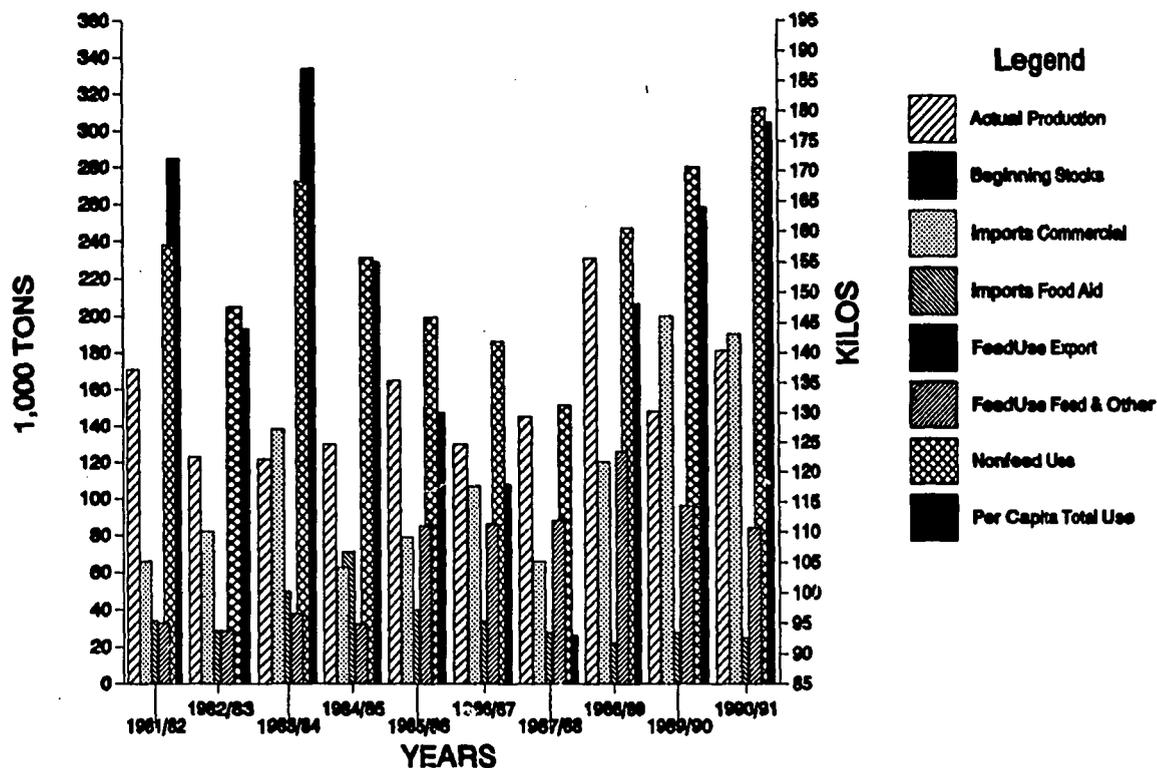
KENYA MAJOR CEREALS DATA^{1,2}

Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use	
			Commercial	Food Aid	Export	and other			
			-----1,000 Tons-----						Kilos
1981/82	3171	193	22	127	0	252	2656	153	
1982/83	2909	605	110	165	77	255	2691	149	
1983/84	2549	766	39	122	107	254	2679	143	
1984/85	2061	436	217	340	0	274	2267	116	
1985/86	3318	513	140	139	150	310	2766	136	
1986/87	3419	884	72	107	315	370	2671	126	
1987/88	2980	1125	86	171	100	355	2837	129	
1988/89	3453	1070	123	90	125	306	3151	138	
1989/90	3421	1154	128	44	148	363	3144	133	
1990/91	3167	1092	267	74	200	375	3294	134	

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.
² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



LESOTHO MAJOR CEREALS DATA



LESOTHO MAJOR CEREALS DATA^{1,2}

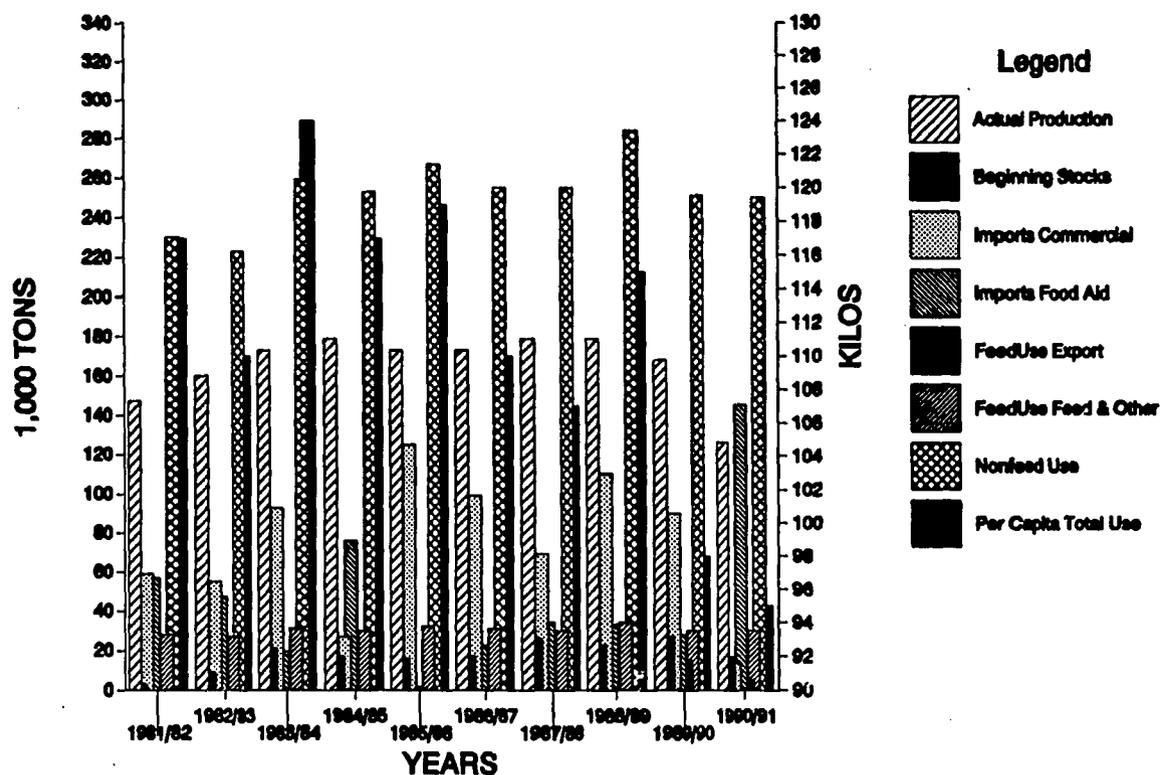
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
1981/82	171	0	66	34	0	33	238	172
1982/83	123	0	82	29	0	29	205	144
1983/84	122	0	138	50	0	38	272	187
1984/85	130	0	63	71	0	32	231	155
1985/86	165	0	79	40	0	85	199	130
1986/87	130	0	107	34	0	86	186	118
1987/88	145	0	66	28	0	88	151	93
1988/89	231	0	120	22	0	126	247	148
1989/90	148	0	200	28	0	96	280	164
1990/91	181	0	190	25	0	84	312	178

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



LIBERIA MAJOR CEREALS DATA



LIBERIA MAJOR CEREALS DATA^{1,2}

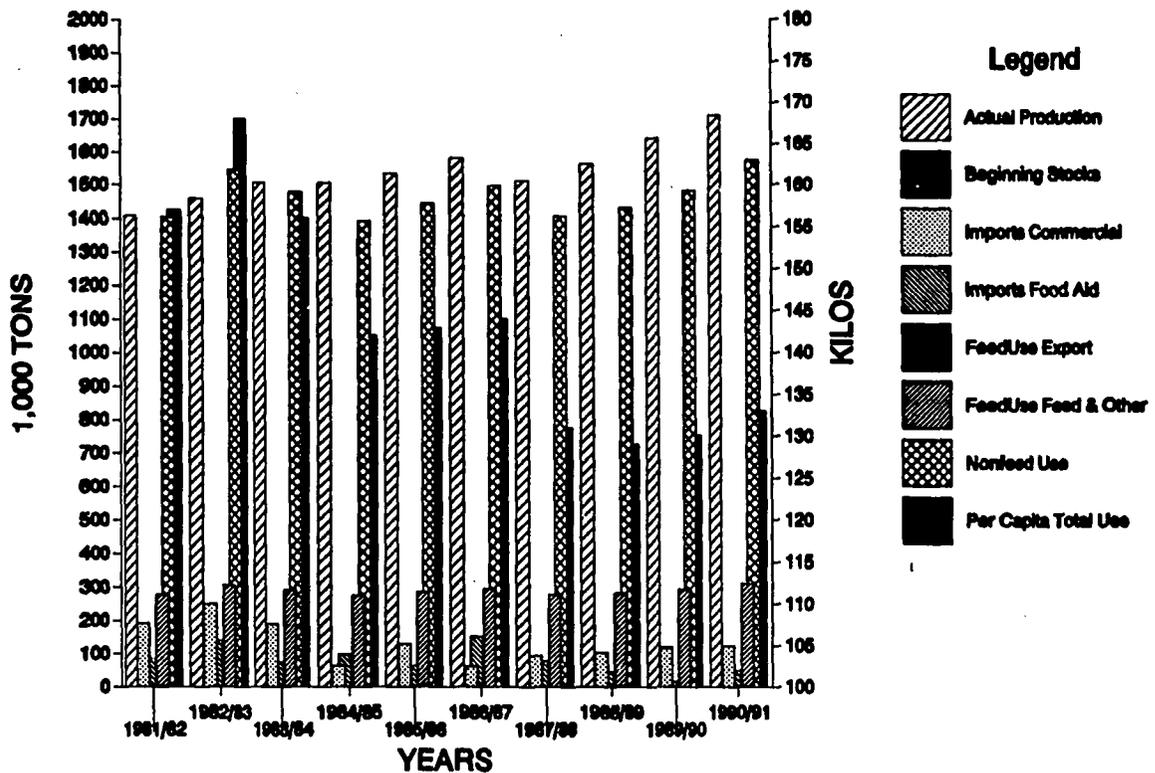


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	Feed and other		
-----1,000 Tons-----								
1981/82	147	3	59	57	0	28	230	117
1982/83	160	9	55	47	0	27	223	110
1983/84	173	21	93	20	0	31	259	124
1984/85	179	17	27	76	0	30	253	117
1985/86	173	16	125	2	0	32	267	118
1986/87	173	17	99	23	0	31	255	110
1987/88	179	26	69	34	0	30	255	107
1988/89	179	23	110	33	0	34	284	115
1989/90	168	27	90	28	15	30	251	98
1990/91	126	17	14	145	5	30	250	95

