FOOD SYSTEMS UNDER STRESS: THE UGANDA SITUATION

BY

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1. INTRODUCTION

Statistics show 1990s as the period with the fastest growth in human population than any other time before and that 90 million people will be added every year. Therefore the world population is projected to reach closer to 11 billion than the 10 billion originally predicted towards the end of this century. This scenario pose serious challenges to the survival of the people in many countries with regard to food availability as food production is being outstripped by population growth rates (Seyoum 1990). It is estimated that globally between 340 and 370 million people are food insecure, which means that they are at risk from malnutrition,hunger and even famine.

In the developing world population growth is generally outstripping food production. In Africa, natural calamities like drought and man made disasters such as wars have exacerbated the food situation. The situation, however, tend to vary between countries in Africa. While countries like Burkina Faso, Sudan, Ethiopia and Somalia etc. tend most of the time to be food deficient due to unfavourable

climatic conditions compounded by wars (in the three last countries), a country like Uganda is nationally food sufficient at most times despite several civil wars due to moderately favourable climate.

Despite the fact that Uganda has food surplus most of the time, not every region and more importantly not every household is food secure. Chronic malnutrition affects about 45% of children in the range of 5 years and about 20% of women have low birth weights (Uganda National Food and Nutrition Council Policy Paper No.1). This means that the problem may not be production but distribution and consumption or accessibility to food.

This paper discusses the concept of food system, stress and food security before analysing the food situation in Uganda. It then goes on to examine factors which appear critical to the functioning of the food system. Finally the key issues which require investigation are identified.

2. THE CONCEPTS OF FOOD SYSTEM AND STRESS

A food system consists of logically related processes which includes; production, distribution, consumption and biological utilization of food. Stress becomes apparent when in one or more stages of a food system, there exists a threat to the attainment of sufficient food for all at the household, community or national level due to a combination of climatological (drought) and/or ecological (serious

resource degradation) and socio-economic and/or political factors (e.g. distribution, marketing, trade at national and international levels). When a community or a household is experiencing malnutrition, it means one or two of the processes is not functioning well in relationship to this community (Pacey and Payne, 1985). In regard to the Uganda's case where there is most times food surplus at a national level, if a community or a household is malnourished, it could mean that there is a problem with access to or entitlement to food (consumption process); or that the problem is at the ultimate level of biological utilization which could imply that the food utilization is being undermined by disease brought about poor water and sanitary environment(Pacey and Payne, 1985).

The notion of stress in Africa's and Uganda's food system is not only related to production difficulties due to harsh climatic conditions such as droughts or floods. The view that limits stress to drought stricken areas is narrow since stress has many dimensions and occurs during normal as well as abnormal weather (Pottier 1993). Other authors indicate that stress can also occur when population growth outstrip the available land resources.(Rowland 1993, Reijnttes et al. 1992). This means that the available land resources cannot generate sufficient food to feed the population resulting in food insecurity for the population. This is relevant to the heavily populated highland areas of

Kabale and Mbale in Uganda. Improved technology which increases productively per unit area can minimize the effect of this stress factor (population pressure) by enabling sufficient production of food. When food is accessible to all peoples at all times, it means that there is no stress within the system and therefore everyone is food secure. Food security crucially depends on the reliability of production and people's access to it. The concept therefore encompasses the question of both sustainability and equity (FAO 1990). Analysis of nutritional problems within a society may therefore have implications for agriculture at many different levels. At one level, it may consider the impact of agricultural change (production process) on the ability of people to earn an entitlement to food consumption. To produce more, but at a cost many people cannot afford, may be self defeating. An orientation of technology to production, which neglects problems of consumption, needs to be corrected. At other levels, the analysis points to the need for an integrated approach by planners to the development of land resources for food, for fuel, and for cash crops. It underlines the need to improve the domestic environment as well as to plan resource inputs in agriculture (Pacey and Payne, 1985). This means that to ensure continued production and consumption of food, arrangements should be made to bring about food and agricultural production without destroying the environment,

which is the base of the most important process in the food system - production.

3. OVERVIEW OF THE FOOD SITUATION IN UGANDA

3.1 Government Policy on Food

The declared policy goals of the Ugandan government in regard to food is the production of sufficient food to ensure food security and adequate nutrition standards. (Background to the Budget, 1988-1989 MPED P.37). In the Background to the budget 1989-1990, the policy is repeated as it continues to focus on the increase of food production for self-sufficiency and diversification of agricultural exports in order to broaden the base of export crops. This was also the declared goal of the Obote II regime (Republic of Uganda, Recovery Programme 1982-1984 April 1982, Kampala).

The policy also emphasized the increasing diversification and liberalization of agricultural exports, while increasing food production and availability while giving due regard to environmental conservation.

There has been skepticism as to whether this goal can be achieved within the framework of the IMF/World Bank sponsored Structural Adjustment Programmes(SAP). SAP have been implemented in two phases, the 1st phase from 1981-84 and the second phase from 1987-1992 (Bazara 1992). An important instrument of SAP is devaluation. Since the inception of SAP in 1981, the Uganda shilling has been

constantly devalued. Devaluation is supposed to cheapen the Uganda shillings vis-a-vis foreign currencies which in turn encourages foreigners to buy more of Uganda exports. Devaluation has gone side by side with export crop diversification. The latter means the encouragement of traditional export crops like coffee, cotton, tea etc. as well as the non-traditional export crops such as maize, groundnuts, millet, sim-sim etc. The non traditional export crops are at the same time the staple foodstuffs consumed domestically.

Another important aspect of SAP is the abolition of the foodstuffs trade monopoly nationwide. This monopoly introduced in 1968 by a statute that established the Produce Marketing Board (PMB). Private dealers were squeezed out of the buying and selling of agricultural produce except as agents of PMB. In 1989, SAP ended that monopoly. PMB from then has been competing with private traders. This competition together with devaluation, high interest rates and balanced budgets are supposed to induce appropriate price incentives that benefit the rural agricultural producers (Bazara 1992).

