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DEVELOPMENT EDUCATION

RURAL DEVELOPMENT THROUGH MASS MEDIA

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INTRODUCTION

The need for concerted action in rural development and the important work being done by international voluntary agencies in the field of rural development in African countries have long been recognized by the United Nations Economic Commission for Africa. Resolution 197(IX) of the ninth session of the ECA, among other things, requested the Executive Secretary to secure the fullest possible co-operation of member States in the adoption of the philosophy and strategy of the integrated approach to their rural development programmes; and to promote co-ordination of the work of ECA, the specialized agencies of the United Nations and other organizations operating or sponsoring rural development programmes in Africa, in order to secure the maximum impact of these programmes on the social and economic progress of the region.

The Africa Regional Conference on the Integrated Approach to Rural Development, held in Moshi, Tanzania, in October 1969, was in direct response to the above resolution. The conference, which examined problems of the development of rural areas in Africa, stressed, among other things, the need to promote research into, and dissemination of information on all aspects of rural development in Africa. For this purpose, it recommended the establishment of a clearing house for informing member governments of what is being done in the field of rural development in Africa and in other regions.

The Moshi Conference was followed by two sub-regional meetings of Experts on the Development of Rural Life and Institutions, (Libreville, Gabon, 2 - 12 December 1969, and Accra, Ghana, 22 - 31 July 1970). At both these meetings, participants emphasized the need to involve the population in rural development programmes and to enlist their co-operation in the preparation and implementation of development plans. They also requested governments to closely associate the peasantry in the preparation of plans relating to the development of their areas; and, above all, emphasized that participation implies that the rural areas should be kept constantly informed through the press, radio, and the most varied audio-visual methods.

In pursuance of the same resolution, ECA, in co-operation with UNICEF, FAO and WHO, organized a Symposium on Rural Development in Africa in the 1970s, which was held at the headquarters of ECA in Addis Ababa, from 9 to 13 August 1971, under the chairmanship of the Executive Secretary of the ECA.

The Symposium, which was attended by representatives of 27 international voluntary agencies, the United Nations specialized and operating agencies - FAO, ILO, UNDP, UNESCO, UNHCR, UNICEF, WFP and WHO - and the Organization of African Unity, together with the (UK) Commonwealth Secretariat and USAID as observers, reaffirmed its recognition of the importance of rural development, and made five positive recommendations, one of which was to initiate a mass communication programme for Development Education.

In its broadest sense, the *Development Education* programme of the ECA aims at stimulating and involving rural communities in the development of their communities and countries through self-help projects, such as improvements in community water supplies, adoption of more efficient agricultural techniques and mobilization of savings. The essential factor in such a broad-based approach to rural education is the creation of an awareness, the incentives and the means for change, brought about by the people themselves. Without this, people cannot contribute fully to development because of lack of aspirations aimed at higher objectives. With the inculcation of general attitudes for self-help ventures, they are more likely to participate in a positive way to ensure that development is not just a slogan, but a reality that both involves and benefits them directly. Thus, the Development Education programme is designed to examine problems of rural development and call attention to types of simple village-level development projects which can bring about an improvement in the general standard of rural living through self-help efforts.

Self-help is not a new concept in African society. In days past, a mutual social responsibility was accepted by members of a community who always went to one another's or the community's aid as the need arose. Over the years, this fine attribute of African society has weakened considerably, especially in urban areas. The Development Education programme is in part designed to resurrect and revive the spirit of self-help, especially among rural communities.

The very nature of the process of rural development and the size of the problem of promoting economic and social progress in rural areas require that action be taken on several fronts simultaneously, and not independently of each other. Hence programmes of agriculture, health and nutrition, education and training, community development, etc., should not be planned and implemented, each in isolation and without consideration of the implications that development programmes in one area might have for the others.1/

The problems being encountered by African states in their rural development programmes are many, varied, and inter-related, hence the need for a concerted action or integration of various disciplines in rural development programmes cannot be over-emphasized. The seemingly independent aspects of rural development dealt with in this monograph are intended to demonstrate the inter-relatedness of the problems involved in rural development and the need for an inter-disciplinary and integrated approach.

The United Nations Economic Commission for Africa, assisted by the Radio Voice of the Gospel in Addis Ababa, arranged, under the Development Education programme, a series of radio broadcasts based on material prepared by the ECA. The broadcasts mainly took the form of panel discussions, relating to a particular problem in rural development and citing specific

1/ Integrated Approach to Rural Development in Africa, UN Publication, Sales No. E.71.II.K.2.

examples of how such a problem was tackled in some African country or countries. Since the inauguration of the programme in October 1971, eight radio programmes had been broadcast at the time of this publication; and, in addition, the texts had been distributed to a number of broadcasting authorities in African countries for local use, besides being serialized in the ECA «Priority» publications.

The role played by the Lutheran World Federation (Radio Voice of the Gospel) in promoting this programme typifies the interest which various international voluntary agencies have consistently shown in the promotion of social and economic development in Africa. Information available indicates that in the four years ending 1971, of the 53 international voluntary agencies with rural development programmes in Africa, 41 of these, for whom figures were available, had sponsored around 25,000 rural development projects in various African countries involving an average annual expenditure of US$127,566,850. Although more recent figures are not available, all indications are that these figures have since increased considerably, especially in the last two years, with the rehabilitation programmes in the Southern Sudan, the Sahelian countries in West Africa and Ethiopia.

This monograph constitutes an attempt to bring to the attention of African governments and other interested institutions, rural development planners, voluntary agencies and rural development workers, some material prepared by ECA with a view to bringing into focus some of the incessant problems of rural development in African countries and how these are being tackled by some countries with the assistance of international agencies. It is also, and perhaps especially, intended to promote and influence government and voluntary actions in tackling the problems of rural development within the context of national development through the use of mass media, since it contains basic information which may be adapted to local conditions.