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

MADAGASCAR MAJOR CEREALS DATA



MADAGASCAR MAJOR CEREALS DATA^{1,2}

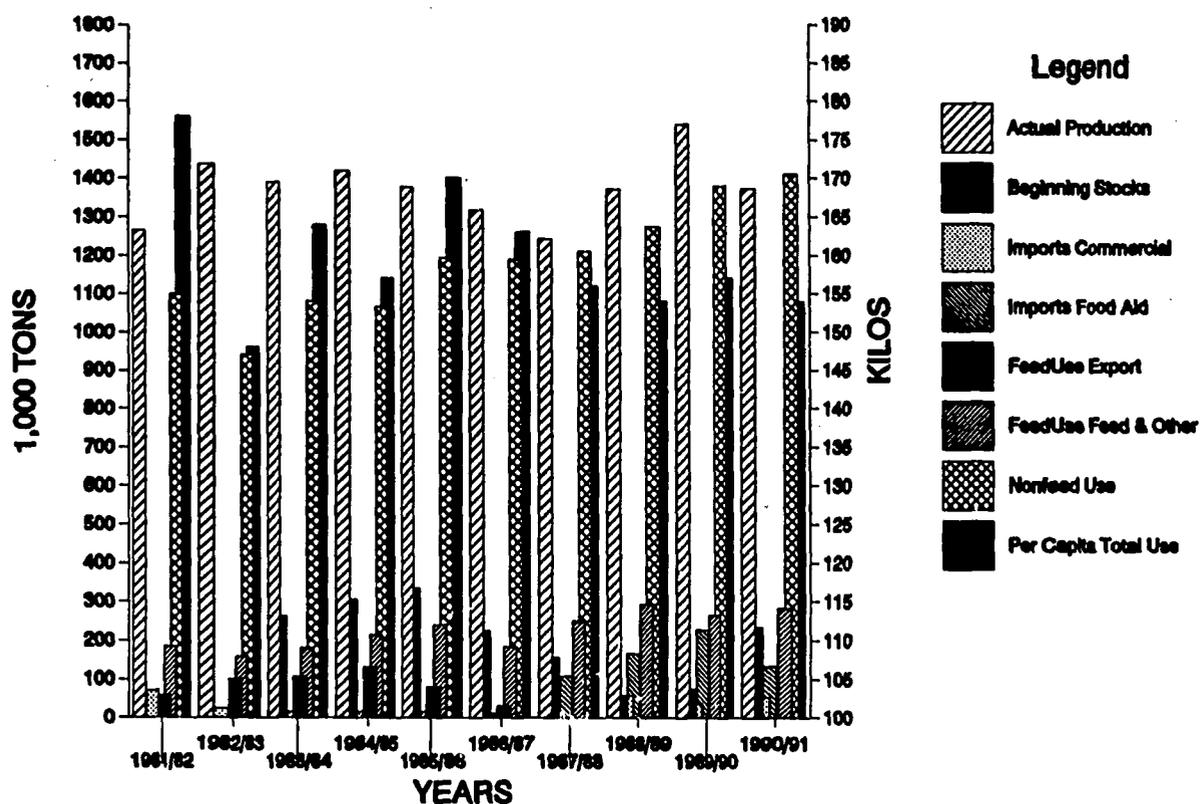


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	other		
			-----1,000 Tons-----					Kilos
1981/82	1408	0	192	87	5	278	1404	157
1982/83	1460	0	250	141	0	306	1545	168
1983/84	1506	0	191	74	0	293	1478	156
1984/85	1505	0	64	98	0	276	1392	142
1985/86	1534	0	131	65	0	286	1443	143
1986/87	1580	0	62	152	0	297	1486	144
1987/88	1511	0	94	79	0	279	1406	131
1988/89	1563	0	105	46	0	283	1431	129
1989/90	1640	0	118	17	0	294	1481	130
1990/91	1710	0	125	50	0	312	1573	133

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

MALAWI MAJOR CEREALS DATA



MALAWI MAJOR CEREALS DATA^{1,2}

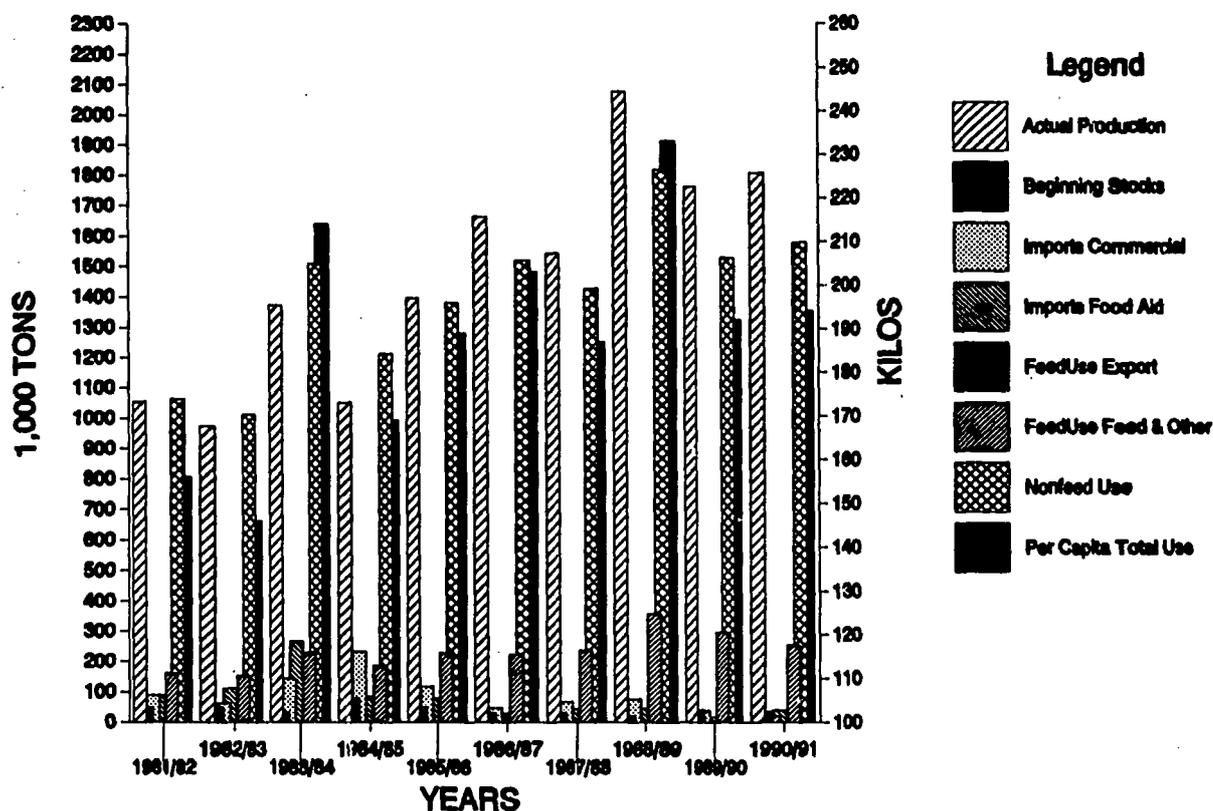


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
	-----1,000 Tons-----							
1981/82	1267	0	72	2	58	184	1099	178
1982/83	1437	0	24	3	102	157	941	148
1983/84	1391	263	16	4	106	181	1081	164
1984/85	1420	306	16	5	131	213	1066	157
1985/86	1377	337	17	5	80	240	1192	170
1986/87	1318	224	6	10	30	183	1190	163
1987/88	1243	158	1	109	0	249	1210	158
1988/89	1371	50	58	167	0	294	1275	154
1989/90	1540	76	37	227	0	266	1380	157
1990/91	1372	234	54	135	0	283	1412	154

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

MALI MAJOR CEREALS DATA



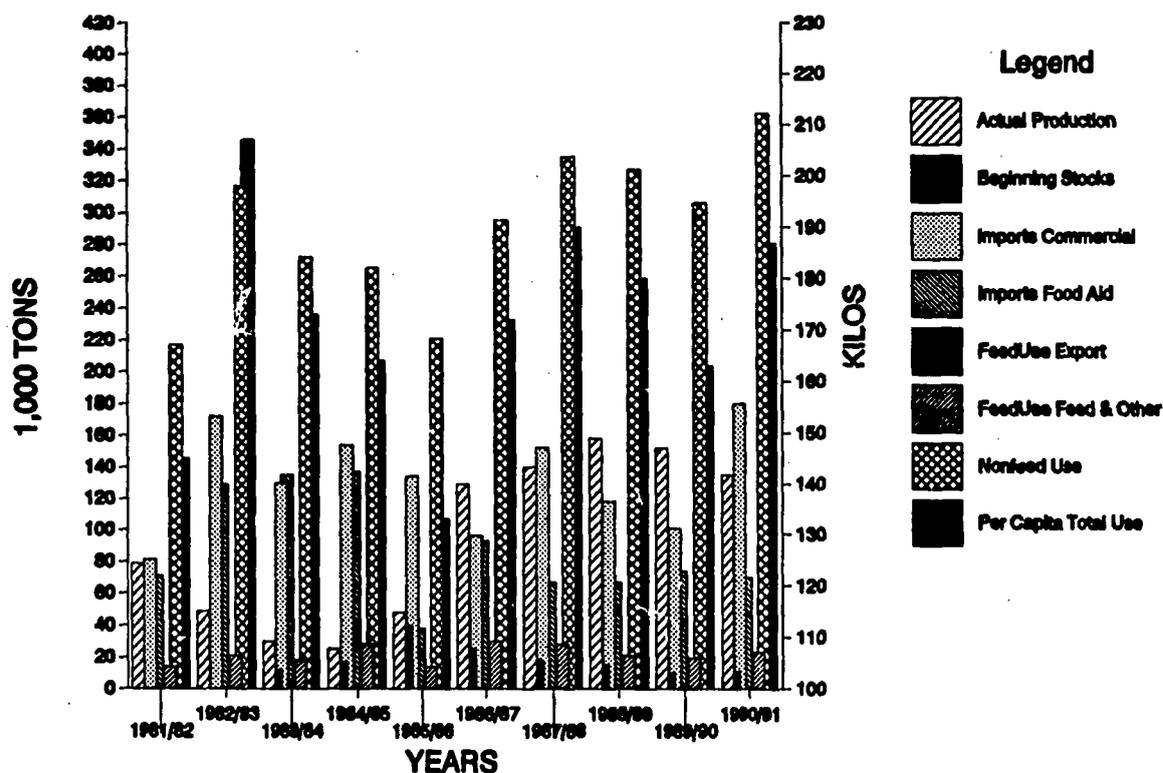
MALI MAJOR CEREALS DATA^{1,2}

Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use	
			Commercial	Food Aid	Export	Feed and other			
			-----1,000 Tons-----						Kilos
1981/82	1052	46	89	88	0	161	1063	156	
1982/83	975	51	61	110	0	153	1011	146	
1983/84	1370	33	143	266	0	228	1507	214	
1984/85	1050	78	230	83	0	183	1210	169	
1985/86	1394	48	116	77	0	226	1379	189	
1986/87	1663	30	47	28	0	221	1518	203	
1987/88	1543	29	85	44	0	235	1425	187	
1988/89	2076	20	74	44	0	357	1817	233	
1989/90	1760	40	37	17	0	294	1526	192	
1990/91	1807	33	20	40	0	251	1579	194	

