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The Crisis of Farming Systems in Luapula Province, Zambia

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ABSTRACT

This article is based on two years' field experience, from 1982-84, in the seasonally high rainfall Luapula Province of northern Zambia. The writer worked as an agricultural adviser to promote the Zambian government's Lima Campaign, which was aimed at increasing the national output of five crops: maize, rice, groundnuts, field beans and sunflowers.

Some of the traditional methods of cultivation, particularly chitemene, are outlined. Aspects of production are discussed in the light of traditional social structures and attitudes.

The Lima Campaign appeared to aim at reducing the traditional diversity of crops grown within a field, often including trees as an "agroforestry" component, to the level of a monoculture without any trees. The campaign placed much emphasis on maize, also at the national level. Other biological limitations of the Lima approach were noted, e.g. possible detrimental effects on soil structure.

Subsequently the writer became aware of conflicts between groups of people at various levels: between the interests of the urban communities of the Copperbelt who exert pressure on central government to keep prices of staple commodities down and Luapula's rural communities who want fair prices for their agricultural products. The difficulties experienced by parastatals, the cooperatives in particular, reflect the conflicts between urban and rural interests. Nearer the farmer is another set of contradictions: those between the strongly masculine western-modelled extension service and the farmers themselves, most of whom were women.

Possibly the most dramatic single step towards empowering local farmers to promote their own interests would be to increase greatly the proportion of women extension workers in villages. It is also proposed that the extension service be diversified to include experienced farmers who might work with conventionally trained officers on an equal basis. Some factors which might promote such equality are mentioned.

Experts live in a different world as regards beliefs, customs and priorities from the local people they encourage to adopt "modern" methods. The experts as a group need to revise their attitudes and behaviour towards the local people they profess to support. The revision of attitudes should extend, for example, to an re-

examination of western profit-oriented motives, which may not be operative in African villages. Many of the privileges experts currently take for granted should be open to question. People wielding power must be acutely sensitive to the needs of more vulnerable people.

1. INTRODUCTION

The vast majority of people living in countries of sub-Saharan Africa belong to rural communities. Insofar as they live directly off the land or water, one may consider these people to be farmers. For virtually all of their basic subsistence, and sometimes to procure cash, rural people herd animals and cultivate a wide range of plants for food and clothing. Hunting and gathering activities such as fishing, the bringing home of wood for fuel and construction or the collection of vegetables and medicinal tree leaves etc. from uncultivated woodlands supplement the products of domesticated farming.

Luapula Province, a plateau region of leached soils formed under a regime of sharply contrasting wet and dry seasons in Northern Zambia, may with justification be regarded as a microcosm of sub-Saharan Africa. The vast majority of Luapulans live in a rural environment, relatively untouched by urban influences. The author's experience is mainly confined to the context of Luapula, but is probably applicable to other areas inhabited by Bantu-speaking peoples who have traditionally practised forms of shifting cultivation up till recent times.

Farming in such a broad sense constitutes a way of life for rural Luapulans: in contrast to the situation in industrialised countries people and the land they live on with its plants and animals still form today a closely interwoven system which can be termed the farming system (Ruthenberg 1980:3).

It may therefore appear paradoxical that rural people suffer periodically or chronically from shortages of food, fresh water, fuel and shelter, from overwork and disease, as well as lack of opportunities to improve their lot. Particularly women and children lacking male support are condemned to live in poverty. In Africa as a whole the situation has grown steadily worse since the 1960's, with growth in populations outstripping increases in food production by nearly 2 to 1 over this period (Milimo 1986). The plight of rural people is reflected in the state of the land they depend upon, which becomes unproductive or degraded in various ways.

The mechanical agents which directly degrade (agro-)ecosystems are generally well understood by local farmers on the basis of centuries of experience. The reasons why the same farmers are unwilling or unable to forestall degradation are often understood by themselves at least in an intuitive way. Nonetheless, few northern agronomists have yet gained a proper grasp of why humans fail to mend an ailing system. This is doubtless a result of our compartmentalised training: agronomists have traditionally been taught to examine agro-ecosystems as if farmers did not exist!

This paper will argue that in Luapula much of the failure of farming, both as a way of life for rural people and as a system of production, stems from rapid commercialisation inflicted by outside interests upon people with few previous dealings and little *rapport* with a western-style cash economy. In the ensuing clashes of interests between newly formed juxtapositions of groups - farmers vs. the state, male extensionists vs. female farmers, male cash crop farmers vs. female subsistence farmers etc., the behavioural checks and balances offered by local traditions are no longer adequate to ensure either equity or sustainability in the use of natural resources.

In such situations the social scientist has several tasks. Ideally, before any drastic changes are made (s)he should be called in to foresee the directions in which new tensions are likely to arise as a result of a proposed shift in the command over natural resources between interest groups. (S)he has a duty to make her (his) conclusions clear to the parties concerned before changes are made. The success of such efforts may depend upon how much trust the scientist has previously earned among the various groups.

In practice, of course, social scientists are seldom consulted before projects are begun. There are several reasons for this. Many sociologists use opaque jargon. Possibly they do this to conceal their (understandable) failure to express extremely complex situations in clear terms. A more likely reason for ignoring social scientists until a decision becomes irreversible is simply that dominant groups are concerned only with cosmetic effects. In the best possible case, a skillful social scientist may be allowed to steer a threatening conflict of interests towards concessions.