The chapters of this monograph are based on the original texts prepared by the secretariat for use in its Development Education programme. They have been revised, edited, and some illustrations added for clarity.

In a few instances, reference to a specific country or development programme has been omitted because adequate or up-to-date information was not available at the time of writing. In the circumstances, the examples cited are not necessarily the best ones available.

Some chapters end with a number of questions. These are designed to stimulate further exploration and discussion. The monograph as whole would have served its purpose if it resulted in arousing interest and stimulating peoples' direct participation in self-help development projects.

Appreciation is due to many individuals and organizations who have kindly made available some data and illustrations, and have given valuable comments on the draft texts. Acknowledgement is made in particular of the co-operation of the Radio Voice of the Gospel, Addis Ababa, which not only assisted in promoting the programme, but offered valuable suggestions on its implementation and development. Gratitude is also owed to the many international voluntary agencies with rural development programmes in Africa for making available information on their activities in various African countries.

CHAPTER I

DEVELOPMENT OF RURAL WATER SUPPLIES

Needs and availability of water

Human beings need water for their survival, and a good supply of clean water is essential to man, not only for his own personal use, but also for agriculture, animal husbandry, industry, and so on. In Africa, some areas appear to have more water than is needed, others have just enough, while for the most part water is very short or not available at all. Since towns are generally sited with conscious regard to availability of water supplies, the shortage of water is experienced most by rural communities where streams and wells often dry up during dry seasons and people have to walk long distances, sometimes as far as 15 miles (24 kilometres) to find water. Lack of constant water supplies causes great hardship to many rural communities.

The most important use of water is in support of living organisms, but its use is not restricted only to this. Water is also utilized to support or raise the living standards of people, through such schemes as hydro electric power, irrigation, fish farming, navigation, etc.

It is recognized that the provision of a satisfactory domestic water supply is one of the most useful and acceptable services which the authorities can offer to a community. It is both a social and an economic service which ranks on a level with communications, education and other developing services.

There is no single measure that can so improve the health and well-being of the rural dweller as the provision of an ample supply of potable water. Not only is the water supply the most important factor in the health and social life of the community, it is also the basis for the economic activities of rural peoples. The problem of the drought which has for some time been receiving the attention of many African countries is rooted in basic lack or unavailability of water.

Studies as prerequisites

In a number of African countries with problems of water shortage, studies are needed to determine the existence, quantity and quality of water; water needs - current and future needs; the economics of investment in rural water supply - costs and benefit; the impact of rural water development on general economic and social development. Implicit in such studies is provision of a framework for the implementation of the water programme. Even well-designed, and finely executed water schemes - especially irrigation schemes - may have unforeseen and indeed unfavourable impacts on an area, for example, an increase in water-borne diseases.

Water development programmes

In planning rural water development programmes, consideration must be given to a number of factors (health, economic, social, etc.), in establishing priorities. For example regarding :

(i) *Health:* Water-borne diseases rate (e.g. dysenteria, typhoid and paratyphoid fever, schistosomiasis, intestinal parasitic infestation, etc.), shortage of water, use of insanitary or polluted water sources, possibilities of improving personal hygiene and sanitation.

(ii) *Economic:* Economic benefits to be derived from such a programme - irrigation requirements, agriculture and livestock development, trade and commerce and the economy of the scheme.

(iii) *Social*: To make life easier and more productive by providing convenient sources of water for domestic use; social and political implications of scarcity or inadequacy of water; population density, possibility of grouping villages for joint supply; possibility of local participation, accessibility of present sources of water, etc.

Many African countries are today concerned more than ever before with rapid economic development. Of the projects being undertaken in this respect, the development of water resources is among the most important ones. This is because almost all the projects involve water in one form or another, for instance, agriculture, health, animal husbandry, industries, etc.

In order to increase agricultural productivity, as well as to reduce the drift to the towns with its attendant problems of uncontrolled urbanization, many countries have programmes for the development of rural economy. A good example of such a programme is that formulated by the Ministry of Lands and Settlement in Kenya. The key feature of this programme is the establishment of an infrastructure of «local», «market» and «rural» centres to provide social services and market facilities to scattered rural communities. It is significant that the common requirement for all these centres is a public water supply without which hospitals, schools, administration and commercial undertakings, and similar developments would be virtually impossible.

In the same way, the establishment of village industries, particularly those in which food and other agricultural crops are processed in the vicinity of the place where they are grown, is usually dependent upon the existence of a suitable community water supply.

The provision of water supplies for domestic use has, in several areas, permitted the utilization of uncultivated land by enabling communities to exist where, before, habitation was not possible. Settlement of nomadic tribes and the opening up of cattle routes have also been made feasible by the same measure.

A further economic factor to be considered is the employment created by the construction and operation of the water supplies themselves. Provided that construction is planned with this factor in mind, labour will be used not only on actual construction (e.g. well sinkers, dam builders, etc.) but secondary employment

A not untypical rural water supply

will also be created in other manufacturing industries, in transport and ancillary services.

It is not easy to prove statistically the effects of safe water supplies on improving rural health and social conditions as this would require elaborate, medical and laboratory tests on a significant sample of the inhabitants of the communities helped, and a repetition of such survey after a number of years of living with the improved facilities. This substantial effort is not always made as a normal routine. However, for those who may be interested in the practical results obtained from supplying of adequate and safe water to rural communities, there is within the WHO/UNICEF (1970) programme a well-documented case history.