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

MAURITANIA MAJOR CEREALS DATA



MAURITANIA MAJOR CEREALS DATA^{1,2}

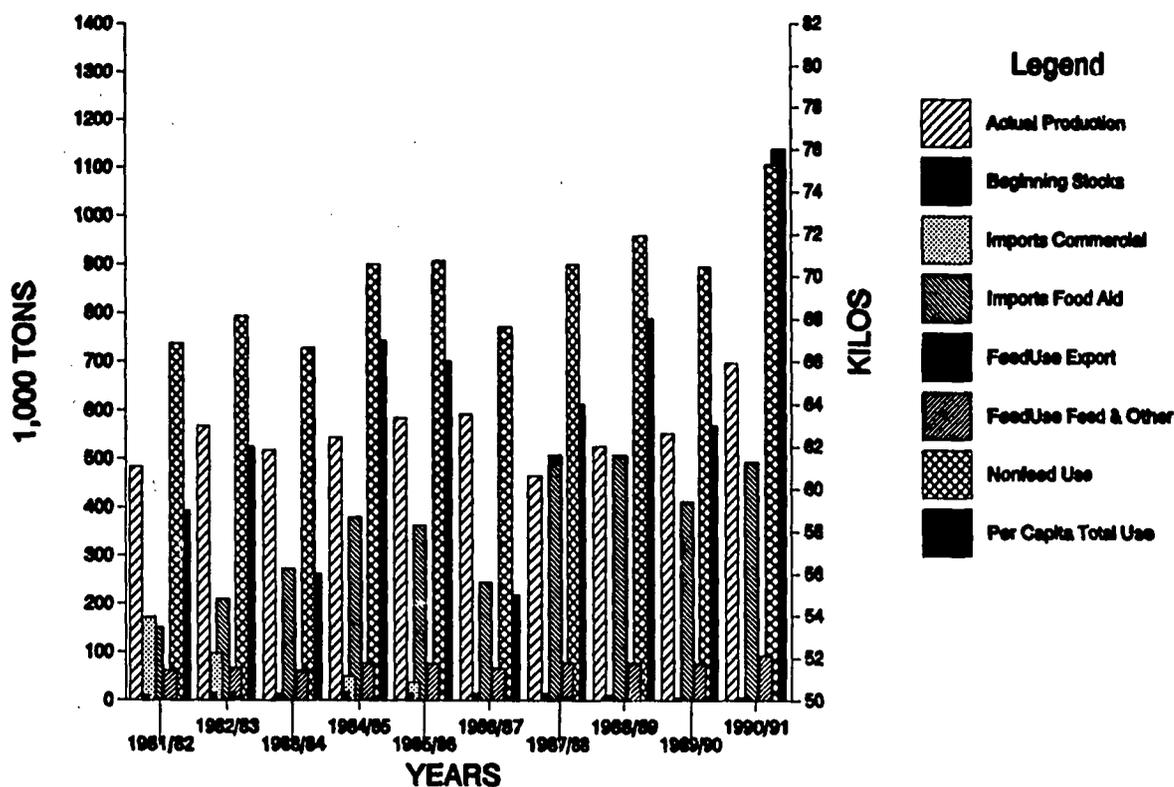


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
	-----1,000 Tons-----							Kilos
1981/82	79	0	81	71	0	14	217	145
1982/83	49	0	172	129	0	21	317	207
1983/84	30	12	130	135	0	18	272	173
1984/85	25	17	154	137	0	28	265	164
1985/86	48	40	134	38	0	14	221	133
1986/87	129	25	96	93	0	30	295	172
1987/88	140	18	152	67	0	28	335	190
1988/89	158	15	118	67	0	21	327	180
1989/90	152	10	101	74	0	20	306	163
1990/91	135	11	180	70	0	23	362	187

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

MOZAMBIQUE MAJOR CEREALS DATA



MOZAMBIQUE MAJOR CEREALS DATA^{1,2}

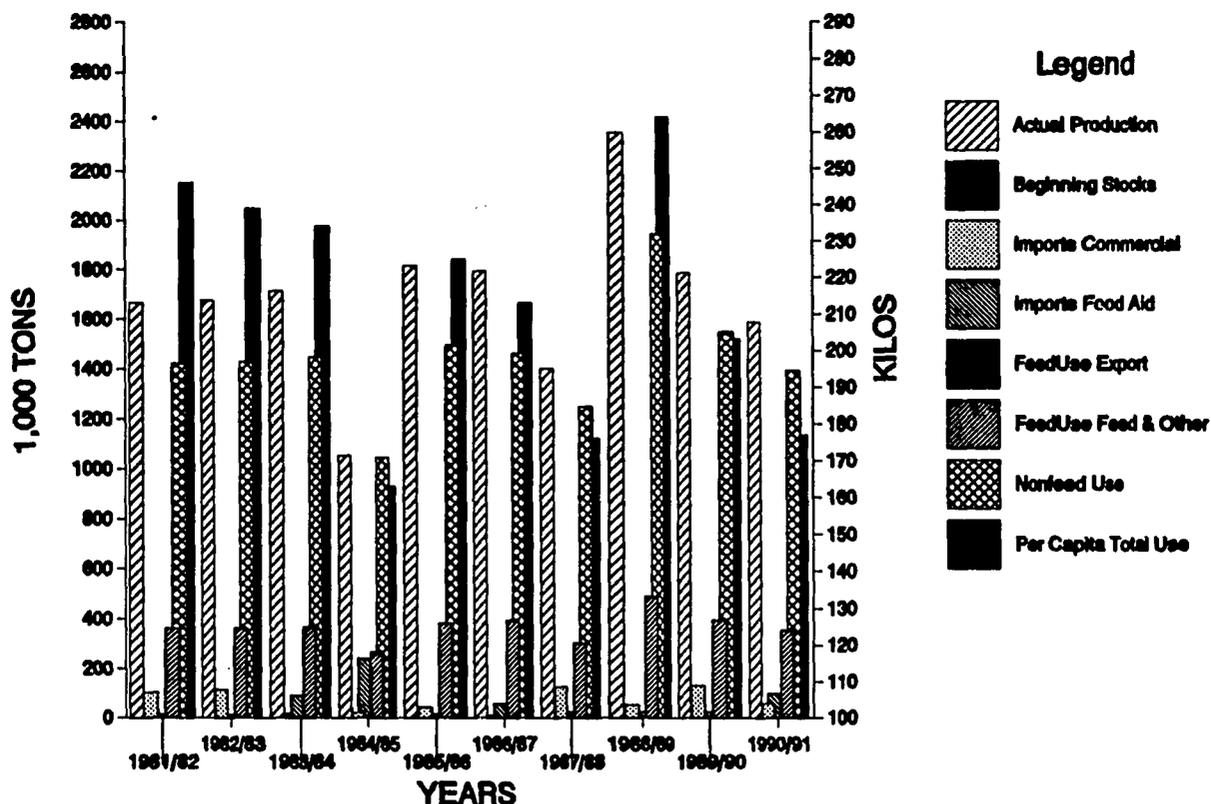
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use	
			Commercial	Food Aid	Export	and other			
			-----1,000 Tons-----						Kilos
1981/82	483	10	171	149	0	62	737	59	
1982/83	568	14	97	210	15	67	793	62	
1983/84	518	14	0	274	0	62	728	56	
1984/85	544	17	51	379	0	76	900	67	
1985/86	584	15	38	362	0	77	907	66	
1986/87	593	15	0	244	0	67	771	55	
1987/88	465	15	1	506	0	78	899	64	
1988/89	525	10	0	506	0	78	958	68	
1989/90	553	5	7	410	0	76	894	63	
1990/91	697	5	7	493	0	93	1104	76	

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



NIGER MAJOR CEREALS DATA



NIGER MAJOR CEREALS DATA^{1,2}

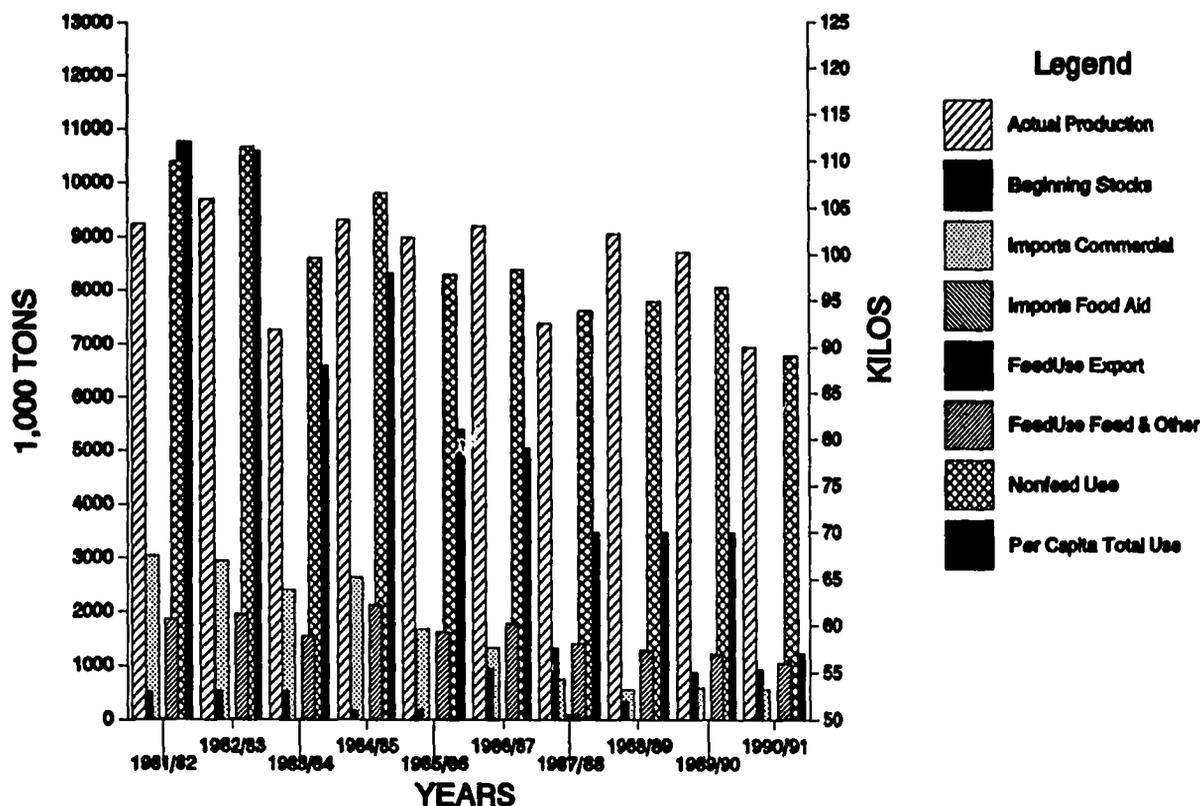


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
-----1,000 Tons-----								
1981/82	1668	0	104	12	0	362	1421	246
1982/83	1677	0	115	13	0	363	1427	239
1983/84	1715	15	0	90	0	369	1450	234
1984/85	1053	0	20	239	0	266	1045	163
1985/86	1817	0	42	17	0	381	1485	225
1986/87	1793	0	9	56	0	394	1464	213
1987/88	1401	0	126	25	0	304	1249	176
1988/89	2356	0	53	25	0	490	1944	264
1989/90	1785	0	131	25	0	394	1547	203
1990/91	1588	0	60	100	0	355	1383	177