The impact of this policy appears to have been to increase the area under cultivation in favour of export crops and against food crops. Export crops production is reviving faster than food crops consumed locally. Furthermore, SAP has failed to achieve higher and higher

incomes for the producers. Producers continue to lose a big proportion of their sweat to some produce dealers who are urban based. In addition, the constant devaluation always accompanied by high fuel prices translate into high prices of all imported commodities thereby wiping out the little income producers get from the reformed market and preludes possibilities of innovation and further expansion. By seriously reducing real income, SAP has had harmful effects on the availability and affordability of household food at all times among both the rural and urban households. SAP has had unequal impact on the rural people because they are differentiated. It has not only deepened the existing inequalities, but also undermined access and control over resources by the poor. In the long run emphasis on export crops will undermine further food production and security because the majority of rural producers are gradually losing control over resources to the better off ones whose investment patterns are geared towards commercial trade and export crop production. Therefore food policy within the framework of SAP by emphasis on export crops have reduced food available for local consumption and by reducing the real income of producers and consumers through high prices and by undermining the access and control of resources by the poor, has reduced their entitlement to food rendering them food insecure.

Finally the expansion of areas under crops has meant

that in certain areas the expansion has occurred in fragile areas like swamps and marginal areas therefore leading to environmental deterioration;. This in the long term will destroy the basis of food production if unchecked.

Recently, however, the National Food and Nutrition Council completed a proposal on Food and Nutrition Policy and Strategy. The proposal will be debated by the National Resistance Council before it becomes policy. This proposal is a significant improvement in the Food Policy which has been in existence in Uganda. This proposal aims at not only promoting food production and availability through adoption appropriate technologies, reduction of exports when necessary, but also indicates the need to tackle problems of disease and health especially for children and mothers which undermines nutrition through treatment and primary health care. It also focuses on improvement of storage at household level and buffer stocks at regional and national level and promotion of appropriate technologies in food production, processing to reduce the workload especially for women.

Finally ensuring food security for vulnerable groups such as children, women and the disabled is also included in the draft policy. If this draft policy is approved it would resolve some of the key constraints to the proper functioning of the food system in Uganda hence reducing food insecurity.

3.2. Food Situation in Uganda

1. Crop Production

Uganda is endowed with moderately favourable climatic and soil conditions to produce sufficient food. Despite this, not everyone has sufficient supplies of food at all times. Food supplies therefore tend to vary in time and within regions, communities and households. Records indicate that up to about 1978 Uganda was self-sufficient in food and produced surplus for export. From 1979 to 1981 there was a decline in the levels of food produced in the country with the dramatic fall occurring in the 1979. This decline in food production levels resulted from a combination of key factors notably war leading to insecurity and breakdown of infrastructure and drought. (Uganda Food and Nutrition Council Policy Paper No. 1, February 1993).

The country experienced a short lived recovery in food production from 1982 to 1984 after which it experienced sharp fall again in 1985 due to prolonged drought of 1984/85 and effects of the civil war, the worst hit area being Luwero Triangle. From 1986 food production increased in the country with the exception of North and Northeast where there was insurgency. Table 1 on the next page illustrates food production in metric tones in Uganda from 1970-1992.

Table 1: Production ('000mt), 1970 - 1992

Year	Bananas	Beans	Cassava	G/Nuts	Maize	Millet	Sorghum	Sweet Potato	Total Prod.
1970	7657	388	2578	244	389	783	462	1570	14071
1971	7557	222	2417	251	421	650	348	1425	13291
1972	7634	277	2650	234	500	594	419	1224	13492
1973	8126	170	2132	212	419	643	380	1232	13314
1974	8879	196	2350	200	430	591	345	1786	14777
1975	9106	326	2992	194	570	682	467	1953	16290
1976	8137	337	2838	177	674	567	390	2002	15117
1977	8531	253	2993	193	566	578	344	1659	15117
1978	8840	229	2028	198	594	561	351	1689	14541
1979	6090	181	2100	80	253	481	316	1272	10774
1980	5699	133	2072	70	286	459	299	1200	10218
1981	5900	240	3000	80	342	480	320	1300	11662
1982	6595	300	3177	89	393	528	258	1487	12677
1983	6647	314	3239	99	413	545	407	1843	13507
1984	6461	265	1866	118	280	264	221	1791	11266
1985	5552	267	1674	107	343	480	148	1142	9712
1986	6660	267	1971	118	280	350	280	1865	11697
1987	7398	299	3101	85	363	518	315	1674	13753
1988	7784	352	3271	176	560	626	378	1716	14863
1989	7469	389	3568	145	624	610	347	1658	14210
1990	7843	396	3339	158	602	560	360	1693	14951
1991	8080	383	3599	126	517	576	363	1785	15429
1992	8098	740	11538	222	716	442	511	3563	25830

Source: Ministry of Agriculture, Planning Division, Entebbe, 1989.
*Forecast for 1992 still provisional.

Over the last twenty years, the area under food crop production, the total yield per unit are have on the average not significantly changed. The exceptions are bananas and beans where the trend has been the increase in the area under cultivation; but the production have remained the same because of declining yield per unit area.

Generally however, the hectarage under cultivation is expected to increase due to the dismal situation of employment in the industrial and commercial sector, to recent fiscal and monetary policies and to reduction in the number of civil servants and army personnel which has made living conditions in out of farm employment unbearable. The impact of all these pressures will be to bring more acreage under cultivation mostly through continued pressure on marginal, arid and semi-arid lands, acceleration of forest reserve encroachment and wanton swamp reclamation by largely small scale farmers. It is projected that hectarage under cultivation will increase from 4,373,000ha in 1991/92 to 6,250,056ha in 1994/95 (development Cooperation/Uganda, 1989 Report)

Tables 2 and 3 on the next subsequent pages indicate the area under food crops and yields respectively from 1970-1992.

