

A VILLAGE CONCEPT OF SUSTAINABLE AGRICULTURE FOR RURAL AFRICA

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Abstract

Africa as a continent was said to be at minimum a generation behind Europe in terms of development. With the AIDS pandemic this gap has no doubt been getting bigger and bigger. We in the developing world have lived with a challenge of making life better. Living standards can and do grow on a solid base. A sustained supply of food to all will afford people the opportunity to think of ways to develop themselves. Development on hungry stomachs has proved to be impossible.

There is need to develop a need based sustainable approach to deal with mechanized farming. It must be inculcated in the minds of the rural masses that it is for them and only them can make it work. Such an approach should be based on understanding the village concept of Rural Africa.

Key words: development, AIDS pandemic, living standards sustained food supply, sustainable approach, mechanized farming, village concept, rural Africa.

INTRODUCTION

To date we have been witnesses to designing the African Rural to the technology that we have tailored at foreign-based research centres. There are hardly any records of sustainability that we can refer to. A family in Rural Africa will see the benefits of mechanized agriculture, if the family income covers most of its needs. An approach which is utilized to bring forth expected results whilst being friendly to the environment can be said to be cost-effective because it does not yield negative side effects which will engulf much more resources at a later stage – a burden for the future generation!

Agriculture in Zambia

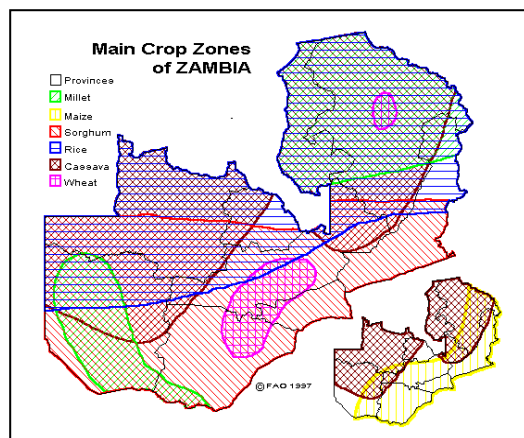
Agriculture is a major sector of Zambian Economy. It contributes about 16% to GDP and employs about 88% of the active labour force in rural areas. Food carries a weight of over 60% on the consumer price index in

Zambia. There is renewed government emphasis to boost this sector. Zambia has a total area of 752,000 km² out of which 11,890 km² is water and 740,724 km² is land. 45 % of the land is potentially arable. Only 23 % of the arable land is being used; 3 % for commercial farming and 20 % for smallholder farming. The rest is unused.

There is one rain season in Zambia which spans from October to April. Most agriculture in the country is rain dependent. Hence there is one growing season per year. Based on physical and climatic characteristics, there are three major agro-ecological zones in Zambia.

Zone I receives about 600-800 mm rainfall annually. It is dominated by subsistence crop production of small grains (sorghum and pearl millet) largely using family labour with the most common farm implements being hand hoes. The use of improved sorghum varieties is quite pronounced particularly in the Southern part of the country.

Fig. 1. Main crop zones of Zambia



Zone II receives about 800 - 1000 mm rainfall annually. It is characterized by maize regime. This zone is most mechanized and consequently is the most commercialised in crop production. Cash crops including cotton, irrigated wheat and soybeans are most common. In the recent past, production of the country's highly valued cash crops such as spices, flowers and horticultural products are found in this zone.

Correspondingly, most of country's commercial and emergent farmers are found in this zone and hence is characterized by better infrastructure and services. A good number of crops are improved cultivars.

Zone III has the highest rainfall in the country, an annual average of 1200mm. It is mainly characterized by cassava and maize regime. Northern part of the country produces finger millet also. This zone is similar to zone I as agriculture is dominated by subsistence farming. Crops grown here are mainly local varieties.

There has been a decline in the total cultivated hectareage in the nineties. Below are some of the factors responsible for the decline:

- The cost of farm implements. The 1990s have been characterized with full implementation of market policies resulting in removal of all subsidies on agricultural inputs.

- Zambia experienced severe droughts in 1990s which affected crop production. The droughts in 1991 - 1992 and 1994 - 1995 seasons had serious social and economic impacts. The Zambia Food Need Assessment (1998) indicated that over 90% of the households in affected districts depended on crop production. Food security indicators showed that about 50% of the households had severe food deficit. Part of the deficit was met by imports of which about 70% was met by donor assistance through food aid programmes. Adverse weather conditions are not restricted to drought alone. The 1995/96 season experienced floods particularly in the northern part of the country which also had serious impacts like the grain storage and haulage.

Number of work oxen has reduced largely due to loss of animals as a result of the drought and cattle diseases. Crop yield rose by 33.3% in 1995-96 but declined by 0.6 and 3.4% in 1996 and 1997 respectively. Therefore agriculture as measured by GDP has continued to fluctuate significantly from one year to another as the sector is highly vulnerable to climate variability. Warmer conditions aggravate the problem by the incidence of pest attacks and diseases. Zambian farming system is less intensive in capital and technology.