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

NIGERIA MAJOR CEREALS DATA



NIGERIA MAJOR CEREALS DATA^{1,2}

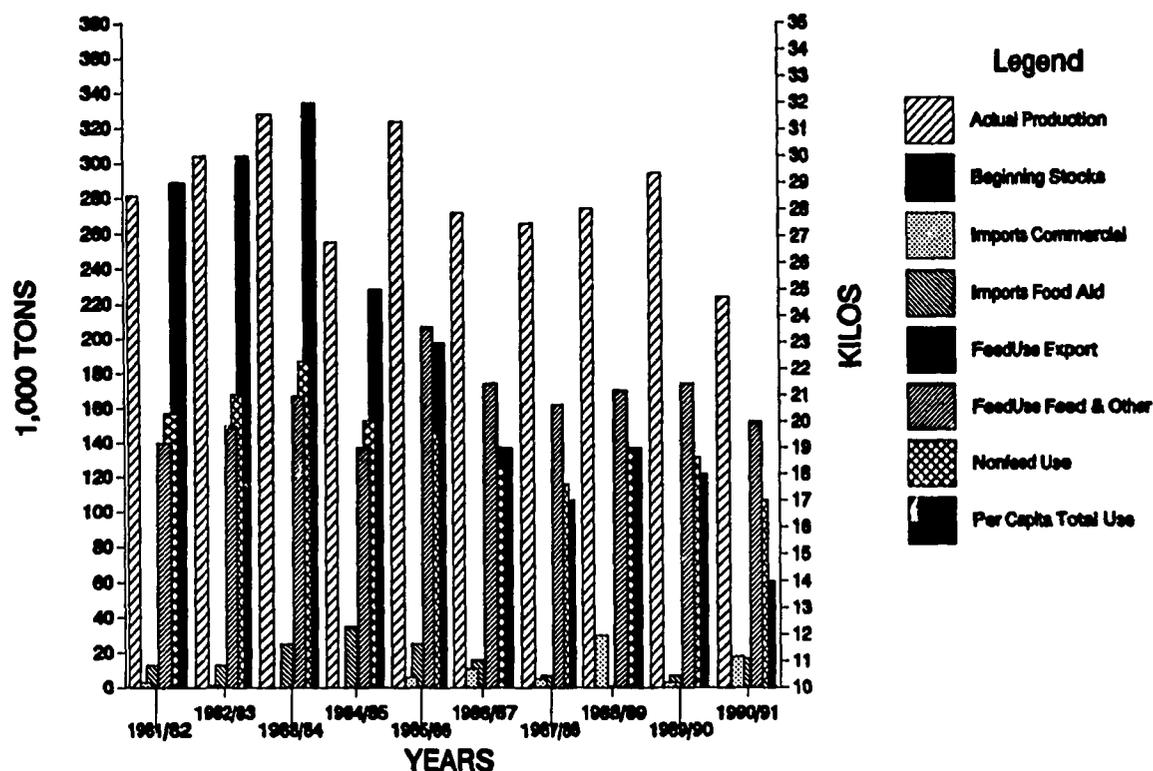


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use	
			Commercial	Food Aid	Export	and other			
			-----1,000 Tons-----						Kilos
1981/82	9234	514	3035	1	5	1867	10393	112	
1982/83	9692	519	2936	0	12	1943	10665	111	
1983/84	7262	527	2411	0	10	1530	8601	88	
1984/85	9311	159	2630	0	0	2122	9797	98	
1985/86	8990	181	1660	0	0	1608	8288	81	
1986/87	9195	935	1320	0	0	1762	8378	79	
1987/88	7380	1310	742	0	100	1393	7599	70	
1988/89	9050	340	543	0	0	1279	7784	70	
1989/90	8700	870	591	0	0	1197	8044	70	
1990/91	6928	820	565	0	0	1029	6764	57	

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

RWANDA MAJOR CEREALS DATA



RWANDA MAJOR CEREALS DATA^{1,2}

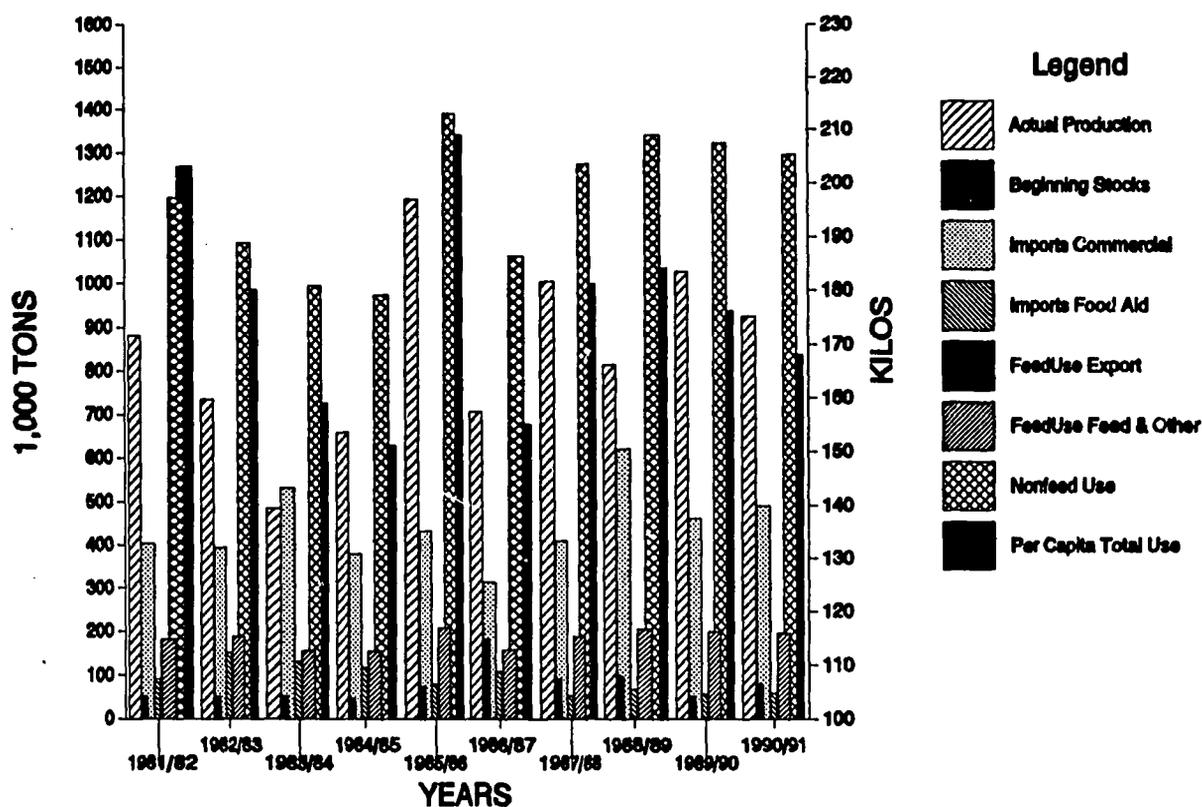


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
-----1,000 Tons-----								
1981/82	281	0	3	13	0	140	157	29
1982/83	304	0	1	13	0	150	168	30
1983/84	328	0	0	25	0	167	187	32
1984/85	255	0	0	35	0	137	153	25
1985/86	324	0	6	25	0	207	147	23
1986/87	272	0	11	16	0	174	125	19
1987/88	266	0	5	7	0	162	116	17
1988/89	274	0	30	1	0	170	135	19
1989/90	294	0	3	7	0	174	131	18
1990/91	224	0	18	17	0	152	107	14

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

SENEGAL MAJOR CEREALS DATA



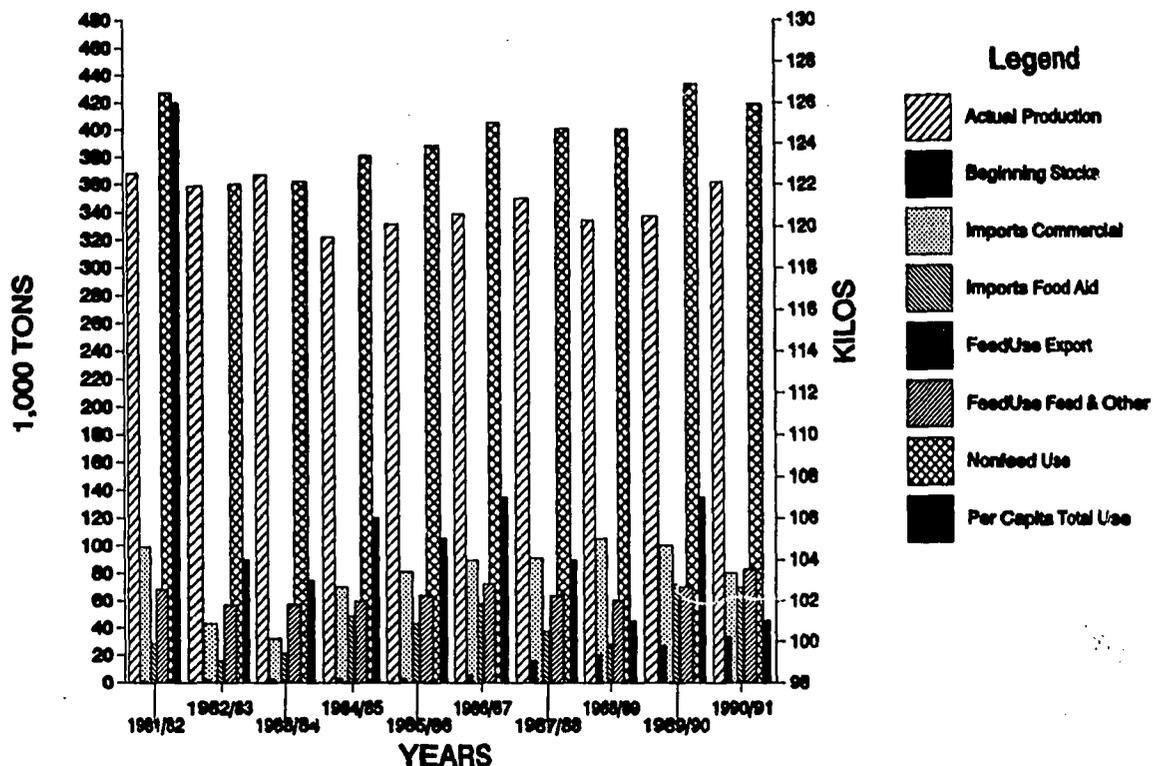
SENEGAL MAJOR CEREALS DATA^{1,2}

Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
-----1,000 Tons-----								
1981/82	882	52	403	91	0	181	1195	203
1982/83	735	52	394	151	0	187	1082	180
1983/84	484	52	531	131	0	156	994	159
1984/85	658	47	378	118	0	153	973	151
1985/86	1192	75	432	80	0	207	1390	209
1986/87	706	182	313	108	0	157	1061	155
1987/88	1003	92	408	53	0	187	1272	181
1988/89	813	97	619	67	0	204	1339	184
1989/90	1026	52	461	58	0	198	1320	176
1990/91	825	79	490	60	0	195	1295	168



¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.
² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