If irreversible changes are made regardless of the social scientist's predictions, then conflicts will inevitably arise, either suppressed or expressed. It is all too often at the stage of expressed conflict that the social scientist may be called in to suggest ways out of strife into peaceful coexistence.

2. LUAPULA PROVINCE: CLIMATE, SOILS AND VEGETATION

Geographically the Luapula Province of Zambia lies within a zone of seasonally high rainfall on the Central African Plateau, between latitudes 8° and 12°24' south and longitudes 28°30' and 30° east. Altitudes vary from 900 m above sea level in the lower Luapula Valley to over 1,300 m at Kawambwa.

To the east and south of Samfya, Lake Bangweulu and the Bangweulu Swamps drain into the Luapula River system, which eventually flows northwards into Lake Mweru. The Muchinga Escarpment runs north-south and forms a sharp boundary between the Luapula Valley and the plateau to the east. The system comprising the Luapula River Valley, the swamps leading into Lake Mweru and the lake shore itself will be referred to as "the Valley" (Figure 1).

Figure 1. Luapula Province: Physical features.
Source: Gould (1989:3).

[Note: Figure 1 not available in the web version.]

Figure 2. Natural regions according to Derricourt (1980).

[Note: Figure 2 not available in the web version.]

The province belongs to a region of high annual rainfall (1,000-1,500 mm/annum). The cool, dry season is pronounced, usually lasting from April till October (northern Luapula) or November (southern Luapula) by which time mean temperatures approach 30°C.

Much of the rain falls in intense thundery bursts. The length of the rainy season varies from 140 days in the south to 190 days in the north (Hutchinson 1974; Anon 1981).

Over much of Luapula soils are severely leached, sandy loams of acid reaction (the pH usually varying between 4 and 5). Such soils are considered to be of very low agricultural potential (e.g. Trapnell 1953), and cannot sustain even moderate levels of agricultural production without regular inputs of lime and plant nutrients, as well as laborious measures for protecting the soils against erosion.

Very broadly, two main associations of vegetation cover most of the province (Figure 2). **Miombo** woodlands, mainly found on loamy soils of the plateau and the Muchinga escarpment, comprise a 10-15 metre canopy of semi-evergreen trees (*Brachystegia* and *Julbernardia* spp.) with a rather sparse herbaceous ground flora. **Chipiya** vegetation is probably a climax of fire-tolerant trees and shrubs scattered within a dense layer of herbs and grasses. Chipiya is subject to bush-fires almost every dry season (Fanshawe 1971).

The flood plain adjoining the Bangweulu basin represents a distinct vegetation type, consisting of wide treeless expanses with raised areas of evergreen swamp forest.

Mineral soils with miombo or chipiya vegetation alternate with numerous wetland areas known as **dambos**: treeless areas resulting from the accumulation by *Carex, Sphagnum spp*. and other wetland plants of considerable depths of peaty matter under seepage conditions. Ecologists have emphasised that dambos are important in maintaining a hydrological balance over entire regions where they occur, but Ferreira (1974) accepted a generally held view that controlled agricultural use of dambos need not conflict with conservation aims.

3. POPULATION AND DEMOGRAPHIC TRENDS

The data and interpretations in this section rely heavily on Gould's (1989) work. Luapula's population, totalling over 420 000 in 1980, is predominantly rural. The fishing districts of Mwense, Nchelenge and Samfya show relatively high densities of 9-10 people/km^2, while Mansa and Kawambwa provinces have around 7 people/km^2 (Anon 1980).

The structure of the population in 1980 is given in Figure 3. The extremely broad base of the pyramid is characteristic of African rural societies, and indicates a very high level of fertility and a large proportion of dependents. Over half the population is less than 14 years of age. The strong skew away from men of working age reflects the vast drain of men to supply labour for the Copperbelt.

Figure 3. Population pyramid for Luapula Province, 1980.
From Gould (1989:24) after Anon (1980), Table 1.7.

[Note: Figure 3 not available in the web version.]

The infant mortality rate for Luapula, 112.12 per 1000 live births (for 1980), is the highest in Zambia (Gould 1989: 30). Population growth rates have long been confounded by migration of men to the mining industry. Annual growth rates were negative for all districts (-1.0% for the whole province) over the period 1963-69 when out-migration was strong. From 1969-80 rates have been high, ranging from 0.9% in Samfya to around 3% in Nchelenge and Mansa Districts.

The deficit of able-bodied men puts an enormous burden on women-folk, who in addition to their usual tasks often have to do the heavy work of land preparation, traditionally the men's domain. Although older people share with the parents the responsibility for raising children, the women inevitably shoulder much of this task, too. Many households in Luapula are headed by women.

If child mortality falls and fertility levels remain high while men continue to return from the Copperbelt, Luapula can expect very rapid population growth over the next few decades.

4. Social stability and agricultural production in conflict?

In citing sources within this and the following section, I shall use the present tense. Although traditional aspects of African life have become eroded in recent

times, in Luapula many observations made earlier this century are in my opinion still valid.

During the 1930s Audrey Richards worked in the Bemba area which today forms the plateau of Northern Province, including Luapula to the west. In her book "Land, labour and diet in Northern Rhodesia" (Richards 1969) she recurrently referred to the apparent laziness and poor will to work of the Bemba peoples, at least in the eyes of Europeans. She could not, though, provide an altogether satisfactory explanation of why people who often go hungry are not generally prepared to work more than a few hours a day.