Table 2: Area under Crop Production 1970-1992

Year	Banana	Beans	Cassava	G/Nuts	Maize	Millet	Sorghum	Sweet Potato	Total Area
1970	909	300	539	251	300	582	311	444	3636
1971	905	459	508	291	280	714	307	495	3959
1972	916	309	371	291	415	497	318	508	3625
1973	974	359	483	222	314	636	287	400	3675
1974	1063	408	485	267	388	510	367	506	3994
1975	1097	408	618	243	475	484	311	550	4186
1976	1180	436	512	213	527	498	326	564	4256
1977	1240	338	529	234	429	527	280	467	4055
1978	1287	388	529	234	450	510	286	476	4160
1979	1173	227	322	122	272	313	187	256	2872
1980	1173	224	302	95	258	279	167	231	2729
1981	1179	289	310	110	260	294	170	340	2952
1982	1119	361	311	120	285	330	200	372	3198
1983	1209	398	372	124	295	341	207	457	3403
1984	1209	385	398	172	346	332	206	386	3434
1985	1209	334	387	124	289	300	186	347	3176
1986	1210	396	362	177	322	342	208	407	3424
1987	1336	373	345	126	307	234	203	398	3412
1988	1322	480	392	189	430	381	231	405	3830
1989	1322	480	392	189	430	381	231	405	3830
1990	1388	495	417	186	401	373	240	413	3855
1991	1430	510	417	180	420	384	245	437	4023
1992	1433	463	424	202	447	316	269	440	3994

* Forecast For 1992 still provisional

Source: Ministry of Agriculture, Planning Division, Entebbe, 1989.

Table 3: Yields (Mt/Ha), 1970 - 1992

Year	Banana	Beans	Cassava	G/Nuts	Maize	Millet	Sorghum	Sweet Potato	Total Yield
1970	8.42	1.29	4.78	0.97	1.30	1.35	1.49	3.54	3.87
1971	8.35	0.48	4.76	0.86	1.50	0.91	1.13	2.88	3.36
1972	8.33	0.77	7.14	0.80	1.20	1.20	1.32	2.41	3.72
1973	8.34	0.47	4.41	0.95	1.33	1.01	1.32	3.08	3.62
1974	8.35	0.48	4.85	0.75	1.11	1.16	0.94	3.53	3.70
1975	8.30	0.80	4.84	0.80	1.20	1.41	1.50	3.55	3.89
1976	6.90	0.77	5.54	0.83	1.28	1.14	1.20	3.55	3.73
1977	5.88	0.75	5.54	0.82	1.32	1.10	1.23	3.55	1.98
1978	6.87	0.75	3.83	0.80	1.32	1.10	1.23	3.55	1.98
1979	5.19	0.80	6.52	0.66	0.93	1.54	1.69	4.97	2.
1980	4.86	0.59	6.86	0.74	1.11	1.65	1.79	5.19	2.90
1981	5.00	0.83	9.68	0.73	1.32	1.63	1.88	3.82	3.25
1982	5.50	0.83	9.42	0.74	1.38	1.60	1.29	4.00	3.09
1983	5.50	0.79	8.71	0.80	1.40	1.60	1.97	4.03	3.13
1984	5.34	0.69	4.69	0.69	0.81	0.80	1.07	4.64	2.16
1985	4.59	0.80	4.32	0.86	1.19	1.60	0.80	3.29	2.11
1986	5.50	0.67	5.17	0.67	0.89	1.02	1.35	4.58	2.28
1987	5.54	0.80	8.99	0.67	1.18	1.60	1.55	4.21	3.06
1988	5.58	0.79	9.06	0.65	1.42	1.68	1.47	4.12	2.81
1989	5.64	0.81	9.00	0.77	1.45	1.60	1.50	4.10	2.92
1990	5.65	0.80	8.01	0.90	1.50	1.50	1.50	4.10	3.90
1991	5.65	0.80	8.64	0.70	1.23	1.50	1.50	4.10	3.84
1992	5.65	1.60	27.2	1.10	1.60	1.40	1.90	8.10	6.50

*Forecast for 1992 Still provisional

Source: Ministry of Agriculture, Planning Division, Entebbe, 1989.

Uganda's food security has relied heavily on root crops and tubers which in 1969/71 contributed 17.6% of the diet and had almost doubled its contribution in 1984/86 to 31.3%.

The Ministry of Agriculture Animal Industry and Fisheries made estimates on production and consumption of food crops for the year 1990 and found that there was surplus food available for both internal and external market as Table 4 below shows;

Table 4: Estimated Family Consumption and Marketable Surplus 1990

Crop	Production 000Mt	Consumed % Food	Balance For sale	Internal 000Mt	Export 000Mt
Maize	614	50	307	154	155
Sorghum	357	60	154	90	65.4
F. Millet	555	80	111	100	11
Beans	392	92	31	10	21
Cassava	2976	80	596	298	298
S. Potato	1963	80	393	393	Nil

Source: MAAIF PLANNING DIVISION

More recently the National Early Warning and Food Information Unit in the Ministry of Agriculture indicates that the Supply of cereals, especially maize and rice, pupses, root and tuber crops and bananas was satisfactory during 1992; small deficits of millet and soya beans still existed. The national food outlook as at the end of March 1993 was as shown in Table 5 below.