A simple water supply system was installed in the Zaina area in the Central Province of Kenya, with the help of UNICEF and WHO, in 1961. This system is fed by gravity from a high level surface source of good physical quality and provides chlorinated piped water to 588 farms and four villages which had a total population of 3,850 in 1961. By 1965, the system had been extended to supply water to 5,800 persons. Prior to 1961, the source of water for domestic use and the considerable farm animal population was the Zaina River which flows in a gorge about 100 metres below the inhabited areas. Carrying water up the steep incline consumed a major portion of the time of the women.

When the new system was installed in 1961, a complete survey of the health and social aspects of the area was made under the supervision of the Provincial Medical Officer. The survey collected detailed information on the incidence of illnesses and infections, housing conditions and general living standards. A similar study was made of a control area located eight kilometres from Zaina and comparable to it in practically all characteristics except that it lacked an adequate community water supply. In 1965, after four years of operation of the Zaina water system, a resurvey was made of both areas.

It was found that the Zaina community was in better health than four years earlier in terms of both total number of illnesses and duration of each illness. Using the same basis of comparison, the people of the control area were found to be in poorer health. A dramatic difference was found in the stool examination of children for ascariasis, the most common helminth infection in the area. The 1965 survey showed a decline of the disease in Zaina and an increase in the control area giving the latter a prevalence of six times that found in Zaina. The studies also showed that Zaina had made a greater economic advance than the control area. The easy availability of piped water and the release of women's energies for better housekeeping, care of children and vegetable gardening, was the principal factor in the improvement of both health and well-being in Zaina.

The main object in rural water development is to make accessible to every community an adequate and safe water supply as a general welfare service for better health, increased tandard of living and the stimulation of social and economic betterment. Clean water is not only an important factor in improving the living conditions of rural communities, but it is also essential in establishing communities on new lands. Digging of wells and pumping of water supply constitute major items in the settlement projects in Africa.

Measures to improve water supplies

Among the measures being taken in various African countries to improve water supplies at the village level are programmes initiated by the UN and its agencies and a number of international voluntary agencies, to provide water to rural communities to raise the standards of living and increased agricultural production. This is being done through simple or elaborate means of construction of reservoirs, dams and irrigation systems where surface water is readily available or sinking boreholes, where no surface water is available. Construction of minor rural water supplies includes pond digging and digging of wells where it does not require much digging to reach the water level. Villagers usually do this on a self-help basis under competent supervision and material assistance from aid-giving agencies.

A number of international voluntary agencies have particularly been very active in this field. Information available shows that in 1972 there were 386 water development projects in thirty African countries undertaken by voluntary agencies alone[1/], e.g. Swiss Association for Technical Assistance, Catholic Relief Services, Lutheran World Federation, OXFAM, Freedom from Hunger Campaign, International Co-operation for Socio-Economic Development (CIDSE), International Association for Rural Development (IARD), Community Development Foundation, to mention but a few.

To take one example, between 1968 and 1971, the Swiss Association for Technical Assistance initiated 42 water development projects in Cameroon, involving water supplies, dams, well-sinking, etc. In the period 1965-1969 they spent a total of CFA 93,883,715 on water development in that country alone. This programme proved a big boost to the development of rural areas and a stimulus to economic progress.

Popular participation

It is important, in initiating any rural water development programme, that the people who are to benefit by it should be involved right from the beginning and should participate fully in the programme. They should be made aware of the problems involved and contribute in solving them. In doing this they need guidance and encouragement from competent people or government officials. A publicity campaign to arouse enthusiasm, emphasizing the benefits and how they can be achieved makes a good start. Community relations and health specialists should be used from the earliest possible moment, if possible before the survey and development stage, in order to provide for a maximum community

1/ ECA, Directory of Activities of International Voluntary Agencies in Rural Development in Africa (doc. E/CN.14/SWCD/61/Rev.2). Updated

A WHO expert explaining the hygienic advantages of a new cement well to the villagers of Yimbi (Central African Republic)

A young woman from Yimbi does her laundry at a new cement well equipped with a pump (Central African Republic)

participation from the beginning of the project. To achieve full community co-operation there is a need to develop a sense of self-help and community prestige, pride of ownership and sense of responsibility.

Unless there is full consultation, and participation by the local populace, the programme could easily be misunderstood and regarded as another government project to interfere with the lives of the people or to displace them from their land. Self-help effort in this field, with the minimum of outside help, mainly technical know-how and equipment, has the best chance of success than straight-forward government sponsored projects which are sometimes treated with suspicion by rural communities. There is always a sense of pride and satisfaction by the community from the results of its own efforts. This needs promotion and encouragement.

Efforts to secure community participation have a good chance of success if directed through practical examples of how an adjacent community with similar conditions has solved its problem - such demonstration has far greater impact than discussion. It is in this respect that mass media can be employed as an effective means of arousing enthusiasm, achieving the greatest impact and illustrating what can be achieved.

Problems

Rural water development programmes are not without a number of problems. Some of the more frequent problems encountered in initiating, developing and administration of water development projects in rural areas can be given as:

(i) The scattered nature of the population means that even with improved water supplies people will still have to walk up to say 2 km for water unless they concentrate their homes near the sources.

(ii) Clean water is called for but as long as the supply is outside the house and often untreated, many of the health benefits may not be realized.

(iii) Relating water development to overall rural development programmes.

(iv) Promoting the most effective future land use procedures, particularly where cattle are to be served.

(v) Water development can destroy the existing ecological balance.

Some of these problems can be tackled through careful planning and a programme of development education.