In Zambia, substantial experience in the promotion of animal traction had been accumulated in different parts of the country. However, the evolution of project design and implementation had occurred without proper central direction and without a formal mechanisation policy structure. The signals of the several animal traction projects and the necessity to promote a

mechanisation system for small-scale farmers without requiring large sums of foreign exchange (tractorisation for small-scale farmers had failed).

Objectives

The objectives of the research tours that I have undertaken for the past four years, have been:

- to collect data on the impact of the mechanisation efforts of the government in the staple food growing region – Mazabuka, Choma and Kalomo.
- to establish the actual mechanisation needs of farmers in the rural areas.
- to establish the effectiveness of technology transfer.

MATERIAL AND METHODS

To obtain the information required for this exercise, I visited research centers which are involved in animal traction and mechnisation; and the Ministry of Agriculture and Cooperatives; and the farmers in Mazabuka, Choma and Kalomo where I interviewed the farmers.

Limitations and constraints

- Some data collected on the first visit to farming households could not be worked upon on the following visit because some households had changed due to loss of life in the households as a result of AIDS.
- Access to some sights – Choma villages- in the third year was lost due to the loss of an officer who had been carrying out a project in the areas.
- Access to Kalomo was also lost when the farmer who had been incorporated into the study passed away.

RESULTS

The visits to the research centers:

- Palabana in Lusaka. Palabana is still designing and making implements for both handtool and animal draught technology. Much of the work they have been doing has been passed on to small and medium scale manufacturers of farming implements. The popular groundnut ripper and the zero till ridgers have become a household product among local farmers. Farmers are brought in for training which also save as a medium for technology transfer. Farmers are acquainted with the advancements in the implements and technologies.

- Magoye in Mazabuka. The Magoye centre for mechanisation has not been active in the field of mechanisation. In 2000 the centre was converted into a Trust which is mainly focussed on cotton growing. The animal traction and mechanisation part has been moved to Palabana. I was able to use Magoye in the study for one year before mechanisation was phased out. Magoye was well positioned given that it is in the area which is the main producer of maize in the country. It used to be

much easier to establish the feedback on the benefits of mechanisation through this centre.

Visit to the farming households in Mazabuka, Choma and Kalomo

The farming households interviewed are categorised as:

- **small-scale farmers:** farmers who normally plant at least 0.5 ha but less than 5 ha.
- **medium-scale farmers:** farmers who normally plant at least 5 ha but less than 20 ha.

The households were used to farming with animals. As mentioned in the introduction a lot of animals have been lost. The farmers interviewed said that they were not accustomed to using hoes.

The government has introduced donkeys. This has had both technical and social drawbacks. The technical setback has been the non-availability of appropriate implements for the donkeys. Many implements on the market have been designed for cattle.

During the study, many households in the communities have lost workers to AIDS. Productivity falls when a person becomes ill and dies, and it is also hit hard when family members must spend time caring for the sick, going to funerals and mourning the dead. The mourning which lasts for as long as two weeks takes up the time that is needed for agricultural activities. This diminishes the family's food consumption, nutrition and well-being.

Maize growing is labour intensive. Ploughing with animals is done by men. Weeding is the most labour demanding. This is mainly done by women. With illness and death cutting down the number of workers and the cash available for weed prevention, there has been a decrease in maize output.

The lack of labour has also caused the plots of cotton to deteriorate so badly that it is no longer economic for any but the wealthiest or most labour-endowed households to continue in cotton production.

DISCUSSION AND RECOMMENDATIONS

There is an urgent need to sustain agricultural production to feed the sick and support the balance of payment through exports. The trend encountered in this study has shown that women tend to remain behind and

takeover the task of raising children when the husbands die. AIDS is a long-term disease. As a patient gets weaker and weaker he/she is unable to work with animals. Hand tillage becomes impossible for the sick.

It is time for the agricultural engineer, the policy makers, NGOs and donors to coordinate their efforts and design technologies to help develop the rural areas. Since this has seen a measurable decrease in the food security and falling levels of nutrition in many households of not only the communities of Mazabuka, Choma and Kalomo but also the nation at large, the following must be the way forward:

- a national wide study must be carried out to establish the real impact of AIDS on the nation. The local findings of this study reflect the situation in many other parts of the continent.

- the research must focus on the changing rural farming households.

- a village based concept for mechanisation must be worked out and based on this the stakeholders must direct their resources towards the development of simple, robust and user friendly mechanisation and technologies to help improve nutritional levels, stabilize food security and provide rural Africa with a form of income. This is the income which can empower rural Africa and support the balance of payment of the nations.

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