SIERRA LEONE MAJOR CEREALS DATA



SIERRA LEONE MAJOR CEREALS DATA^{1,2}

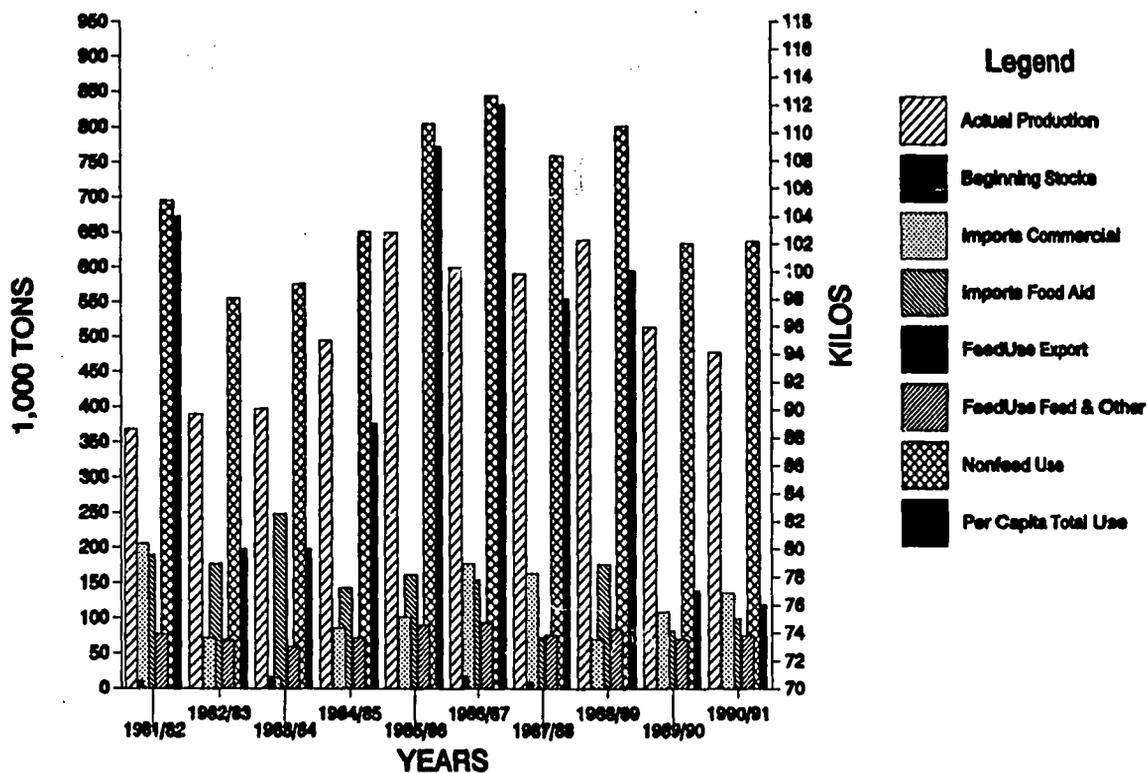
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	Feed and other		
1981/82	368	1	99	29	0	68	427	126
1982/83	359	2	43	16	0	57	360	104
1983/84	367	3	32	21	0	57	362	103
1984/85	322	3	70	49	0	60	381	106
1985/86	332	3	81	43	0	64	389	105
1986/87	339	6	90	58	0	72	405	107
1987/88	350	16	91	38	0	64	401	104
1988/89	334	20	105	28	0	60	400	101
1989/90	337	27	100	72	0	70	433	107
1990/91	362	33	80	70	0	83	419	101

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



SOMALIA MAJOR CEREALS DATA



SOMALIA MAJOR CEREALS DATA^{1,2}

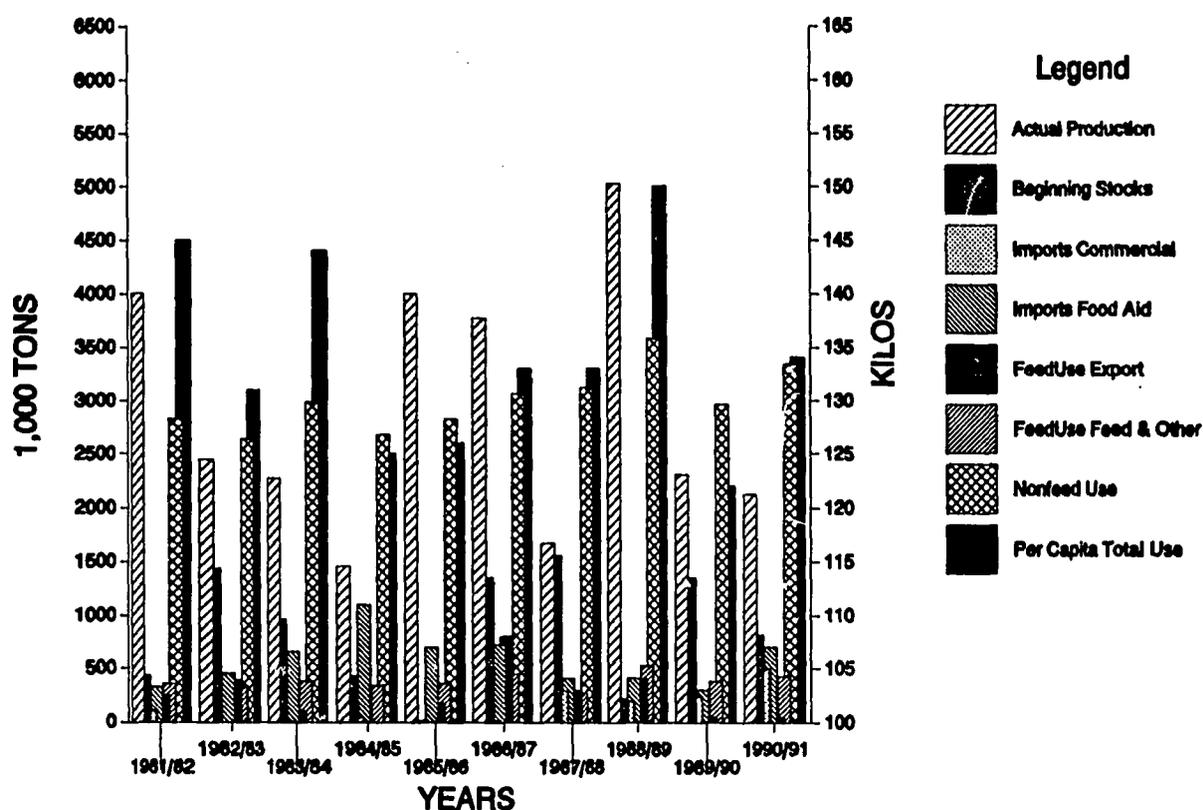
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
1981/82	369	10	205	189	0	78	695	104
1982/83	380	0	72	177	0	69	555	80
1983/84	397	15	16	248	0	60	576	80
1984/85	494	0	86	143	0	72	651	89
1985/86	649	0	101	161	0	90	804	109
1986/87	599	17	177	154	0	94	844	112
1987/88	590	9	163	73	0	76	759	98
1988/89	639	0	70	176	0	84	801	100
1989/90	513	0	109	82	0	70	634	77
1990/91	477	0	136	100	0	76	637	76

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



SUDAN MAJOR CEREALS DATA



SUDAN MAJOR CEREALS DATA^{1,2}

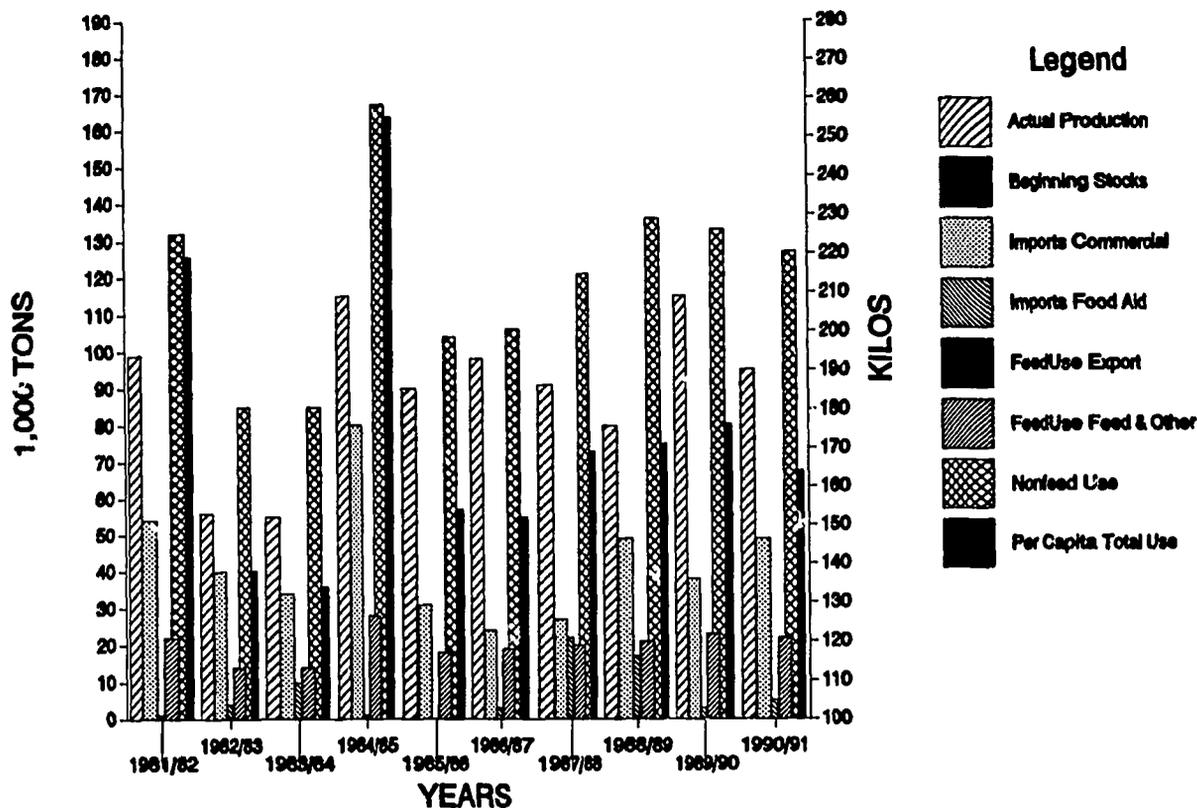


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use	
			Commercial	Food Aid	Export	and other			
			-----1,000 Tons-----						
1981/82	4007	436	107	330	253	360	2833	145	
1982/83	2448	1434	1	450	393	336	2644	131	
1983/84	2268	961	7	654	100	379	2981	144	
1984/85	1457	429	48	1100	0	341	2679	125	
1985/86	4001	14	0	690	170	360	2826	126	
1986/87	3773	1349	14	725	800	444	3063	133	
1987/88	1665	1554	293	410	300	273	3124	133	
1988/89	5027	224	200	410	400	528	3582	150	
1989/90	2307	1350	241	301	50	377	2962	122	
1990/91	2119	810	500	700	50	425	3344	134	