Table 5: Food Situation status by the end of March, 1993

Crop	Food Production Mt for 1992	National Food Requirements 000 Mt	Available Surplus for Sale 000 Mt	Current status
Cereals Maize	775	425	350	Surplus
Millet	456	510	-	Deficit
Sorghum	551	544	7	Surplus
Rice	103	42	61	Surplus
Pulses Beans	813	289	524	Surplus
Oilseed Groundnut	241	187	54	Surplus
Simsim	106	85	21	Surplus
Soya bean	63	282	-	Deficit
Root crop Cassava	12233	1394	10839	Surplus
Sweet Potatoes	3912	680	3232	Surplus
Irish Potatoes	1117	221	96	Surplus
Plantains Bananas	8116	4760	3358	Surplus

Source: National Early Warning and Food Information Unit, Ministry of Agriculture, Animal Industry and Fisheries, April, 1993.

Good harvests of cereals, pulses, oilseed crops, bananas, root and tuber crops improved the food situation resulting in reduced food prices during the month of March, 1993.

2. Livestock

Uganda has 4.2 million herds of cattle which provide protein sources such as milk and beef. It is estimated that Uganda is producing about nine to ten million litres of milk a year of which 30% is consumed on a subsistence level and 60% is sold. Out of 60% which is supposed to be sold a big percentage actually may not reach the market and there be wasted due to inadequate storage and transportation. Other sources of animal protein includes goats, sheep, pigs and rabbits.

(Uganda National Food and Nutrition Council (UNFNC) Policy Paper No. 1 Feb. 1993)

3. Poultry

Poultry also contributes considerably to food supply in Uganda. The Poultry Sector Survey of 1988 put the population of birds at 6.0million which are predominantly indigenous with low productivity and high mortality rate that results from poor management. Other sources of food which needs exploitation includes, turkey, ducks, geese, doves, bees (honey) grasshoppers and termites.(UNFNC Policy Paper No. 1 Feb. 1993)

4. Fish

The present annual production of 245,000 tones of fish is not only the most important source of animal protein

representing 12 kilograms per capita per annum, but also a principal source of employment. The distribution of fish consumed in the country is 50% fresh, 40% smoked, 9.5 salted and 0.5% dried. (UNFNC, Policy Paper No. 1 Feb. 1993). There are, however, problems of over exploitation, harvesting of immature fish and water hyacinth which threatens to reduce the capacity of this source to contribute to sustained nutrition and development.

5. Wildlife

Uganda is also endowed with abundance of wildlife resources which has a tremendous potential to contribute to nutrition. There is need to involve people in the beneficial management of wildlife in Uganda if these resources are to be utilised on a sustained basis.

It is clear from the proceeding statistics in table 4 that nationally Uganda has surplus food and big quantities are even exported. The Key question is: why are some areas, communities and households in Uganda deficient in food. The answer to this question appear to lie in a number of factors which constrain the proper functioning of Uganda's food system. The following is a discussion of each of these factors.

4.3 CRITICAL FACTORS IN UGANDA'S FOOD SYSTEM:

1. Drought.

Drought has been an important stress factor in Uganda's food system.

During the 1979/80, 1984/85, and 1991/92 the country experienced prolonged drought in most parts of the country and this resulted in reduced food supply and availability in the affected areas. The problem was compounded by civil wars which were very intense especially during the first two periods. There has also been drought and famine every four to five years in North-Eastern Uganda,especially Karamoja. But according to Okudi (1992) famine is not a natural but a social problem resulting from in Watts (1983) words the inability of the economic system to cope with the unusual harshness of the ecological conditions and their effects. During the famine of 1980 which was one of the worst affecting most parts of the country but Karamoja region being hardest, hit, government was informed of the impending problem ahead of time, but there was no response. It was only when people started dying in large numbers that the plight of the people in Karamoja was brought to the attention of the international community through BBC. When relief food came it was almost too late(Okudi 1992). The number of people who died in Karamoja have been variably put between 20,000-50,000 (Keesings contemporary Archives, 2,731,051 28th August, 1981). The prolonged drought of 1978/79 and the insecurity during the 1979 provided conditions for the famine to occur. People resorted to the sale of agricultural produce at cheaper price. The speculative traders later sold the produce at very

exorbitant prices unaffordable by a majority of peasant farmers. So even with the availability of some food in the market, lack of entitlement constrained access to it. The farmers then resorted to the sale of what they would not sell in normal times, that i.e. land and cows (Okudi 1992). The traditional support system of getting assistance from the neighbouring communities had collapsed. If the government had responded in time the number of deaths could have been reduced. Therefore even if the drought and insecurity brought by war contributed to the crisis, lack of response by government was more responsible for the crisis. This is because even if the government had no sufficient resources to deal with the situation, early appeal for international assistance would have saved thousands of lives. Of even greater importance is that there was no subsequent plan or strategy by government to contain future famine in terms of investing for instance in low cost irrigation schemes to ensure that water is controlled by farmers or investment in food processing and storage.

2. Diseases and Pests:

The level of food production and food security in the country has been severely affected by diseases and pests. The spread of cassava mosaic for instance in recent years had destroyed cassava which to many people especially in the East and North has been a bulwark against famine. Cassava has the capacity to resist drought. Food shortage in

Pallisa district now for instance is partly a result of the severe reduction in the production of cassava due to cassava mosaic. Even in the 1980 famine plant disease contributed to the reduction of production levels.

Similarly banana weevils have seriously reduced the yields of banana crop making a big number of people of Uganda especially in the central and western regions who depend on this crop food insecure. The use of pesticide is increasing in Uganda though gradually because it is now realised that it contributes to high crop yields. But its use is limited among farmers because of its high cost. Pesticides, however, has side effects which include chemical poisoning,pollution of water sources, resistance by pests, destruction of harmless and useful organisms. Care should therefore be made to ensure that the harmful effects of pesticides are eliminated if its positive effects is not cancelled by its negative ones.