Richards made a clear distinction between a primary matrilocal group (called **ulupwa** in the Valley) and a secondary matrilineal descent group (**cikota**). Marriage is generally matrilocal, i.e. a man goes to live in his wife's village, where he will work for his father-in-law for a number of years (Richards 1969:112). According to Richards the secondary matrilineal relationship, which includes a man's mother and her brothers and sisters, will have lesser significance in determining local associations than will the primary group.

Karla Poewe's anthropological studies were made in the Valley during the 1970s. She reached the opposite conclusion to Richards - namely, that matrilinear relationships generally weigh more heavily in the distribution of wealth than matrilocal ones, which are impermanent. Poewe observed that the husband, together with the wife's kinsmen may form an uneasy coalition which becomes part of the ulupwa or laterally extended family, but in general there is resentment between a father and the mother's brother (Poewe 1976:46).

Poewe saw a contradiction between on the one hand communalistic social relations, which aim to redistribute wealth among a large number of matrikins(wo)men in the cikota and, on the other, productive means, which are strongly individualistic (Poewe 1976:30). Successful economic ventures, she pointed out, must be based upon fixed capital and fixed resources; this presupposes a disciplined, skilled and coordinated labour effort. Such coordination is lacking in Luapula since people are rewarded by membership in (matrilineal) lines of descent, independently of their work contribution. The result, claimed Poewe, is a very poor work ethic.

Whether or not one accepts Poewe's argument that matrilineal systems of inheritance are economically counter-productive, it is worth considering the possible advantages of a dualistic grouping of social relationships. Gluckman (1955:1-27) pointed out that in any society people who are friends on one basis may be enemies on another. Furthermore, overall social cohesion is rooted in the conflicts between people's different allegiances. Between closely adjacent groups potential conflicts may be "sublimated" by variously elaborate forms of ritualised behaviour. In Luapula, matrilinear interest groups are dispersed by marriage outside the line into other clans and by common residence of the husband with the new clan. When conflicts arise between two lineage groups, common residence will necessitate some cooperation between the different interests in order to maintain peace. The conflicts between an individual's allegiances to different

groups - in this case a man's conflicting allegiances to his ulupwa and cikota - thus contribute to social cohesion of a society at large.

The same idea may be used to interpret traditional concepts of land ownership, in which certain types of myth appear to play an important role. It is perhaps significant that the histories of Luapula peoples cannot be recounted as a factual list of events; we are obliged to resort to orally transmitted traditional histories (sing. **ilyashi**) which permit mythical and imaginative elements to be woven around an elusive core which the European mentality strives in vain to sift out as an objective account of "what (probably) really happened" (Cunnison 1969).

Perhaps "what really happened" is irrelevant in establishing mutual understanding about land usage. The ilyashi of a clan or lineage (cikota) is borne and related by a spokes(wo)man (**cikolwe**) and serves to uphold the identity and authority of the group. More practically, by culminating in an account of how and where the cikota eventually established itself the ilyashi makes a claim upon a piece of land. Claims by other groups upon the same piece of land do not necessarily result in conflict but rather the reverse: by cutting across clan and tribal boundaries ritually maintained agreements on land use may enhance overall stability of the community. These unwritten patterns are generally becoming eroded as registered ownership patterns spread and rituals are abandoned.

However much overall stability results from criss-crossing patterns of land use or matrilocal/matrilinear relationships, there is presently much marital instability and a high incidence of divorce in the valley: in some areas most of the people Poewe interviewed had divorced and remarried several times. Indeed, in her view there are few considerations encouraging a couple to stay together (Poewe 1976:84). Poewe's conclusion that unstable marital relations will not be conducive to effective running of productive systems is convincing.

5. Traditional Farming Systems

By tradition land in Luapula is not owned by individuals, but as in many other parts of Africa is allocated by the headman or headwoman of a village to people of either sex, according to need. Since land is generally prepared by hand, one ulupwa cannot take on a very large area; in this sense land has not been a limiting resource over large parts of the province. The situation has already changed near the main townships, and there has long been a scarcity of land for cultivation in the Valley. In these areas registered ownership patterns are becoming prevalent.

Most of the traditional cropping in Luapula, as in the Bemba area to the east, is based on **citemene**, a system whereby crops are grown on the ashes of tree branches. As a rule, entire trees are not felled, but are pollarded so that they can regenerate. Branches are cut over an area of varying size early in the dry season, and stacked to dry over a rough circle about a fifth to a tenth of the pollarded area. The wood is fired before the rains and in the first year planted with the African

cereal finger millet (*Eleusine coracana*). The grain of this crop is used to brew local beers such as **cipumu**, which contribute several vitamins of the B complex to peoples' diet. Cipumu is also used in cementing reciprocal working relationships (Pottier 1985).

During the second season, and possibly for a few seasons more the area is planted to variously mixed combinations of annuals such as maize, pumpkins (*Telfiria occidentalis*) and other cucurbits, sweet potatoes, groundnuts, Phaseolus beans and various leafy vegetables, grown with a certain amount of rotation. The diverse sequence ends with cassava, which is often planted into the developing last-but-one crop as a relay.