CHAPTER II

IMPROVEMENTS IN AGRICULTURAL PRODUCTION THROUGH THE USE OF MODERN TECHNIQUES AND PRACTICES

Significance of agriculture

Agriculture and allied industries employ about 80-90 per cent of the entire population of the developing countries in Africa. Agriculture is thus not only the source of livelihood of a great majority of people in Africa, but its products are the main source of exports through which most African countries obtain foreign exchange so vital for their economic and social development. Agricultural development thus plays a most important part in the economic and social development of most African countries. Nor is that all. With the high rate of population growth, African countries need to increase supplies of food at a faster rate than hitherto in order to keep pace with the increase in population and growing urbanization.

The social and economic significance of agriculture makes its current poor performance a source of concern. The low level of production does not only mean less food for the increasing population but might easily lead to an increase in the rural-urban migration, a matter of great concern to most African governments. The lack of modernization in the agricultural sector has already resulted in a shortage of food supplies and malnutrition in many parts of Africa.

The importance of the agricultural sector becomes evident in the recognition that it must supply more food and fibres, maintain or expand exports, provide a market for industrial products, yield a substantial part of its surplus income for economic development, provide initiative and the leadership required for the rapid and extensive adoption of new techniques, and enable the development of institutions and organizations that are associated with modern agriculture.

Modernization of agricultural production is an important factor, if not the main factor, in an effective rural development programme. It is through higher agricultural production that rural communities can improve their nutritional standards, increase their income, obtain better social services and a better standard of living.

Agricultural development and some limiting factors

While agricultural production and standards of living have risen sharply in Europe, North America, the Oceania and other parts of the world, in the developing countries of Africa the levels of living in terms of food consumption remain either a little under, or have risen only slightly above, the 1940s levels. Harvests are poor due to poor or overused soils and poor quality of seeds, resulting, progressively, in declining quantity and quality of food supplies in many countries. For many people hunger is a constant companion, and starvation is all too often lurking in the nearby shadows. In spite of some efforts made here and there, progress has been slow as indicated by the fact that quite a large number of the population still lives in dire poverty and hunger, and a large proportion is malnourished. The slow progress made is, to a large extent, eliminated by the rapid increase in population.

African soils are known to have, as a result of years of cultivation or lack of sufficient restoration, deteriorated in the way of a decrease of nutrients. Soils are often cropped generation after generation, often by wasteful processes that result in depletion of its nutrients and erosion, thereby limiting agricultural development.

Soil erosion is wide-spread all over Africa and it is one of the main detrimental factors to agricultural development. Because of the heavy rains, rain water carries away cultivable land. If the soil is on a slope, the water flows more quickly and makes deep ditches in the land. If there are no plants protecting the soil, i.e. if the soil is bare, there is greater erosion. Wind can also carry away the earth. In very dry regions where the wind is very strong, the earth is literally blown away by the wind. Bare soils and soils that have a bad structure are most easily carried away by the wind. Erosion on cultivated land is very destructive because it uproots the plants, it obliterates the ridges, it removes mineral salts, and sometimes most of the cultivable soil.

Uncontrolled soil erosion

Uncontrolled soil erosion and its effects on crops

Destruction of crops by soil erosion

Measures for improving soils, crop yields, etc.

Soil erosion can be controlled or greatly reduced by controlling the water flow. For example, if the flow of water is blocked the resulting mud settles on the ground and the earth is not lost. There are various ways of controlling the flow of water and conserving the soil. These include contour line ridges, ditches, barrier strips, strip cropping, etc. Covering the soil is also another effective way of reducing erosion. This can be done by use of mulches and sowing cover crops. Mulching not only reduces erosion, but it also keeps the soil moist.

Soils may sometimes offer a poor return because of their texture and low content of organic matter, or because of climatic factors unfavourable to crop improvement; but, generally speaking, much of the agricultural land in Africa can be improved by use of fertilizers while crop yields may be increased by use of improved seeds and control of plant pests and diseases.

Shifting cultivation is widespread throughout Africa. Shifting cultivation is a system of farming by which a plot of land is allowed to rejuvenate after two or three years' cropping. The interval between the previous and following cultivation may be anything from three to ten years, depending on the availability of farm land. The main disadvantage of the system is that farmers do not bother to make any long-term improvement to the land. As the population increases, resulting in more demand for land, the period of fallow becomes shorter. With no fertilizer application the yields progressively run low. Means are needed for utilizing the land more productively. To accomplish this, many factors have to be taken into account, but one of the most important is the use of improved agricultural techniques and practices in the form of improved seeds, fertilizers, pesticides, etc. Additional amount of plant nutrients must be applied in order to obtain the higher yields needed to increase human food consumption and improve nutrition. Considering the population growth and the necessity for improvement in nutrition and for the diversification and

Young farmers in Lesotho on conservation work, blocking a gulley with stones

Farmers in Zaïre learn practical application of incorporating organic matter into their soil beds

Nursery for the production of improved coffee seedlings (Ethiopia)

expansion of export crops, it is important that improved agricultural techniques should be used by all farmers where possible. To achieve this there is a need for national programmes intended to revolutionize agricultural production.

In highly developed countries such as the United States, only five per cent of the labour force is engaged in farming and ranching. Each farmer produces enough food for himself and 130 others. This contrasts sharply with the situation in Africa where up to 90 per cent of the population is engaged in agriculture mostly at the subsistence level.

A major objective of all African governments is to accelerate the modernization of their economies, increase their productivity and improve income and living standards. That economic development must give high priority to agriculture is now recognized by all. Put in another way, the rate of increase in output in agriculture may set the limit within which modernization proceeds. Experience has shown that the rate of growth in agricultural production is one of the most limiting factors in the progress of African economies.

African governments have much to gain from undertaking national programmes to introduce and promote modern agricultural techniques and practices - use of fertilizers, high-yielding varieties of seed, pesticides, etc. Provided the necessary measures are taken, countries can achieve rapid improvements in their food production and, in turn, improve their general economic situation.