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

SWAZILAND MAJOR CEREALS DATA



SWAZILAND MAJOR CEREALS DATA^{1,2}

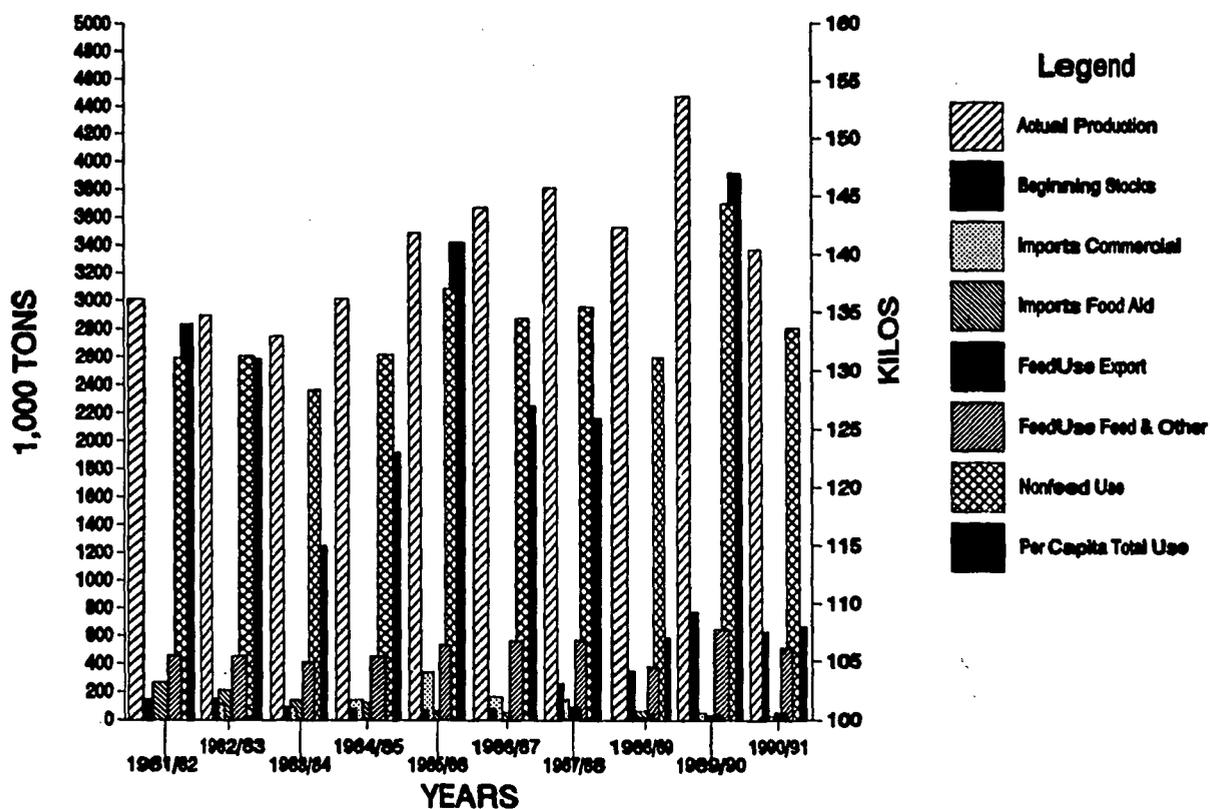
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	other		
-----1,000 Tons-----								
1981/82	99	0	54	1	0	22	132	219
1982/83	56	0	40	4	0	14	85	138
1983/84	55	0	34	10	0	14	85	134
1984/85	115	0	80	1	0	28	167	255
1985/86	90	0	31	0	0	18	104	154
1986/87	98	0	24	3	0	19	106	152
1987/88	91	0	27	22	0	20	121	169
1988/89	80	0	49	17	0	21	136	171
1989/90	115	0	38	3	0	23	133	176
1990/91	95	0	49	5	0	22	127	164

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



TANZANIA MAJOR CEREALS DATA



TANZANIA MAJOR CEREALS DATA^{1,2}

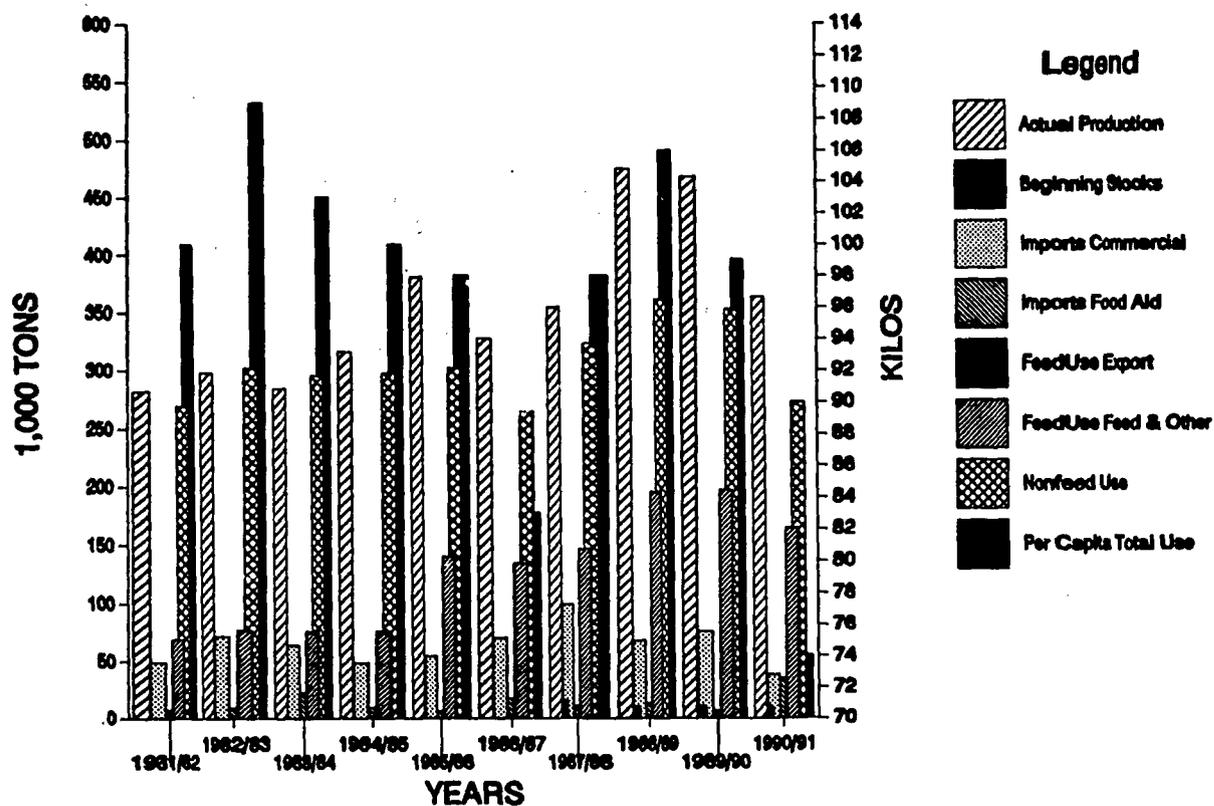


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	Feed and other		
-----1,000 Tons-----								
1981/82	3012	148	0	266	0	456	2594	134
1982/83	2895	150	112	213	0	452	2605	131
1983/84	2746	85	92	141	0	412	2364	115
1984/85	3014	82	145	125	0	449	2619	123
1985/86	3487	70	336	66	0	530	3082	141
1986/87	3666	79	167	55	0	567	2872	127
1987/88	3811	259	144	36	90	568	2658	126
1988/89	3531	348	20	63	30	376	2798	107
1989/90	4473	775	52	19	30	645	3815	147
1990/91	3365	628	27	12	50	515	2802	108

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

TOGO MAJOR CEREALS DATA



TOGO MAJOR CEREALS DATA^{1,2}

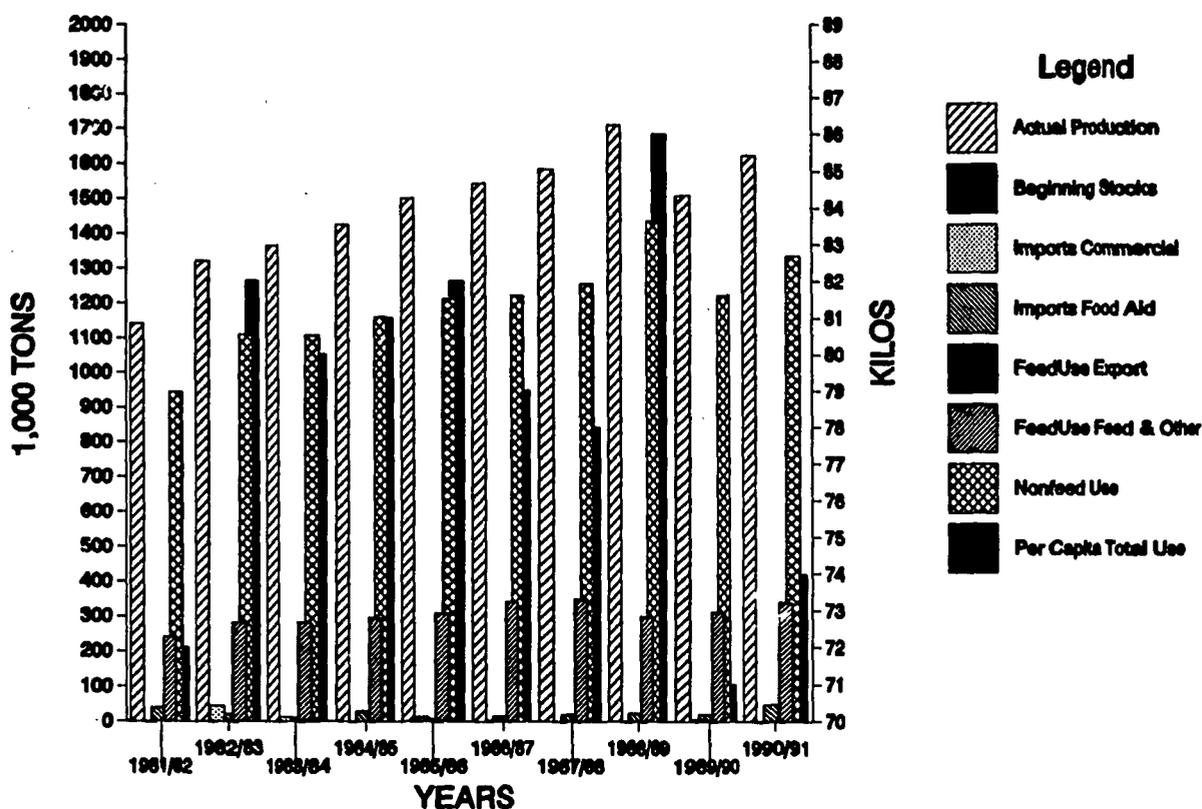
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	Feed and other		
			-----1,000 Tons-----					Kilos
1981/82	282	0	49	7	0	69	269	100
1982/83	298	0	72	9	0	77	302	109
1983/84	284	0	64	23	0	76	295	103
1984/85	316	0	48	9	0	76	297	100
1985/86	380	0	54	6	0	140	301	98
1986/87	327	0	70	17	0	134	264	83
1987/88	354	15	99	11	0	146	323	98
1988/89	475	10	68	13	0	195	361	106
1989/90	468	10	75	6	0	197	352	99
1990/91	363	10	38	35	0	164	272	74