Livestock diseases have also contributed to the reduction of animal production levels and has reduced the capacity of livestock resources to contribute to food security. Animal drugs being too expensive have constrained the control of diseases.

3. Structural Adjustment Policy:

This policy consists of constant devaluation of the Uganda shilling to stimulate exports of Uganda crops and the liberation of produce trading. This emphasis on exports of

both traditional and non-traditional crops appears to have led to a decline in the production of food stuffs locally consumed and thereby undermining the food security of the household and the country (Bazaara 1992).

This occurs because more land resources and labour and other inputs are allocated to the production of cash crops and less on the production of food for consumption. The proceeds from the sale of produce is used for meeting other household needs and hardly any amount is reinvested in agriculture. When the next harvest approaches, the little food grown would be exhausted. So at the household level access to food would be difficult resulting in malnutrition. Even if the food may be available in the market, entitlement to food (income) is a problem for most households. It should be noted however, that people are affected differently even in the same community. In a study of the Impact of Structural Adjustment Programmes on Food Production and Security in Masindi, Bazaara (1992) concluded that to appreciate issues of food security both at the level of production and entitlement it is important to realise that SAP was introduced on producers who are socially differentiated. Differentiation means unequal access to the means of production-land, labour and farming implements. SAP has benefitted capitalist farmers and rich peasants more than middle peasants, poor peasants and wage laborers. The poor have been getting extremely low incomes and SAP has

undermined their access and control over productive resources. The capacity to produce food crops and levels of food security are narrowing on to a few well off rural producers.

4. Processing Storage and Distribution:

Another factor that constrain the availability of food to everybody all times despite food surplus situation in the country are processing,storage and distribution problems. There is no effective mechanism in the country to ensure stability in the flow of food from surplus to deficit areas.

Persistent scarcity of food in some of the regions in Uganda especially North East can be partly attributed to poor storage and marketing mechanisms. Agricultural production is seasonal thus storage is required at both household and national levels to stabilize the food supply by reducing post-harvest loses. Unfortunately most strong facilities at household level e.g. traditional granaries are very poor leading to infestation by pests ad deterioration due to rain. Under these conditions farmers are obliged to sell the surplus produce immediately at give away prices (Uganda National Food and Nutrition Council Policy Paper No.1 1993).

With regard to marketing, farmers find it difficult to adjust their production plans to meet the changing market demands because production systems depend on weather and long distances from the areas of production to areas of

consumption. Feeder roads connecting food surplus areas to deficit areas are very poor discouraging produce dealers to send their trucks to transport food to deficit areas.

5. Access to Land:

Majority of farmers in Uganda are insecure in regard to land tenure. Most farmers don't have lease tenure but have customary tenure and so can be evicted any time some person obtains title to the land. A fairly large number of farmers rent or are squatters on land especially in the central region. In this situation the farmers have no incentive to bring improvement on land in such a way that increases crop yields per unit area.

In Uganda there is a lot of land unutilised. It is said that only 25%-30% of the 167,000Sq.Km. of arable land is used and the average size of land cultivated per average family of 7 members is 2.6 ha, which is rather small (MISR & LTC 1989). However the seemingly empty land may not be easily accessible to any potential farmers who may need to use it (Mwaka 1990). There is need to create a land tenure system that guarantees security of tenure for all those who are engaged in agricultural production; as well as a system which facilitates ease of access to land by any person who would want to productively use it.

6. Access to Credit:

Credit is very vital in boosting agricultural production because it enables farmers to invest in better

inputs in agriculture. Unfortunately few farmers have benefitted from bank loans in Uganda. This is because the procedure is very bureaucratic and takes a very long time before it is obtained. Secondly bank loans require collateral security usually of leased land. Few farmers have leased land because of bureaucratic problems and financial expenses involved. Because of this problem the NRM government designed 'character loans' under the Uganda Commercial Bank administered Rural Farmers Scheme in 1987.

After about 6 years of its operation, it is clear that the Rural Farmers Credit Scheme has not had any significant impact on agricultural and food production. The weakness of this scheme include bureaucratic delays resulting in disbursement of funds when the rains have passed, high interests rate (32%) charged as soon as the loan is given, market and weather unpredictability and diversion of the loans to trade. Diversion made the bank to change mode of disbursement from cash to actual inputs.

7. Labour Availability:

Labour is a key factor in food production especially, during critical periods of weeding and harvesting. This is why even in areas where land may be abundant, areas under crop may not necessarily be expanded because of labour constraint. A big proportion of the energetic youth leave rural areas to find work in the towns leaving the young and the old whose productivity is low. In addition AIDS has

decimated a considerable production of the active and productive population (15 -45 age range) severely reducing labour in food production.

8. Soil Tillage Technology:

There has been a controversy on the use of tractors vs animal traction and other simple tools. The use of tractors can improve yields through better land preparation and more timely and precise placement of seed and fertilizer and are more efficient in harvesting and thus increased production levels (Reinjutj'es et al 1992). However, the machines and fossil fuel they use have to be imported and paid with foreign exchange, a very scarce resource in a developing country like Uganda. In addition, a majority of farmers are even not able to afford hiring the services of tractors let alone manage them as the Resistance Council Tractor Scheme demonstrates. Moreover, the use of tractors increase the risk of environmental damage by soil erosion and soil compaction. Alternatives such as animal traction, improved hand implements and less energy demanding techniques are more suitable for a country like Uganda.

9. Fertilizers use:

Artificial fertilisers can make a significant effect on crop yields because of their ability to be utilised as fast as possible. Despite this fact artificial fertilisers are mainly used by large commercial farmers because it is very

expensive for the small or poor farmer to afford. Even organic manure from animal and crop waste is not used as much as should have been by farmers and yet this contribute significantly to increased yields and is cheaper in terms of costs and environmental effects.