Use of high-yielding varieties of seed, together with other inputs - proper ploughing, sowing, efficiency in the use of fertilizers, water and a broad spectrum of disease control - constitute one of the means of increasing the farmer's return on his land and labour. Such improvement could bring greater prosperity to the African farmer and his household and thus avert a deterioration of rural society which endangers many of the African countries. At the same time, it is hoped that these will make peasant farmers more receptive to modern agricultural methods.

Studies and research made in this field indicate that the problem of the lag in food production could be resolved relatively rapidly by the greater application of modern farming methods. Numerous experimental tests have demonstrated spectacular results due to the use of improved agricultural techniques - improved seeds, fertilizers, pesticides, water and crop management practices.

Farmers should be aware of the benefits of fertilizers, high-yielding varieties of seeds, etc., even if they are not able to obtain them regularly. Education programmes through mass media, extension services and financial incentives can be used to convince them to improve their agricultural practices.

It is generally agreed today that fertilizers are one of the most effective means of increasing agricultural production in Africa. Depending on the types of crops and the amounts of fertilizers applied, increases in output ranging from 20 to 80 per cent have been noted. In optimum situations it has been possible to double or triple output. This has been the case with some cereal crops in certain very poor tropical soils of West Africa.

African soils are often very deficient in phosphorus; this is the element which is the primary factor limiting plant growth. Unless sufficient fertilizers are used to restore nutrients to the soils to a good level of fertility, and to bring it up to its greatest possible productive capacity, the decline in crop production will continue, hence a further decline in nutrition levels of the people. Fertilizers supply nutrients needed by crops, they help to produce more and much cheaper food and cash crops, which can improve the well-being of the community and the nation. Fertilizers also ensure the most efficient use of land and water. The yield per unit of water used may be doubled. Fertilizers increase profits or farm income and, if properly used, farmers may get back more than double their investments.

As an illustration of the results obtained from fertilizer application to soils, we can look at a few random examples:

(i) In Madagascar, fertilizers are coming into general use on the high plateau region. The increased yield obtained experimentally is about 1,500 kg. in Tananarive province, for example, and the practice has been highly profitable. By applying restorative fertilizers, very high yields were obtained on deteriorated soils which would virtually have been unproductive without fertilizers;

(ii) In Ghana, the FAO has demonstrated that the application of fertilizing compounds (nitrogen, phosphonic pentoxide and potash) increases yields in yams by three tons per acre and is highly profitable;

(iii) The Freedom from Hunger Campaign Fertilizers Programme in West Africa (Ghana, Gambia, Nigeria, Senegal and Togo) has shown that the weighted average increase from the best fertilizer for all crops tested was 51 per cent.

Substantial material benefits resulting from use of fertilizers and the successful introduction of new varieties of high-yielding seeds can be a very potent force for advancing agricultural development as a whole. The extra income derived through greatly improved agriculture gives rise to the possibility of raising living standards and can have consequences extending far beyond an increase in the staple food supplies.

It has been reported from India that the added income obtained by farmers from successful high-yielding variety programmes is creating an increased demand in rural areas for transistor radios and bicycles. On quite a simple level, these prestige items represent not only the beginning of consumer economy, but also the first steps in the development of better communications in rural areas which, in turn, lead to an increased

Young farmers' club members in Maseru building a compost heap in their garden

Young farmers preparing manure in their garden (Lesotho)

awareness among farmers of the market possibilities for their produce.

International assistance

The United Nations together with its Agencies and many international voluntary agencies are doing all they can in helping to improve agricultural production in African countries. Millions of dollars are being spent every year in this field besides hundreds of experts to assist national governments in revolutionizing agricultural production.

A number of international voluntary agencies have programmes in a number of African countries which are intended to involve peasant farmers directly in projects which can introduce them to new knowledge and modern techniques that would improve their subsistence agriculture or introduce them to market agriculture. Maximum publicity possible, through national and local media, needs to be given to these projects so that the greatest number of farmers may benefit by them.

The choice of examples from projects being undertaken by international voluntary agencies is a deliberate one because their modest, but effective efforts, endeavour to meet the basic day-to-day needs of rural communities.

Information available indicates that in 1973 there were upwards of 2,500 1/ agricultural development projects in Africa, involving millions of dollars, which were financed by international voluntary agencies. These varied from small school garden schemes for educational purposes to extensive irrigation projects. Among these are many intended to assist rural communities in the use of improved varieties of seeds, fertilizers, pesticides, and proper methods of ploughing and sowing. To mention a few examples:

(i) The FFHC project in Lesotho for seed testing and certification service at Masom Experimental Station for local and improved seeds for local farmers; and a similar project for improving the quality of wheat grown at high altitude in Lesotho;

(ii) The Catholic Relief Services' project in Ethiopia for distribution of seed, including re-distribution of good quality seeds;

(iii) The OXFAM fertilizer demonstration unit for small-holders in Kenya and the FFHC project for multiplication and distribution of Katumani maize seeds, and a similar project for the provision of machines for making insecticides;

(iv) The International Association for Rural Development project in Rwanda for teaching improved tilling methods, use of certified seeds and fertilizers;

(v) A FFHC project for seed treatment in Malagasy Republic and similar ones involving increases in rice production in the high plateau region through the introduction of advanced technology and regionally diversified research and experiments to promote the fertilization of rice fields;

(vi) The Catholic Relief Services' project in Tanzania providing funds for seeds and fertilizers, seed banks, ploughs and water projects throughout the country; and a similar one for providing seeds, fertilizers and insecticides for young farmers just beginning;

(vii) The World Neighbours project in Uganda for teaching of improved methods of agriculture, use of fertilizers and pest control by the field workers;

(viii) The Lutheran World Federation project in Cameroon at Mbe and Tibati for theoretical and practical training in use of improved hand tools, use of oxen, modern machines, use of fertilizers, crop improvement, use of insecticides, extension work and small co-operatives;

(ix) The four FFHC projects in Nigeria involving extensive expansion of existing programmes for increasing corn crops by use of selected fertilizers.