Richards (1969) observed that the practice of citemene entails a definite division of labour between men and women. A man stakes out a plot in an unobtrusive manner, since it is considered provocative towards one's neighbours to mark boundaries in an explicit way. The dangerous work of felling branches is the men's province, and involves much pride. Branches are stacked by the women, and fired by the men. Formerly women and men cooperated in the planting work, but the harvesting was always done by the women. At the beginning of the cycle little weeding is necessary, since the firing of the branches effectively destroys weeds. As the cycle progresses weeds increase and nutrients eventually become depleted to a point where further effort with annual crops is judged to be not worthwhile: at this point the cassava is planted, since it can produce a crop on nearly exhausted soil. Thereafter the plot is abandoned, and a new area pollarded for the next citemene cycle.

When forest is not available - this is increasingly the case nowadays - various ridging systems (**ibala**) are built on small areas, to be planted with combinations of maize, beans, groundnuts and sweet potatoes, usually relayed with cassava. These plots are usually tended by women, and provide subsistence. Where their roots have year-round access to water tables mango, guava and oil-palm trees often grow around homesteads, particularly in the Valley, forming a traditional agroforestry system. In season some of the fruit is sold by the roadside or in local markets.

The margins of dambos are sometimes planted to local varieties of rice during the rainy season, and areas adjacent to vegetables irrigated with water from the dambo during the dry season. The extent of cultivation is very limited, no doubt because the growing of crops under dambo conditions calls for a great deal of skill (Dougnac 1987:9-10). Near towns some of the vegetable produce is sold in local markets. Mangoes and bananas often flourish near the edges of dambos.

Fishing has long provided a much needed protein supplement to the diet of Luapulans, as well as being the one substantial source of cash. Much fish is dried for sale to areas away from the main waterways. The Mweru and Bangweulu Lake Basins are the main areas of year-round fishing, but the Luapula River is also exploited during the latter part of the dry season. Several previously abundant and desirable species, such as the Luapula salmon or **mpumbu** (*Labeo altivelis*) and

pale (*Sarotherodon machochir*) have all but disappeared from Lake Mweru, apparently due to mismanagement (Huckaby 1979).

Fishing has always been a far more remunerative activity in Luapula that crop husbandry. A fisherman may earn more in a week than a bean or maize grower in a whole season. I sometimes heard claims that the relatively high earnings to be obtained from fishing induced an "easy come, easy go" outlook among Luapulan men. On the other hand, someone who secures good but erratic earnings may (according to Poewe's reasoning discussed in the previous section) feel that their investment in an economically productive activity is not worthwhile because Luapulans fail to cooperate well in such activities. Besides, a fisherman with spare cash will find little in the way of working equipment to spend his money on. Better spend one's money in the bars and have a good time!

Only small numbers of cattle or oxen are kept in the province owing to the prevalence of the tse-tse fly. For the few herds, the dambos provide subsistence grazing during the dry season. The absence of animal draft power greatly limits peoples' ability to plough and cultivate land: a married couple can rarely manage to prepare by hand-hoeing more than two limas (0.5 ha).

Most people keep freely roaming chickens and goats. These act as a reserve for bartering, but may also be occasionally slaughtered for ceremonies or for entertaining important visitors. These animals are not a regular part of most peoples' diet.

Citemene has been an ingenious system for providing people with seasonal production of high quality cereals and vegetables in regions of acid, heavily leached soils. Nutritionally, the most serious deficiency was that of protein. This could at times be alleviated when fish was available, provided that cultivators lived near the Valley and could find the means of bartering for dried fish. The citemene/fishing system was well adapted to the ecology of the miombo regions and sustainable for long periods, but only as long as human population densities stayed at low levels.

Although population densities are still much lower than in several countries of South-East Asia, neither the fisheries nor the forests and woodlands of Luapula are capable, with unmodified traditional practices, of supporting the people in a sustainable manner. For instance, even in a normal season people suffer from a lack of energy, protein, vitamins and minerals in the diet. A third of under-five children brought to clinics are either stagnant in growth, or are losing weight (Gobezie 1984a, 1984b).

Overall, people must learn to intensify and diversify their productive systems while yet ensuring that these systems will remain productive in the future, when even more people will need food. Increasing overall production of food, though a vast challenge in itself, will not be enough, however. At the same time storage and distribution systems must allow everyone access to at least a moderate share of the total.

6. Macroeconomic Policies Relating to Agricultural Development in Luapula

During the colonial period, agricultural policy sought to secure a cheap supply of staples to the urban concentrations of the Copperbelt and along the line-of-rail down to Livingstone. The colonial government introduced price controls and quotas to ensure that most of the production was firmly in the hands of white settlers who had established themselves in the Southern and Central Provinces of Zambia. Maize cultivation was encouraged, and the cultivation of the African staples sorghum, finger millet and bulrush millet (*Pennisetum typhoides*) was discouraged by pricing policies. Cassava was not favoured by markets, either. There were virtually no market-oriented producers outside Central, Eastern and Southern Provinces. Luapula belonged to this completely neglected region (Wood 1985).

After independence the government professed to be concerned with improving the living standards of rural societies. Provision of cheap staple food for the urban areas without recourse to expensive imports was still as important as during the colonial period, but in line with socialistic ideals there was now a preoccupation with bringing rural producers into the market economy. This would, it was reasoned, stem out-migration from rural to urban areas. The new government continued the colonial policy of encouraging maize production by adopting a monopoly of marketing and by introducing uniform producer and retail prices, independently of where the maize was produced. Fertiliser subsidies were provided for the producer and food subsidies for the urban consumer.