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



UGANDA MAJOR CEREALS DATA



UGANDA MAJOR CEREALS DATA^{1,2}

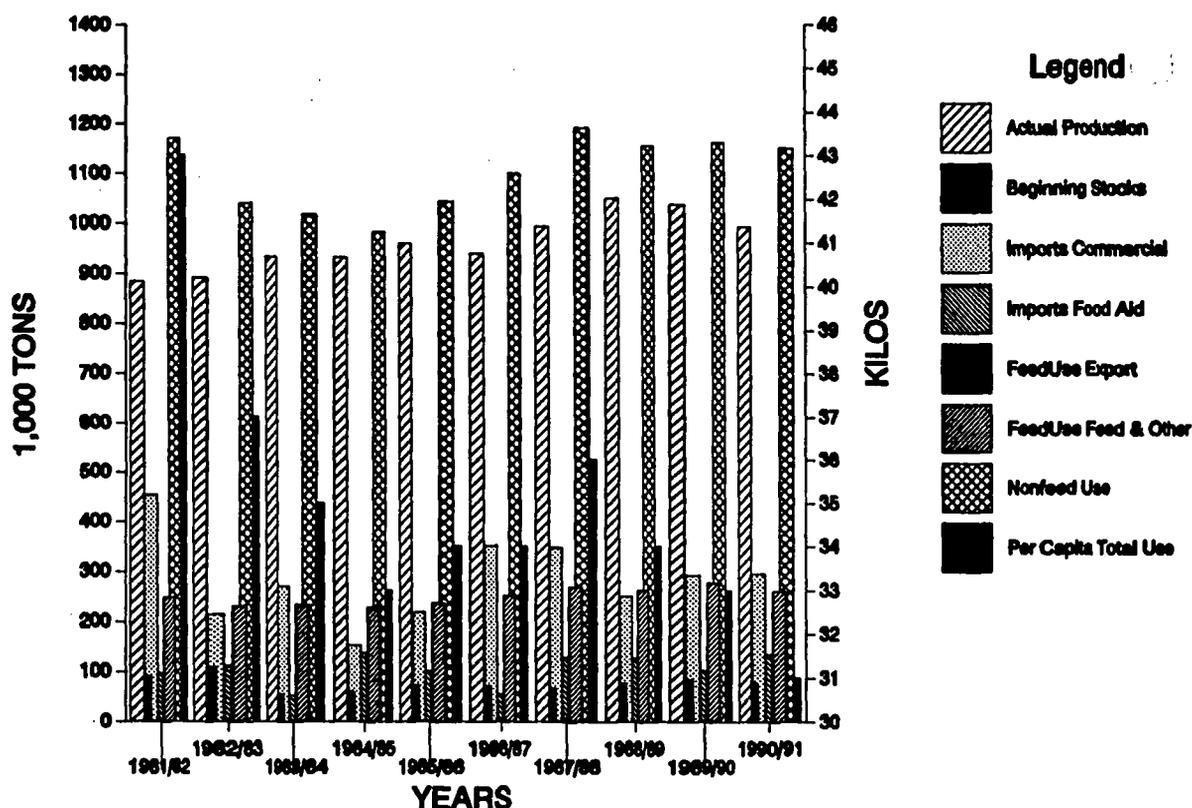


Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
	-----1,000 Tons-----							
1981/82	1142	0	0	40	0	240	943	72
1982/83	1321	0	46	22	0	282	1108	82
1983/84	1365	0	13	10	0	281	1107	80
1984/85	1426	0	1	30	0	295	1161	81
1985/86	1500	0	13	7	0	308	1212	82
1986/87	1545	0	2	15	0	340	1221	79
1987/88	1585	0	0	20	0	349	1256	78
1988/89	1710	0	0	23	0	299	1434	86
1989/90	1510	0	5	20	0	311	1224	71
1990/91	1625	0	1	49	0	339	1335	74

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

ZAIRE MAJOR CEREALS DATA



ZAIRE MAJOR CEREALS DATA^{1,2}

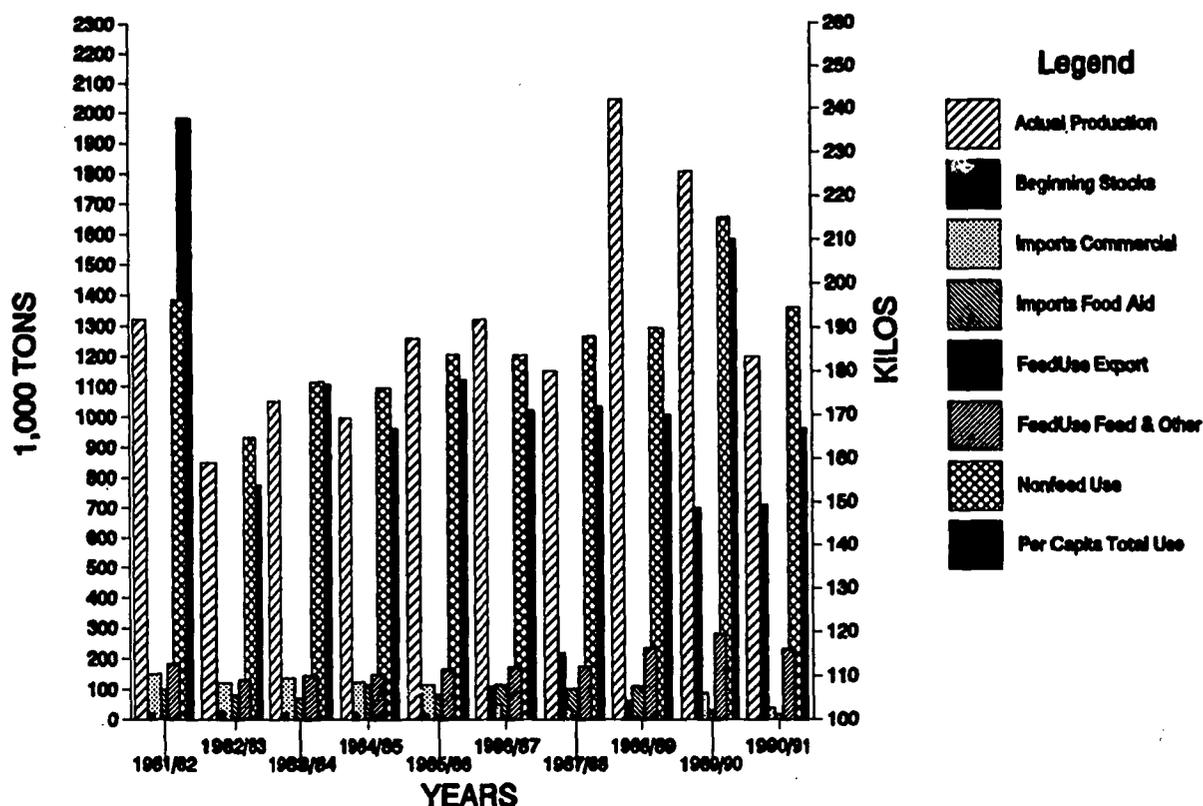
Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use
			Commercial	Food Aid	Export	and other		
1981/82	884	91	454	97	0	247	1170	43
1982/83	893	109	214	110	0	230	1040	37
1983/84	934	55	270	53	0	233	1018	35
1984/85	932	60	153	138	0	229	983	33
1985/86	961	71	219	101	0	237	1044	34
1986/87	941	71	352	56	0	252	1100	34
1987/88	994	68	347	129	0	269	1193	36
1988/89	1051	76	251	127	0	283	1157	34
1989/90	1039	85	293	102	0	277	1164	33
1990/91	994	78	295	135	0	281	1151	31

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



ZAMBIA MAJOR CEREALS DATA



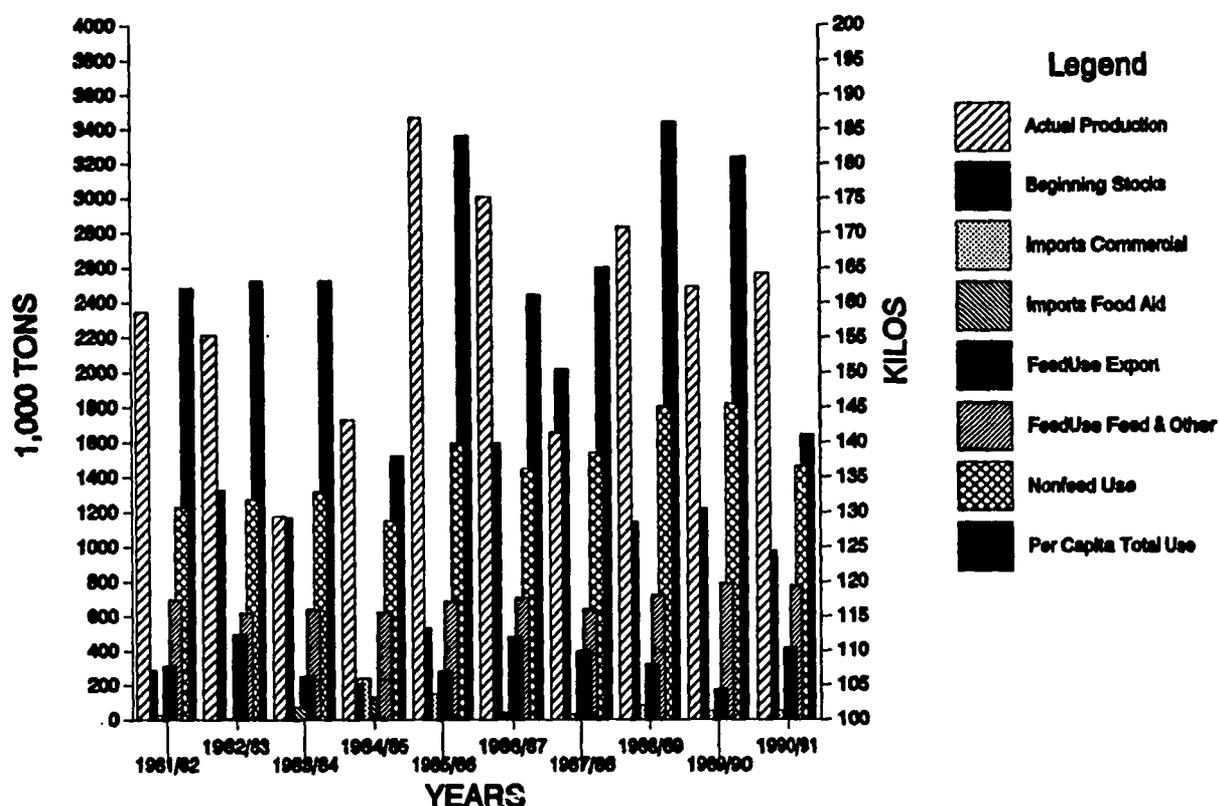
ZAMBIA MAJOR CEREALS DATA^{1,2}

Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use	
			Commercial	Food Aid	Export	and other			
			-----1,000 Tons-----						Kilos
1981/82	1321	23	150	100	0	132	1384	238	
1982/83	850	29	122	83	0	131	932	154	
1983/84	1052	22	138	72	0	146	1114	177	
1984/85	998	24	124	116	0	148	1094	167	
1985/86	1259	20	116	85	0	166	1204	178	
1986/87	1320	110	49	116	0	172	1203	171	
1987/88	1149	211	33	102	0	175	1264	172	
1988/89	2043	64	7	112	0	234	1291	170	
1989/90	1806	700	90	33	0	281	1654	210	
1990/91	1200	710	39	20	0	232	1358	167	

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.