It is not within the scope of this monograph to describe the details of each of these projects, showing what is being done and what has been achieved. However, it is known that nearly every African country has one or more similar projects within its borders. These projects can provide practical examples in preparing mass media programmes to demonstrate to farmers what can be achieved through the application of improved agricultural techniques under local conditions. Using mass media in this way, quoting local examples, is an effective way of introducing peasant farmers to new methods and having them adopted.

These projects are serving a very useful purpose in promoting agricultural development, especially at the village level. Many of the projects are directly concerned with promoting improvements in agricultural techniques and can enable adequate trials and demonstrate of the use of modern equipment, fertilizers and high-yielding varieties of seeds to be conducted. For example, the Fertilizer Programme of the Freedom from Hunger Campaign conducts field operations in many countries where high-yielding varieties are already in use and where programme modifications can be made, to enable governments to adopt and expand such programmes for wider application on a national level.

Some suggestions

The chief obstacle to the utilization of improved agricultural techniques in Africa is an economic one. A

1/ Directory of Activities of International Voluntary Agencies (ECA doc. E/CN.14/SWCD/61/Rev. 2).

A peasant farmer spraying cotton crops with insecticide (Uganda)

farmer would have to make an initial investment of a comparatively large sum of money, for example, without seeing any immediate return on his financial outlay. There is a great need for efforts to be directed to making fertilizers, pesticides and improved seeds more economical and within the reach of all farmers, if necessary by Government subsidy. Multilateral, bilateral and voluntary agency assistance can also do much to promote such programmes, especially in the initial stages.

In such programmes priority should be given to the use of fertilizers, which are economical and involve moderate application. This would be the case particularly in connexion with traditional food crops which do not offer financial prospects for heavy investment in fertilizers, etc. An increasing number of countries are recognizing the importance of increased use of fertilizers, pest control measures, etc., as a means of improving and raising production and incomes for rural people. Fertilizers must therefore be put within reach of the average farmer and not just a few relatively well-off people in the rural economy.

Governments undertaking such programmes on a national level will have to commit substantial resources to them. In most countries, sufficient foreign exchange will be required to purchase the fertilizers, pesticides, chemicals and agricultural equipment that will be necessary. Individual farmers and co-operatives will require financial assistance in the form of credit to purchase supplies. The success of such programmes would depend not only on soil suitability, but also on supporting services such as credit and extension, adequate distribution services of seeds, fertilizers, etc., and in some countries, modification of the land tenure system may be needed to suit what is essentially large-scale intensive agricultural production.

Countries which have not yet done so should consider seriously the possibilities of undertaking national high-yielding variety programmes. In initiating such programmes, many technical, economic and social issues have to be taken into account, since the programme would have significant effects on national economies and individual well-being. Use of new techniques or high-yielding variety programmes is not by itself sufficient. Efforts to involve all the farming community in the programme, extensive financing and comprehensive planning are essential if the full benefits are to be attained.

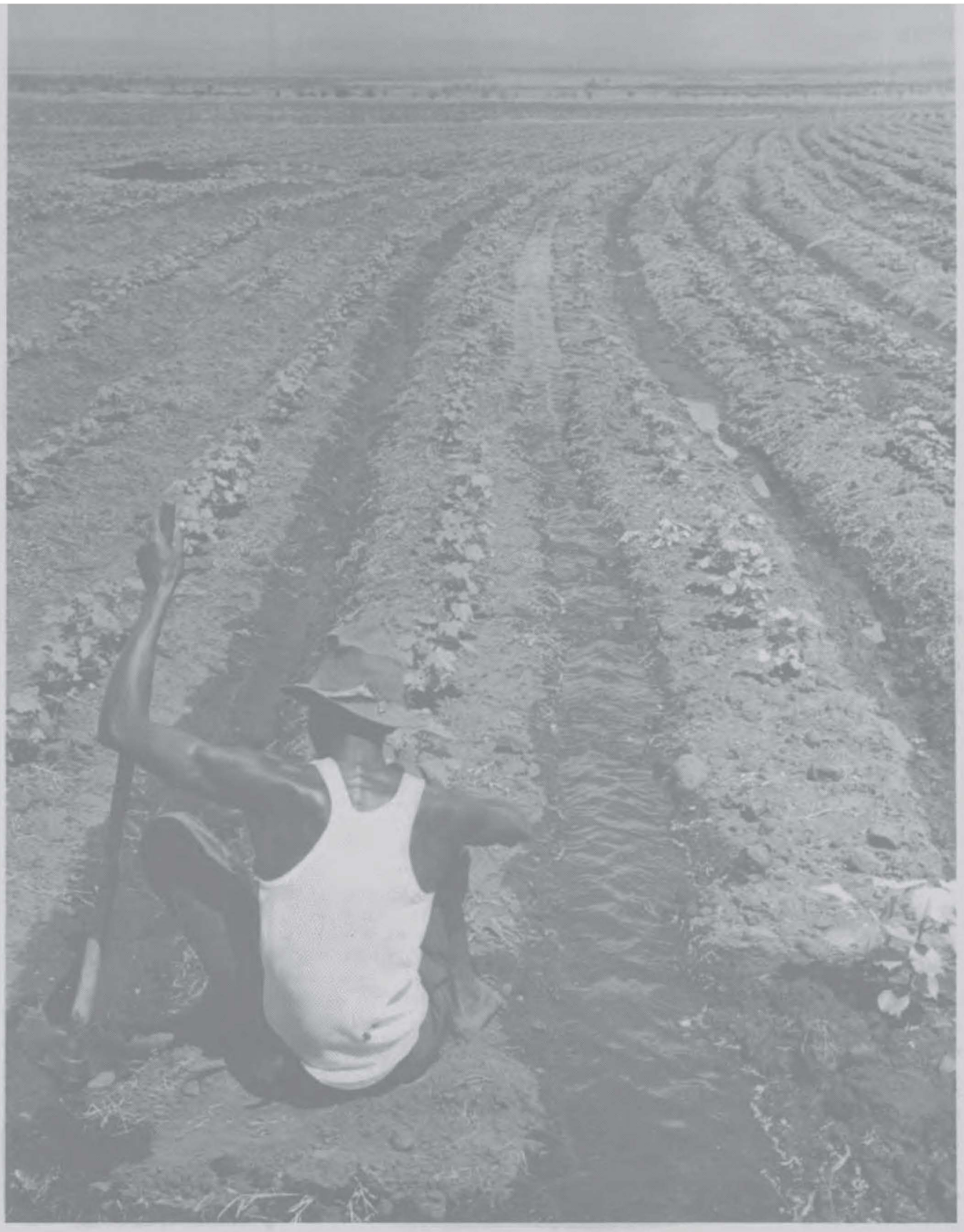
All available extension workers should be recruited for the programme, not as mere advisers to the farmers, but as expert field workers and demonstrators. A widespread regular educational programme aimed at the farmers and the suppliers of inputs and credit should be carried out through whatever communications media are available. Drying, storage, processing facilities, transportation as well as marketing facilities would need to be provided. Price incentives would be necessary to get the programme started and price stabilization would be essential to its ultimate success.