During the 1970's efforts were made to give substance to the infrastructure of agricultural production and marketing. Some of the main aims were to strengthen input supply networks, establish crop collection depots, provide training for farmers and extension staff and set up credit facilities for farmers. To say that many of these endeavours have run into difficulties would be an understatement. A brief list of some of the major failures must suffice here: pricing and subsidisation policies have often been inconsistent, inappropriate and finally insupportable; supply and collection networks have been plagued by bad roads, non-existent communications and poor transport facilities (including lack of spare parts and fuel); and bad organisation can be partly blamed on inadequate training and motivation of staff. Finally, but certainly not least, both social and biological considerations have been ignored.

Undoubtedly Zambia's potential was severely crippled at the outset of independence by an economic structure which depended almost exclusively on the copper-mining industry. The collapse of the copper market and the resulting economic chaos must in large measure lie behind the continuing distortions and failures of the post-independence period. On the other hand, countries such as Tanzania and Kenya, which were not so heavily dependent as Zambia upon a single commodity, have also encountered grave agricultural problems. Analysts have written enough reports, articles and books to fill entire libraries in their

efforts to understand "what has gone wrong" with Zambian - or African agriculture. Here is one more paper.

Smaller-scale projects have also been established on a national basis, such as the Integrated Rural Development Programme (IRDP) for coordinating services to farmers and the Lima Campaign, which aimed to improve the position of small farmers. Any insights this writer has formed will be based on his own experiences within the Lima Campaign.

7. THE LIMA CAMPAIGN: A WORKING MANDATE

Lima is a Bantu word or stem equivalent in status and significance to **agri** and its many derivatives (e.g. Latin **acer**, Swedish **åker** = field, English **acre** = an areal unit) in Indo-European languages. Like the acre, the lima is also a unit of measurement, representing an area of 0.25 hectares. The term **lima farmer** therefore implies two things: that the farmer is directly involved in the campaign, and that she or he is working with about one lima of land, i.e. a small area.

Since its inception in the late 1970's the Lima Campaign has set out to strengthen the activities of subsistence farmers and young people starting farming, and to encourage them to enter the cash economy as an integral part of their profession. Scientists at Mount Makulu, the national agricultural research station near Lusaka, designed a package of recommendations for the cultivation of several crops. Booklets were published in the important local languages as well as in English. The recommendations encouraged farmers to plant high yielding varieties of certain annual food crops as spaced monocultures supplied with relatively high inputs of artificial fertilisers. Such a strategy, it was believed, would stimulate agricultural production and marketing in long neglected regions.

To enable farmers to follow lima recommendations effectively, reasoned the campaign organisers, the agricultural extension and training service would have to be strengthened. This would be done by providing new training courses for both farmers and extension staff, and by improving infrastructural and technical facilities.

In 1980 the Zambian Government (GRZ) recruited via FINNIDA two Finnish experts, charged with the task of implementing the Lima Campaign. Initially they received a mandate to cover Luapula and Northern Provinces, but even when a third expert joined in 1981 the team wisely decided to focus their limited resources upon Luapula. The present writer was working in the second team of three, in 1982-84 with headquarters at the Regional Agricultural Research Station, Mansa.

The main (and vast) burden of administrative and routine work was borne by six Zambian coordinators, one with duties throughout the province, and one for each of the five districts. The coordinators collaborated with government officials at district and provincial levels, with staff at FTC's (Farmers' Training Centres) and LCU (Luapula Cooperative Union), and with extension staff and some of the

farmers in camps. They arranged practical details of courses and the provision of credit, and took care of recurrent purchases of fuel, spare parts etc.

The Finnish team spent much of their time organising brief courses for lima farmers and extension staff. They asked Zambian extension staff, resident in villages, to choose two to four student farmers for the course. The Finns specified certain guidelines for selecting course candidates: these should be young and fit, enthusiastic with a genuine wish to take up farming, but with no major source of income, affiliation to other aid organisations, outstanding debts, or previous farming experience. Women were to be encouraged as well as men.´

The chosen farmers would also be entitled to free inputs of seed and fertiliser for one lima during their first season, and would be able to obtain credit for subsequent seasons.

The Finns collected the selected farmers from their villages to the district FTC, provided their meals and took them back home after the course. Each course was attended by 50-100 students, nearly all of whom turned out to be men. Although women head most households in Luapula and do most of the farming work, the extension service has been staffed almost exclusively by men who, not surprisingly, chose men.

The courses comprised lectures (in ciBemba, or the Finnish contributions were translated via an interpreter) and practicals in equal measure. The course aimed at selling the message that farmers could farm profitably by investing in the Lima package of clearly demarcated, regular areas of land (cf. Section 5 re: Audrey Richards's observations on the reluctance of citemene farmers to make boundaries explicit), high yielding varieties grown in monoculture (local farmers customarily mix their crops), fairly high levels of chemical fertilisers and sometimes a pesticide.

Staff of the Regional Agricultural Research Station and the FTC gave agronomic and technical contributions, while officials invited from LCU provided information on credit, the delivery of inputs and marketing. During the course the farmers were offered the choice of hybrid maize, rice, groundnut, Phaseolus bean or sunflower seed for one lima. The vast majority chose maize. Their choice was a logical outcome of government policy, which kept the producer price of maize high relative to other crops.