10. Improved Seed:

The development of the High Yielding Seed varieties has the potential to improve the food situation in Uganda because they have higher productivity per unit area and matures faster that the indigenous varieties.

In recent times in Uganda, the area under modern high yielding varieties food crops like maize and beans, has increased. The spread of modern varieties of oil seeds, vegetables ad basic food crops such as millet and root crops have been very limited. Modern varieties are essentially highly responsive,bred to respond to high doses of chemical fertilisers. If they are sown under condition of high nutrient and water supply and adequate pest control, modern varieties can indeed be high yielding. If these condition are not guaranteed, risks of yield losses may be higher than with local varieties. When only low levels of external inputs are used,local varieties may out-yield the modern ones.

The promotion of modern varieties has led to disappearance of many indigenous varieties (genetic erosion). This spells disaster for farmers, who for economic

reasons, have to produce with less chemicals or no chemicals. In addition with no control over water and pesticides means that the farmers crop yield will decline over time.

11. Farmer's Participation in Research

Field research on farming systems has revealed the complexity,diversity and rationality of much apparently untidy and unsystematic farming practice (Chambers 1992). A stream of researchers drew attention to farmer's capabilities. Biggs (1980), Paul Richards (1985)and Roland Bunch (1985) (Quoted in Chambers 1992) were among those who showed and recognized that farmers are experimenters.

In Uganda during the 1950s and 1960s the research and development model in vogue was the transfer of technology which explained non-adoption of improved technologies in terms of farmer's ignorance. The district trial centres were created to serve as demonstration centers where the superiority of new technologies would be exhibited in order to facilitate their transfer through the extension service. But because such trials were never designed nor influenced by a sound understanding of the circumstances facing farmers, the expected demonstration effects were not realised (Opio -Odongo 1989).

During this period then conventional on Farm Research (OFR) method has been undertaken. It is conventional in the

sense that the research on farmer's fields were aimed at verifying centre derived hypothesis. In this case the farmers participation in the research has been hardly promoted.

But from the 1980s it has been increasingly recognized that farmers could and should play a much greater part in agricultural research. During this period, the OFR undertaking especially by the research teams sponsored by IDRC,CIMMYT and CIAT derived on-farm trials from and understanding of the dynamics of the target farming system (Opio -Odongo 1989). A system derived OFR is conducted under farm conditions in close collaboration with farmers in order to identify rapidly problems limiting agricultural production, to test and later screen economically and socially viable technical solutions to constraints and to increase agricultural productivity of the existing system (Steiner 1987).

A majority of farmers, however, have not benefitted from OFR. Secondly, the farmers adoption of the new technology is dependent on whether the new technology is more profitable than the old one. This fact tend to limit the benefit of OFR to even the farmers who have participated in this research. Despite its current limitations, OFR based on a systems perspective, certainly has a big role to play in facilitating the convergence between farming and research and maintaining the critical balance between

scientific excellence and relevance in Uganda agriculture. But being a novel research and development strategy OFR pose important policy, methodological and training issues which must be resolved in the interest of sustainable agricultural development.

In terms of policy, the issue include among others

(a) how best to institutionalize OFR.

(b) how best to incorporate OFR in the present research-training-structure.

(c) which mode of OFR would be the most cost-effective and

(d) how best to coordinate OFR activities in the country in order to maximize on the use of the available scarce human and material resources.

The key methodology issue regards the procedures and types of analysis to the adhered to if OFR is to be effective. In addition, the determination of more appropriate mechanism for eliciting maximum involvement of and participation by extension workers and farmers in the OFR process is also a very important methodological consideration.

Lastly in order to foster farmer-researcher-extension participation in OFR process, training needs have to be identified and met (Opio-Odongo 1989).

12. The Gender Consideration

Gender linked constraints seriously affect the level of food production, food availability and security in Uganda. In rural areas of Uganda,women contribute over 60% to food production and 60-80% of agricultural labour force,while most men migrate to urban areas for formal employment (Mutibwa 1990 in Abidi 1990). Despite this fact,most women don't have rights to own land and aren't given support in terms of credit . With the exception of the Rural Farmers Scheme managed by Uganda Commercial Bank,most credit schemes give priority to males because most women have no collateral security due to limited access to land and other property.

In addition,agricultural extension projects tend to target men only and ignore women's pivotal position between production and consumption (Wheeler 1986,Whitehead 1990 in Pottier 1993).

These gender biases negatively affects the level of food production and food security even in high productivity areas. Furthermore scarcity in food supplies tend to negatively affect women more than men because women are reproducers of children and are concerned with the feeding of children.

Support of women in terms of access to land,credit and better tillage technology would strengthen their capacity to increase food production.

13. Population Growth, Environmental Conservation and Development:

Conservation and development are sometimes seen as mutually exclusive. It is true that some development is exploitative to be reconcilable with conservation. Equally some conservation is so protective of the ecosystem that it excludes all forms of human use (Okigbo 1993 in Rowland 1993). A system critical in ensuring food security seeks to combine development with conservation. It attempts to improve the agricultural system in such a way that productivity can be maintained indefinitely.

Traditional African farming systems were sustainable when population density remained low. In regard to Uganda one view is that the population growing at the rate between 2.3% to 3% per annum is leading to an agricultural crisis in Uganda especially in Kabale and Mbale districts. To raise productivity in ways that land can sustain is the greatest challenge facing farmers in these areas (Khalil 1990). In this sense therefore population increases within land resources which is not expanding is seen as a stress factor which brings about food insecurity.

Another school of thought, however, doubts whether population growth per se is a problem in Uganda's agricultural production and food security. This school argues that high population growth becomes a critical issue due to lack of capital and techniques to exploit the environmental

resources in such a scale and manner that can make production commensurate with the rising population (Mwaka 1990). In addition to capital and appropriate techniques which would ensure better use of land, equitable distribution of resources is also crucial to food security.