In initiating such programmes, countries should take into account the likelihood that a successful national programme would produce local and even national surpluses. If it is intended to utilize these surpluses entirely within the country, the best use to which they can be put should be carefully worked out. If the programme is aimed at export, market research would need to be undertaken and facilities for export developed.

It is probable that permanent changes in farm management and organization would be required, and governments should be prepared to adopt national policies that would encourage and reward efficient farm operations on good land and remove marginally productive land from crop growing. Smaller areas than would have previously been required would suffice to produce the food necessary for self-sufficiency and possibly for export, and alternative uses for the remaining land should be explored. Animal production and the planting of forests are among the possible uses to consider.

Improvement in agriculture requires much research work and much of it is rather expensive for many countries. However, there are large ecological regions extending often over several countries where problems display a striking similarity. Use of fertilizers, restoration of the organic composition of soils of grassland plains, introduction of high-yield seeds, to mention just a few examples; the solution which might be found to these problems in a certain well-equipped country would certainly be of value for other countries in the same zone. It would seem, therefore, that it would be advisable to co-ordinate efforts and organize research on an inter-state basis.

Research and training projects will continue to be needed. Research in plant breeding is always necessary in order to maintain continuous improvement in varieties. Also research on soils, water, plant nutrients and many other factors of crop production and management must be continued to provide new and more profitable approaches to the optimum level of crop production. Centres to train extension workers in the practical aspects of crop production deriving from use of improved agricultural techniques and practices need to be set up. The training functions of specialized regional programmes could be used for this purpose.



A peasant farmer in the foothills of the Ruwenzori mountains (Uganda), learning to master the process of continual gravity irrigation

CHAPTER III

WAR ON WASTE

Food production

The need to grow more food to feed the growing population in African countries has been emphasized by a number of international organizations and African governmental themselves. Anxiety has for some time been expressed over the disastrous consequences of food production woefully lagging behind the growth of the population. «Grow more food» campaigns in one form or another have been started in many countries, and such schemes have prominently featured in the economic planning programmes of many countries. However, attempts at increasing food production have on the whole, not been very successful. In some cases, increased food production has even led to greater wastage of food mainly through deterioration and losses resulting from bad storage methods. These tend to cancel any efforts made in increasing food production and improving the nutrition standards of the masses of the people. Waste, in this context, may be defined as the economically avoidable loss of produce.

The provision of adequate food for the ever-increasing population is a policy of all African governments. Besides promotion of new agricultural techniques and high-yielding varieties of seed and fertilizers, an increase in food production can be achieved through reduction in food losses and wastage, particularly harvested produce. One of the ways to do this is through improved storage of food.

Storage of foodstuffs

Storage of produce is carried out for three main purposes: to retain a supply of food, to retain seed for planting the following season, and to service a trading system. Storage is therefore carried out by the producer, the trader, the processor and ultimately the exporter; and at all these levels the storage methods adopted have a bearing on the deterioration and wastage of foodstuffs.

Urbanization is proceeding rapidly in all African countries, and increasing quantities of food will need to be channelled to the expanding towns. This means that storage will assume a steadily increasing importance, and that it must be adapted to handle a wider range of products, including more foods of a perishable nature such as fruit, vegetables, eggs, fish and meat.

Loss and waste of food is not confined to foodstuffs alone but also to livestock as well. In the production of livestock, major losses occur during breeding as a result of reproductive disorders and high prenatal mortality. Inadequate nutrition and gastro-intestinal parasitism are among the major causes of production losses after weaning. In mature livestock, diseases are responsible for important losses of meat, milk and eggs.

Since there is a heavy dependence on cereals in most African countries, estimated by FAO (1966) to be of the order of 60 per cent in some countries and between 70-85 per cent in others 1/; the main concern here will be with produce such as maize, sorghum, millet, wheat and rice, beans, peas, groundnuts, cassava, yams and plantain; fruit and vegetables are also included, as they form part of the staple diet in many countries.