Unfortunately, the Finnish team may have conveyed to the students the impression that citemene was inherently primitive and condemnable, while the use of chemo-genetic techniques is modern and to be striven after. The word "modern" undoubtedly has a strong brain-washing effect on audiences. It was brought out time and time again to imply something creditable rather than merely fashionable.

Similar, but more advanced courses were organised in English at Mansa Farm Institute for the extension staff of the province. Subsequently, refresher courses and field days were organised in villages. This type of activity grew in importance.

The Finnish contribution to the lima effort had started off as "the Fertiliser Programme", but soon became known as "Agricultural Extension and Training Programme/FINNIDA". Later the programme's scope widened still further to the provision of credit. At that time farmers with less than ten hectares were not eligible for credit with the official organ, the Agricultural Finance Company. FINNIDA provided a revolving fund from which lima farmers could qualify for loans.

As well as providing free inputs to first-year lima farmers, the programme equipped extension staff in camps with bicycles, wheelbarrows and some Finnish hand tools. Coordinators and some extension staff were provided with motorbikes and fuel allowances. LCU was assisted with fuel and transport for the distribution of inputs and the provision of local purchase orders for credit.

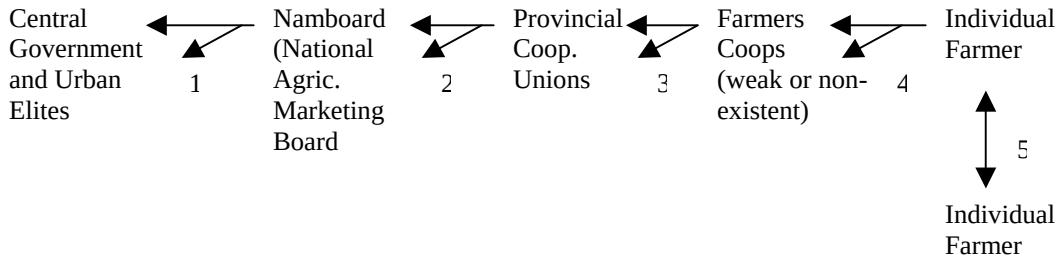
8. Contradictions and Conflicts

A macro-contradiction still persists between the demand of urban dwellers in the Copperbelt for cheap staples and the interests of farmers, who want fair prices for their products. GRZ has until the late 1980s continued the colonial policy of encouraging maize production to the virtual exclusion of other food crops and has monopolised the maize trade (Wood 1985).

Although maize continues to receive the highest priority, recently introduced price incentives have started to favour other crops, including rice, sorghum, finger millet, pearl millet (*Pennisetum typhoides*) and cassava. This response is largely due to general pressure from the World Bank. Government leaders also began to realise in the early 1980's that deregulation and incentives would stimulate agricultural diversification (Thomas and Weidemann 1988).

With hindsight one can recognise that price controls and subsidisation policies have been unwise, though understandable in view of urban pressure on politicians to keep consumer prices down. The consequences have been worsened by the collapse of the Zambian economy. The government is presently making real efforts to remove subsidies, but this is causing extreme hardship to urban consumers.

During the 1970s and 1980s a set of conflicts worked along the state-controlled chain in Scheme 1.



Scheme 1. Possible exploitative linkages between levels of agricultural activity. The arrow indicates the probable direction of flow of overall resources (money, energy, nutrients, perhaps human trust). The downward arrows represent lost opportunities.

Linkages 2 and 3, and possibly the first linkage in Scheme 1 have much in common. NAMBOARD (originally set up to control agricultural trading between provinces but now subsumed to the unions) and the unions have been underfunded for the organisational, marketing, transportation and storage tasks they have been assigned. Apart from lack of funding, staff at all levels within the parastatals have been blamed for carrying out their duties inefficiently and irresponsibly. Prices of goods are not fixed in time, local purchase orders and inputs are delivered too late and payments to farmers for their products are delayed or not met (Böckelman and Negassa 1987).

In a situation where government parastatals are accorded a monopoly on markets, where prices are fixed and a blanket policy ensures equal payment for products irrespective of distance between farms and urban centres, human ingenuity will ensure a high degree of leakage and exploitation between groups. Some examples of how marketing systems with heavy state intervention can "leak" are described in Thomas and Weidemann (1988). Thus NAMBOARD used to have an advantage over the unions in commanding relatively profitable transactions between provinces: "remote" provinces such as Luapula often had to wait until last before their produce was dealt with (Böckelman and Negassa 1987:23).

While sudden deregulation can lead to drastic consequences (e.g. the maize riots of 1986) one would expect that the gradual and consistent introduction of liberalised prices and reduced subsidies, combined with a curb on the monopoly of parastatals, would improve their performance. At present, overall predatory relationships from "high" to "low" levels persist, with unions exploiting the farmers (linkages 3 or 4). This situation will continue until farmers can muster enough solidarity among themselves to exert pressure (not necessarily confrontational) from the bottom up (Chambers 1987:160-167).