Even if nationally population may not be a stress factor in Uganda's food system, because of enormous resources still available in Uganda, at the level of the household, it may be a problem. This is because an average household in Uganda consists of 7 persons,all of whom may be dependent on one or two persons. So coupled with other needs such as education,health,housing and clothing,the household heads finds it difficult to make food available to all members of the household at all times. One possible solution to this problem is to make the reproductive or less productive population especially the youth more productive (Mudusu and Kikafunda 1990).

5. GOVERNMENT STRATEGIES IN RESPONSE TO THE CRITICAL FACTORS

There are a number of strategies which the government has used to respond to the preceding key factors in order to increase agricultural and food production to achieve her agricultural and food policy.

1. Tractor Scheme

The present government facilitated the provision of tractors on loan terms to a number of subcounties in Uganda

under the management of Resistance Council's III. The objective was to avail tractor service closer to the people for cultivation and transportation at affordable price in order to increase food and cash crop production. The scheme, however, was not viable due to management problems. The RCs were unable to pay for the tractor, proceeds from the tractor service were not used to make the scheme self sustaining. In addition a majority of farmers had no access to the service because of its high hire charges. Even for those farmers who could afford, one tractor per subcounty was very inadequate given the Uganda agriculture which is rain fed, correct timing of every process is very crucial to success.

A very important underlying factor which contributed to the failure of the scheme was that the managers of the scheme at the subcounty level were not given the relevant knowledge and skills in managing this kind of enterprise. The scheme was rushed to the people without sufficient groundwork preparation such as training, mechanism for effective maintenance of the machines etc. Tractor hire schemes had earlier on been initiated in the 1960s but eventually collapsed. If a study was conducted to identify the factors that led to its collapse the recent tractor hire scheme would have been more appropriately designed. Initiating a highly mechanised soil tillage technology to be managed by a community who have been used to the hoe pose a

lot of management and technical problems. There is need to tackle these problems before an innovation is introduced.

2. Animal Traction Promotion

Realising that tractor schemes managed by the community was not sustainable, the government has embarked on supporting and encouraging the use of animal traction which is believed to be cheaper and familiar to the farmers especially in the Eastern and Northern Uganda as part of the Northern Uganda Reconstruction Programme (NURP). In these areas, the preliminary arrangement is to stock cattle which was drastically reduced due to massive cattle rustling from the mid 1980s until recently. The programme also involves training farmers or reviving their knowledge on the use of this technology. A key constraint to the success of this scheme is the costs of the animals. The costs of animals are unaffordable by a majority of farmers in the East and North who lost almost everything during the civil war.

3. Rural Farmers Credit Scheme

The NRM government initiated in 1987 the Farmers loan schemes where farmers would obtain the loans through commercial banks on recommendation of the local leaders (Resistance Committees). These arrangements would then ensure that a majority of farmers without collateral security could have access to credit to increase agricultural and food production and improve their living

standards.

After six years, it is apparent that the scheme has not had any sustained impact on food and agricultural production and rural welfare. An important factor responsible for the collapse of the scheme was the problem of loan repayment. The farmers found it difficult to repay the loans due to crop failures, very high interest rates which created a high degree of indebtedness among farmers and diversion of loans to consumptive purposes.

Other weaknesses of the scheme include bureaucratic delays before the loan is obtained and therefore late disbursement of funds, ill-preparedness of the bank officers in handling a scheme of this nature. Despite the fact that women were given priorities, numerous treks to the bank before the loans are received discouraged rural women who have a lot of activities to perform in the home. There has been a suggestion that to tackle agricultural and food production, an Agricultural Bank should be initiated. This kind of bank it is hoped would be sensitive to the risks involved in agricultural production. No attempts however have yet been made to implement this proposal.

4. Liberalisation of Produce Trade

In order to stimulate agricultural and food production, the government liberalised trade in agricultural produce and the broke the monopoly of government parastatals like Produce Marketing Board (PMB). The impact of liberalisation

on production of non traditional cash crop like sim-sim, beans, maize, soya-bean and nice has been moderately considerable. This increased production, however, has not led to food security for the country. This is because more land, labour and other resources have been allocated to the production of cash crops and less to food for consumption. In addition the farmers incomes have not significantly increased in real terms due to the rise in the price of other non-food requirements. In a related manner, urban based produce traders have benefitted more from the liberalisation that the farmers. This is because during harvests, because the supply is high, and the farmers are not organised to influence price, produce is sold at a give away price. The quick selling is also prompted by poor storage at the village level and other pressing needs.

5 Infrastructure Rehabilitation and Development

The rehabilitation of trunk and feeder roads and the construction of some grain silos and the provision of cooling plants and transportation for milk was meant to improve agricultural and food production through improved storage and marketing. The South West Agricultural Rehabilitation Programme (SWARP) for instance involves improvement of feeder roads to improve transportation of agricultural produce to the market. Feeder roads construction programme also cover other parts of Uganda but has not seriously taken off, and in these areas

transportation and marketing of produce is still a big problem. This constrain food availability. Likewise milk storage and transport facilities are not sufficient leading to loss of large quantities of milk.

6. Agricultural Research

The government is collaboration with some organisations have supported research in various crops aimed at generating high yields and quick maturing and disease resistant crops. IDRC for instance supports research in root crops, CIAT (beans), USAID in maize, soya beans and sunflower, UNDP/FAO (horticulture) CIMMYT (maize) and EEC (coffee).