ZIMBABWE MAJOR CEREALS DATA



ZIMBABWE MAJOR CEREALS DATA^{1,2}

Crop Year	Actual Production	Beginning Stocks	Imports		Feed Use		Nonfeed Use	Per Capita Total Use	
			Commercial	Food Aid	Export	and other			
			-----1,000 Tons-----						Kilos
1981/82	2342	288	28	0	310	698	1225	162	
1982/83	2214	1325	5	6	492	620	1272	163	
1983/84	1176	1167	0	75	252	640	1316	163	
1984/85	1730	210	238	132	4	624	1151	138	
1985/86	3465	531	153	0	283	684	1591	184	
1986/87	3004	1591	17	38	480	708	1446	181	
1987/88	1855	2015	33	14	393	641	1538	165	
1988/89	2831	1145	84	0	314	722	1806	186	
1989/90	2489	1218	53	0	174	789	1822	181	
1990/91	2568	975	51	20	414	776	1461	141	

¹ Nonfeed Use = Actual Production + Beginning Stocks + Imports - Feed Use.

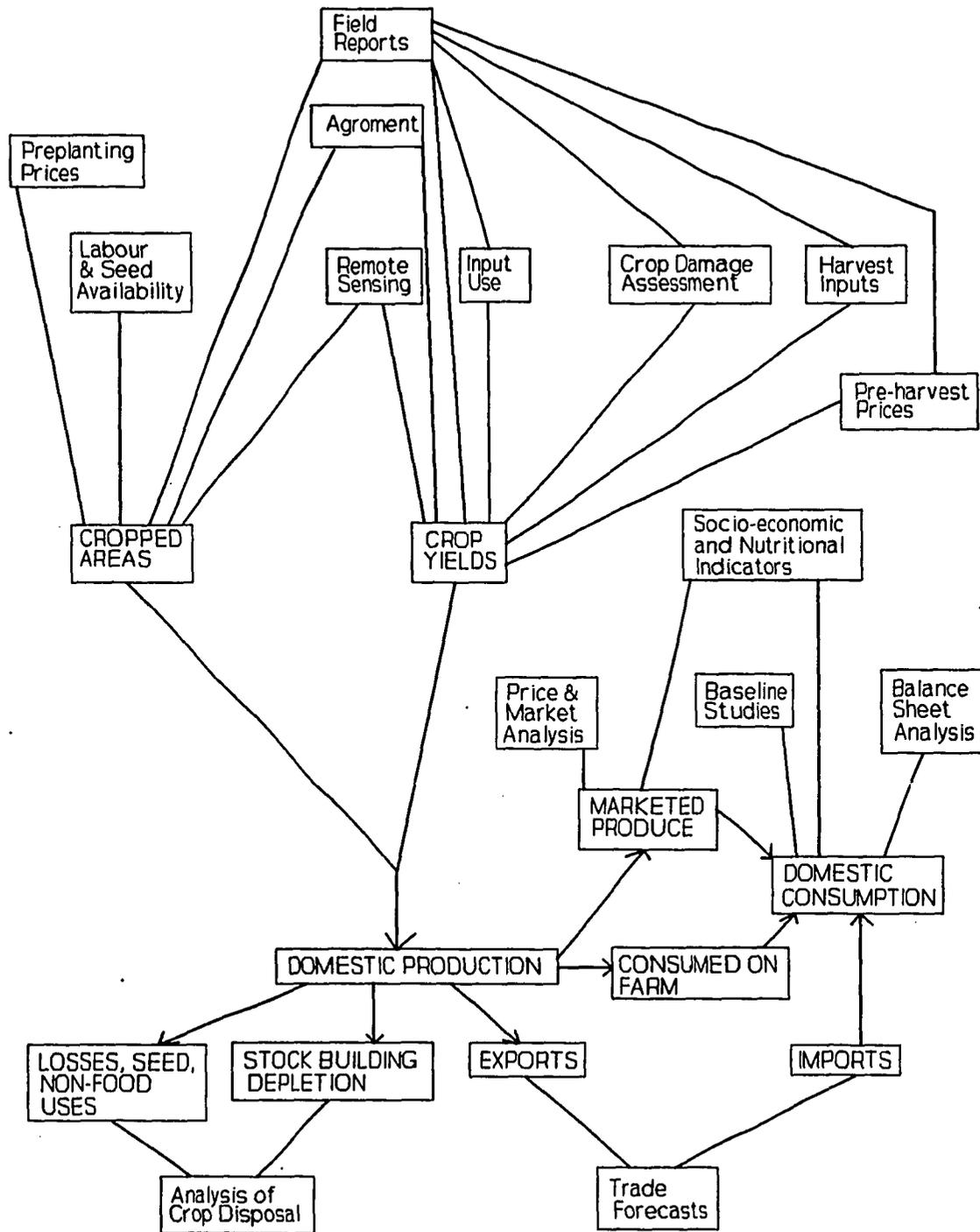
² Source: United States Department of Agriculture, Economic Research Service, Washington, D.C., November 1991.



APPENDIX III

**SIMPLIFIED DIAGRAM OF CROP PRODUCTION, DISPOSAL, AND INTER-RELATED
ACTIVITIES IN NATIONAL EARLY WARNING AND FOOD INFORMATION SYSTEMS**

**SIMPLIFIED DIAGRAM OF CROP PRODUCTION AND DISPOSAL,
AND INTER-RELATED ACTIVITIES IN NATIONAL EARLY
WARNING AND FOOD INFORMATION SYSTEMS**



APPENDIX IV

QUESTIONNAIRE ON FOOD SECURITY STOCK POLICIES

Previous Page Blank

QUESTIONNAIRE

Request For Information From The Parastatals Or Other Public Agency In Charge Of The Food Security Stocks:

(Please return with requested information to the USAID Mission by
December 1, 1991)

The following information is requested:

- (1) Name of the Parastatal (or Public Agency) in charge of food security stocks or reserves (FSS): _____

- (2) Type of FSS: (a) working or stabilization stocks _____
(Please check) (b) emergency stocks _____
(c) both of the above _____
(d) other (EXPLAIN) _____

- (3) Structure of agency that maintains FSS:
 - (a) Does the agency have autonomy in decision making on stock size guidelines and release mechanisms (Yes or No, EXPLAIN) _____

(Board of Directors includes
Government Officials _____
Quasi-Government Officials _____
NGO Officials _____
Private Businessmen _____
Others (EXPLAIN) _____)

 - (b) Is the agency a division of a parent organization, such as, a Food Security Unit within the Ministry of Agriculture (Yes or No, EXPLAIN),

 - (c) Provide organogram of the agency if available

(4) Functions of the agency

(a) Does the agency procure locally produced grain

Grain types procured _____

Percentage procurement of each type of grain locally produced _____

Is procurement made through a tendering procedure (i.e., a least cost basis)? _____

(b) Does the agency have a procurement quota for buying from big and small farmers (EXPLAIN)? _____

(c) Does the agency store the FSS _____

(d) Process the grain (EXPLAIN) _____

(e) Market (sell) the grain _____

(f) Store and handle donated food aid (grain or grain products) _____

(g) Market donated food grain _____

(h) Distribute grain free-of-charge to schools, hospitals, targeted people, etc. _____

(i) Import food grain _____

(j) Export food grain _____

(k) Collect market information _____

Operate database management information system _____

(Describe data regularly collected that pertains to the food security program _____

Manage the data collection for the Early Warning System _____

(1) Other functions (EXPLAIN)

(5) Storage

(a) Number of agency's warehouse locations in the country _____

Actual locations? _____

(b) Total agency's storage capacity (metric tons) by location (if possible) _____

(c) Total private storage capacity (metric tons) _____

Actual quantities of grain (by type) stored and owned by the private sector at different times of the year (using most recent year):

-From harvest until 3 months after harvest _____

-From 3 to 6 months after harvest _____

-From 6 to 9 months after harvest _____

-From 9 to 12 months after harvest _____

(6) Human Resources of the Agency

(a) Total number employees in grain related activities _____

(b) Average number of years experience of the management staff (warehouse manager or above) _____

(c) Percentage of the management staff that have received formal training in warehousing, inventory, management, business administration (invoicing, bookkeeping, etc.), pest control, etc. _____

(d) Does the organization have access to trained fumigators within the organization or must the organization go to commercial pest control operators? _____

(7) Food grain stock size

(a) Emergency stock size (metric tons by grain type)

How is the size of the stock determined?

Variables impacting the size of the stock (for example, expected production, imported grain prices, food aid quantities, etc.) _____

(b) Stabilization stock size (metric tons by grain type)

Variables impacting the size of the stock (for example, privately stored stocks, floor price, ceiling price, total grain consumption, etc.) _____

(c) Are foodgrain emergency stocks used as stabilization stocks and released when stabilization stocks are normally released, even though the emergency stocks have not been replenished?

(8) Trigger mechanism for acquisition and release of stabilization stocks

(a) Actual floor price (provide the price in local currency as per each type of grain) _____

(b) Actual ceiling price (provide the price in local currency as per each type of grain) _____

(c) Other mechanisms (name and explain) _____

(9) Historical quantities of carryover stocks from one year to the next (where the end of the year coinciding with the few days before the new crop is harvested and ready for the market)

TOTAL CARRYOVER BY GRAIN TYPE (metric tons)

	Maize	Rice	Other
1990/91			
1989/90			
1988/89			
1987/89			
ETC.			

(10) For what specific purpose(s) is the emergency food security stock used for? _____

(11) Grain Importation

(a) Does the organization have the authority to import grains? (Yes or no, specify type of grain if necessary) _____

(b) Can the private sector import grain? _____

Does the private sector need a license to import? _____

(c) How long does it take for imported foodgrain to reach the parastatal (public organization) after being ordered from the different exporting countries? _____

(d) Source of imported grains in past five years (imported by the parastatal) _____

(12) Grain exportation

(a) Does the organization have the authority to export grains? (Yes or no, specify type of grain if necessary) _____

(b) Is the private sector allowed to export grain?

Does the private sector need a license to export?

(c) Country to which grain has been exported to by the parastatal in past five years (mention by grain type) _____

(13) Funding

(a) Source of fund for financing the operations of the agency (over past three years)?

(i) percentage generated by the operations of the agency _____

(ii) percentage provided by government _____

(iii) percentage provided by donors _____

- (b) If the agency generates all of its income from its own operations, is it able to:
- (i) breakeven (revenues = costs) _____
 - (ii) make a profit (revenues > costs) _____
 - (iii) lose money but continue to operate on overdraft _____
- (c) If the government partially funds the operations of the agency, are the funds sufficient to cover the normal business costs of the agency (check one)?
- Sufficient _____
 Insufficient _____
- (d) How sustainable are the operations of the agency given present funding arrangements?
- (i) permanently sustainable _____

 - (ii) sustainable only with donor food aid _____

 - (iii) not sustainable _____
- (e) Please attach the income statement of the agency for the past three years

(14) Donor assistance

- (a) Donors assisting the agency in its operations in the past five years (list) _____

- (b) Role of the donor assistance (in the past three years), check please:
- (i) providing funds _____
 for what purpose (e.g., for general operations, for procuring emergency stocks)

 - (ii) providing food (through e.g., PL 480, triangular transactions, local purchases)

 for what purpose (e.g., for emergency stocks)