At the local level there can be potential conflicts between the unions and farmers' cooperatives (linkage 3, Scheme 1). In general, farmers' cooperatives were not well developed during the early 1980's. Böckerman and Negassa

(1987:35-36) criticise the programme's policy of applying credit worthiness to groups of ten farmers. When poor recovery rates were obtained from credit supplied to individual farmers, the Finnish implementers thought that internal group pressure would improve recovery rates. The actual consequence, point out the authors, is that somebody else's defaulting comes to roost with the remaining farmers, who have to bear the whole brunt.

There are many conceivable ways for conflicts to arise between individual farmers, or groups of farmers (linkage 5). The gender bias showed itself blatantly in the context of our own work: the Zambian extension service is almost exclusively staffed with men, and consequently nearly all of our recruits were males. In contrast, women do most of the work in growing crops. One could argue that the programme's courses may have helped to redress the balance by involving men increasingly in farming. In this writer's view, the choice of men for a course which motivates farmers to participate in a market and cash economy intensifies the gap which already exists: men control the few crops which are grown for cash while women look after food crops which are grown chiefly for subsistence of the family. It is surely the women who need better access to the cash economy.

According to the evaluation of Böckerman and Negassa (1987) about 20% of initially trained lima farmers were continuous adopters, i.e. they stayed in farming for up to five years. On the whole, state the evaluators, most prospered both economically and socially. Thus by 1986, 24% of the children of lima farmers had started attending school, which otherwise would not have been possible (Böckerman and Negassa 1987:39). On the other hand, by the end of the period maize yields at several camps (averaged over several farmers) frequently tailed off from 10-20 x 90 kg bags/lima to a level (8 bags/lima) which barely covered production costs. There was much variation between individual farmers in this respect, with a few farmers still able to produce 20 bags/lima after five years (Böckerman and Negassa 1987, Tables 2a-6a). Part of the overall drop may be due to the poor services of LCU, with inputs arriving too late for the maize to utilise them effectively. Soil acidity and micronutrient imbalances may also depress yields. High input technology is rapidly running into problems. On the positive side, the report claimed that some farmers seem to be evolving modified strategies rather than blindly following lima recommendations.

All in all, the evaluation considered that the response of people to the lima effort was impressive. This writer's own observations confirmed that people were willing to put much faith in "our" efforts (and in the eyes of Luapulans it probably seemed as though the Finns had hijacked the Lima effort in Luapula, implicitly imbuing it with a strongly Finnish identity), and tried very hard to practise what we preached. These conclusions refute the generalistions made by Poewe that Luapulans are incapable of innovative economic activity.

What the evaluation bypassed was the question of how farmers outside maize cultivation for cash had fared in the meantime. Whether people take up maize cultivation for cash as a result of external efforts (a minority) or as a result of their own initiative is not the point here; one's concern must be with whether rapid and

one-sided commercialisation trends are causing hardships for people left outside. This writer knows of no work in Luapula undertaken with this concern in view.

Chambers (1987:108-114) discussed how the disadvantages of poor people reinforce one another, causing a deprivation trap. In rural areas, households are often poor, with few assets such as land or livestock, and may be in debt. The household may be physically weak; this is likely to be the case with many of the women-headed, malnourished households in Luapula. Thirdly, rural households are mostly far from main roads and communications: they are isolated. Most rural households are powerless: ignorant of the law and open to exploitation by all kinds of more powerful people. All of the preceding factors culminate in vulnerability: a misfortune such as sickness or loss of a crop will force people to sell vital assets, often under very unfavourable terms, or cause indebtedness.

Availability of land may not be a limiting factor over much of Luapula. The Finnish programme may, though, have discriminated against the most disadvantaged people. We specified that extension staff should choose able-bodied people unburdened by debts. Women were minimally involved.

In following the government's blanket approach, the programme recruited many of the farmer students from areas a long way from main roads. Some of these isolated communities encountered severe difficulties. Lambwe Chomba is situated north-east of Nchelenge, at the end of an extremely bad road 200 km long. On arriving at the camp early in the rainy season of 1986-87, this writer was surprised to see unused piles of fertiliser stacked by the extension officer's house, while nearby stands of rice were obviously starved of nutrients. The farmers told us that they had followed lima recommendations the previous year and obtained a good crop. An LCU lorry from Nchelenge had collected their harvest, and the driver had convinced them that payment would follow. It never did. Naturally enough, the farmers were not prepared to invest in fertilisers in 1986.

9. CONCLUSIONS

The whole rationale of using high input technology for promoting a net outward flow of foodstuffs from a hungry province in exchange for cash is questionable on ethical, ecological and economic grounds. One may argue that outsiders have no right to inflict alien systems of land ownership, resource management or accounting against the wishes of local people, least of all to allow a net flow of foodstuffs out of a hungry province to urban areas indefinitely into the future. This idea leads one to the thorny question of how the interests of local people are to be represented. Whether people opt for a western type of democratic representation or a system based on traditional African consensus, more solidarity and better organisation will be needed - and will in time be found - within local communities. Possibly outsiders can catalyse this process, but in doing so will very likely find themselves opposed to national interests.

Ecological and economic arguments are more likely than ethical aspects to weigh with powerful groups of people. Representatives of urban elites should be able to perceive that non-sustainable methods of cultivation will serve nobody's interests beyond the short term. The present choice, however, appears extremely difficult: between muddling through with the present rickety, one-sided cropping systems based heavily on maize for a few more years until ecological and economic collapse ensue, or allowing more sustainable systems to evolve, with the prospect of immediate curtailment of maize deliveries to urban areas for some time. The latter policy would result in even more hardship than at present and could easily lead to a sharp increase in township violence, even though it should enable recovery over a longer term.