These researches have been very important in generating crops which are high yielding (especially maize and beans) which has led to increased productivity per unit area of these crops. In addition the development of cassava resistant to cassava mosaic has meant that cassava which is drought resistant and a bulwork against famine can now be successfully grown. This will gradually reduce food insecurity in a number of areas of Uganda. Although these researchers involves the farmers in their own yields, a small percentage of farmers are involved and therefore the benefit on farm research reach a small fraction of farmers.

7. National Framers and Best Women Farmer's Competition

The government has initiated annual competitions on a national scale among farmers generally as well as among

women farmers. The best farmers are awarded prizes which includes trips abroad, tractors, farm inputs, radios, TVs, bicycles etc. This has motivated farmers to increase the production of both food and cash crops. The competitions, however, tend to benefit more the rich and less the poor farmers. Because the poor farmers are in the majority, increase in production arising from this strategy has not been very significant. The net effect, however, is to make the gaps between farmers even larger.

8. Land Redistribution Programme

One of the ways in which government have tried to redistribute land is by initiating the creation of Ranch Restructuring Board (RRB) by Act of Parliament in 1990. The task of this Board is to redistribute land equitably 5 ranching schemes between ranch owners and squatters with the objective of eliminating conflicts between these two groups and ultimately improve livestock production through modern husbandry methods.

A formula for redistribution has already been made and surveys are being conducted before redistribution can be effected. Whether this programme will lead to increased animal production through adoption of better management methods will be seen in the future.

In a related manner, in collaboration with World Bank and USAID Government is supporting Land Access study undertaken by Makerere Institute of Social Research (MISR)

aimed at eventually coming with a Policy which will improve accessibility to land and security of tenure. Last year a team under the Land Access Project went around the country getting views from people on the tenurial regime they prefer. Project activities are still going on. It will be seen also in the future whether this effort leads to a Policy which promotes ease of access to land and security of tenure.

8. POTENTIAL RESEARCH ISSUES.

From the preceding it is clear that there are a number of factors which affect the food system and generate food insecurity. These factors warrants investigation and they include the following: Farmers Perception of Food Insecurity, Processing storage and distribution, trade liberalization policy, farming methods and practices, labour constraints, farmers participation in research, access to credit, land tenure system and gender issues.

1. Farmers' Perception and Response to Food Insecurity

It is imperative to involve the farmers in the analysis of food insecurity problems. It is important to know how the farmer views or perceive the food problem, how he/she responds to this problem (coping mechanisms) in the short run and long run. In regard to the long run response, does the food scarcity problem lead to planning at the household and community levels?

2. Food Storage and distribution

There are seasons when the food grown is in abundance but because of poor storage methods food is either sold at give-away prices or just deteriorate in quality. Yet with storage, the food could have fetched higher prices when sold later and some could have sustained the family during times of food scarcity. There is need therefore to investigate the availability of storage facilities or storage methods at the levels of the households and assess to what extent poor storage generate stress in the food system. Some regions in Uganda may suffer abundance of food due to distribution constraints. It is important to assess how significant distribution affects the food system and examine to what extent it is a stress factor.

1. Trade liberalization Policy

It has already been indicated that the liberalization of trade and emphasis on non-traditional cash crops which are also food staples tend to bring about some degree of food insecurity. This occurs because more of the resources are allocated to growing crops which generate cash than crops for subsistence. It would be interesting to investigate at community and household levels to what extent these arguments related to reality.

4. Farming methods and practices

These include soil tillage methods, pests and disease control, erosion control, soil and water conservation and

soil fertilization.

A study is necessary to determine the significance of these practices in the food system and to what extent they affect the production process which is a key element in the food system. An assessment of the indigenous farming practices would be important in identifying gaps or weaknesses which needs strengthening and strength which require further reinforcement. Or great importance also is to investigate what effect farming practices affect the environment upon which production depends. Do the farming practices allow for the sustainability of food and agricultural production.

5. Labour Availability

Labour availability appears to be an important factor in reducing the area cultivated as well as the effectiveness of crop management. In Uganda what compounds the labour problem is the AIDS epidemic which mainly affects the most active and productive section of the population.

A research is imperative to assess the degree to which labour constrain food and agricultural production and how far AIDS compound the labour problem.

6. Credit

Credit is a means of acquiring inputs for agricultural development. Credit availability and its sources and to what degree the availability of credit affect access to inputs and the degree to which inputs translate into

increased production needs to be assessed.

6. Farmer's Participation in Research

Research is very critical to agricultural and food production and development. At community and household levels, it is necessary to assess the extent to which agricultural research involve farmers. Also critical is an examination of whether the farmers' indigenous knowledge are incorporated in the research results and recommendation. For instance, it is interesting to see whether researchers take into account the indigenous early warning system in predicting future food availability.

7. Land Tenure System

The system of ownership of land also has a significant impact on food production because it determines access to land and nature of security of tenure. It is important to investigate the degree of access to land in Uganda and how this impact on the production of food and security for a community and household.

8. Gender Issues

Women perform most of the activities involved in food production. The support of women to perform this function properly will certainly lead to increased food production. It is imperative to research into the accessibility of women to land, credit and agricultural extension and how this affect food production and security for a community and household.

9. CONCLUSION

The existence of food insecurity in a number of communities and within households in Uganda despite surplus food in Uganda most of the time, indicates the complex nature of the food problem.

This means that it is not sufficient to tackle the food problem at the level of production without addressing the issue of access to food, for instance or the problem of diseases which may undermine the last stage in the food system, that is biological utilisation of food.

The complexity of the nature of food problem therefore requires a multidisciplinary approach if it has to be properly understood and effectively responded to. Equally important is the involvement of the people who are affected by food insecurity. This will ensure that the victims' perceptions of the food problem is incorporated into the analysis of the situation, and their response strategies are integrated into the intervention plans. This is the most appropriate manner of handling the food insecurity problem because it is at the local level where it is more felt.

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