In practice, it is by no means certain that the present distribution and marketing systems which, with difficulty, maintain flows will survive over the next few years. If the parastatals collapse completely, informal links will undoubtedly develop to replace them. The resulting hiatus would slow down the overheated maize boom, and give farmers a stimulus to develop more diverse strategies.

This writer does not wish to imply that the development in Luapula of a stronger cash crop sector is in itself undesirable. Rural people need access to services and commodities which they cannot produce themselves. The dilemma arises when national policies prevent people from achieving a mutually satisfactory balance between subsistence production to ensure a measure of self-sufficiency and a cash economy for an exchange of complementary resources, or when exploitative relations upset such a balance in a more direct way.

The policy of encouraging forms of farming which depend upon deliveries and collections of small quantities of goods along difficult roads is clearly inviable. Farmers in isolated areas will try to evolve alternative methods which best utilise the resources available to them, and develop markets on a local scale. The question then arises of whether peoples' efforts of elaborating new systems in a localised context can be accelerated from outside.

Richards (1985, Ch. 6) argues for an indigenous agricultural revolution in which agricultural experts who presently control farmers would be replaced by facultators or consultants serving the farmer's own research and experimentation. Such a fundamental shift in the relationships between, for instance, farmers and extension staff will inevitably result in new tensions, possibly involving other groups as well.

The extension staff in camps could be central in catalysing farmers' innovations. At present their work is hampered by unreliable salaries, indifferent housing, poor transport facilities and lack of access to the results of research work. There are more fundamental constraints: their maleness and their relationship with farmers, most of whom are presently women. It would appear desirable for the Zambian agricultural extension system to make every effort to increase greatly the proportion of women in the service.

To suggest such changes will probably seem utopian. The extension system recruits its staff from secondary school graduates, most of whom are boys, who undergo a prolonged period of training at Monze Agricultural College. Changes to favour girls would have to start within the school system and in cooperation with the children's guardians. It will take massive efforts for several years before the system turns out a new generation of formally trained women graduates ready to take up extension duties.

There may, however, be complementary alternatives. For instance, a number of highly respected and experienced farmers of either sex (elected by villagers, including disadvantaged people) could offer advice or assistance to those less experienced, for an agreed fee. Some of the elected farmers would be women with their own experience of the hardships of subsistence farming. A few might be recruited from other provinces of Zambia. If a farmer's experience could be accepted as a qualification for joining the extension system, two complementary types of extensionist might work side by side in the service: those with formal training who ought to have strong links with the findings of commodity research work, and those with practical experience who would be more involved in the farmers' own trials.

Both categories of extensionist should be accorded equal status. This may be difficult to achieve. One might foresee that the establishment type of extensionist (typically a young man) might tend to gravitate towards cash-oriented farmers, while the newly recruited, farmer-based ones (typically older women) would tend to serve subsistence farmers. The danger is obvious: that the latter category may acquire a stigma. Several ways of counteracting such a tendency might be envisaged. Here are three:

Both categories could receive from farmers some recompense for services performed; the category tending to serve subsistence farmers might need more outside support to offset poor incomes from consultancies;

There could be regular and frequent discussion and constant, judicious exchange of staff between the two categories (young men and older women would have to cooperate);

Every effort sould be made to assign traditional systems of cultivation (experimenting with mixed cropping, use of local varieties in breeding, use of indigenous trees in plantings etc.) equal status to conventional commodity-based systems. This should be a matter of pride in a community's indigenous knowledge, coupled with a willingness to alter it to meet new needs.

It would still seem necessary for a community to retain some provision for the most disadvantaged farmers who are unable to pay more than a nominal fee or favour for the services of extensionists acting as paid consultants. Fees or favours

might be scaled according to a means test acceptable (by consensus?) to all concerned.

Luapulans are capable of bringing about changes, and will adopt innovations, such as new crops to which they have not previously had access, or newly organised extension systems, *provided they see them as relevant to their own circumstances*. At this point I shall risk a generalisation about Luapulans, and which I am tempted to consider a peculiarly African characteristic. My impression is that Luapulans' perception of an innovation is influenced just as much by *the way* in which outsiders introduce it as by its "intrinsic merits" as perceived by a westerner. Perhaps Africa's fickle nature and history of exploitation have taught her peoples caution. If this is the case, much sensitivity is required of outsiders who intervene in the development of local systems.

This brings me to the relationship between Zambians and northern expatriates. The latter take up appointments from a bewildering mixture of motives. If they go out as experts the pay is good, often with a house and Mercedes Benz thrown in, so that by African standards these outsiders live like kings. The climate and social life are attractive, even addictive, and northerners may wish to escape problems at home.

At the same time northerners may be genuinely concerned by development, even if they fail to understand fully what they mean by this term. Few of them bother to learn even the rudiments of the local language.

Privileges of expatriates are defended with the time-worn argument that the best people for the job can only be attracted with the best working conditions. At the same time the same expatriates claim to be on an equal basis with their Zambian colleagues. Some (though by no means all) assume an arrogant manner which derives from an assumption of western superiority: this is belied in body language if not in speech. All this makes up a manner of *in*sensitive intervention.

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