Losses and wastage in food production occur at various levels and at various stages - planting, weeding, harvesting, processing, packing, transportation, storage, etc. Poor or inefficient practices at each of these stages contribute to the serious losses which occur during food production. Saving on physical losses and deterioration in quality, and ability to hold grain safely in order to service a trading system are basic objectives in all programmes to improve storage facilities.

Agricultural production data may show some increase in food production, but not all of this food is fully utilized by man. Between the time the crop is harvested and its consumption, considerable quantities of food are wasted or lost by being eaten by pests, particularly insects and rodents; also, losses in quality (nutritional and commercial potential of the produce) occur whenever these pests and micro-organisms (fungi and bacteria) have been able to grow on produce or when methods of drying or processing destroy the nutrients. In some countries, losses after harvest (i.e. during storage, processing and marketing), may be as high as 50 per cent and, in some countries, higher 2/.

In many African countries people live in relatively isolated communities, each producing its present food requirements plus small quantities of food or other agricultural products to provide money for taxes and consumer goods - clothing, etc. Since there are no proper storage facilities, a sufficient quantity is grown for feeding the family for about three months or so; immediately after harvest, when there is a temporary glut of food and prices are low, produce is sold to traders at prices which often result in losses to the farmers. Thus one of the major contributory factors to the economic non-viability of farming is the farmers' inability to handle and store food efficiently so that he can sell good quality produce when it is scarce and commands a high price. Efficient food storage facilities are therefore a very necessary factor of food production. The standard of living of a rural community depends not only upon the range of foods grown and the capacity to grow in quantity, but also upon the facilities for efficient handling, drying, storage and marketing.

1/ FAO - Handling and storage of food grains in tropical and sub-tropical areas, 1970, page 9.

2/ Idem., page 2.

Preservation and storage of produce, if carried out efficiently, can be a major contribution to the increase in the supply of food. This is a recognized fact in developed countries, but in developing countries, little attention has been paid to this aspect of the problem.

Storage methods

In considering this problem it is necessary to distinguish between produce for export and that grown for local consumption. In most African countries produce for export - usually cash crops - is handled by specially established marketing boards of government departments which finance storage and pest control measures designed to minimize losses. Here, we are only concerned with locally grown produce for local consumption, which is handled by the farmer, the trader and in some cases the consumer.

Storage methods used in African countries are mostly traditional, having been used for generations with little or no modification. Produce is stored in cribs, sheath, pots, sacks and earth granaries. The latter are often made of straw and bamboo plaits, interwoven with palm leaves or cotton stalks and plastered over with a mixture of mud and cow-dung to prevent the grain from leaking out. Such receptacles usually stand under cover on layers of straw or paddy husk or on a raised wooden platform. The variations detectable in construction are often related to climate, local natural resources and customs which also influence the choice of storage methods.

SOME OF THE TRADITIONAL METHODS OF STORING GRAIN AND PRODUCE —

Non-portable baskets of woven grass

Storage bins made of plant material only

A method of storing cob maize on a platform

Farmer's grain store built of dried mud and straw (Chad)

These containers achieve varying degrees of success in applying the basic principles involved in the safe storage of food grains, but are often unsuitable, especially for long storage periods, resulting in deterioration and damage to the produce.

Though many of these storage structures may provide fairly adequate protection from the weather, they are not suitable for preventing rodent damage and insect infestation. Such structures, however efficient they may seem can still habour insects and are susceptible to attack by rodents. They also permit the free movement of moisture and water vapour into the produce, which causes dampness to the grain.

There are many cases where grains are rendered completely unfit for human consumption through bad storage. Cases are not uncommon where tons of maize in storage have been reduced to a dirty brown dusty mass interpersed with cavitated brown maize grains and dead weevils, all in a period of only a few months.

Too little attention has been given to improving the methods, design and construction of traditional storage containers. With minor changes in design, it should be possible to effect better control of grain deterioration through dampness, damage by insect and rodent pests during storage. There is a need to introduce the peasant farmer and the trader to modern, but simple methods of reducing wastage, preserving food and means of conserving as much of the food nutrients as possible during storage.

The contribution of improved and efficient storage systems to the expansion of food supplies has two main aspects. The more obvious one is the avoidance of loss of food that has been produced which could be consumed if it were adequately protected, coupled with the ability to hold produce in order to take advantage of seasonal rises in prices. The other is the vital aspect that the basic function of storage plays in the marketing chain from producer to consumer. Storage enables the marketing system to adjust the time and places of production to the times and places of consumption, which means that the rate of flow into the market can be adapted to consumer needs.

Losses and wastage of food - Main causes

Losses and wastage of food occur at various levels and at various stages in food production. Some causes of loss are initiated from the time of seed planting. For instance, too early or too late seed planting may expose a growing crop to ravages of certain insect pests or weather. For example, in Ghana, maize rusts (Peccinia Sp) attacks are more severe on late-sown maize. Other losses occur between germination and harvest, still others occur between the harvest and the consumer. The latter are the most expensive of the lot.

The main causes of losses and wastage of food could be summarized as:

(i) Too early or too late planting (as explained above);

(ii) Lack of adequate protection of crops against insects, bacteria and fungal attack;

(iii) Poor husbandry practices such as insufficient weeding, etc.;

(iv) Incomplete harvesting of crops. Cases are common where a proportion of the crop is left unharvested because of being in excess of the family's immediate requirements or lack of storage facilities; or sometimes because of shortage of labour;

(v) Inadequate drying and cleaning of the grain. The main problem in many rural areas is that of preparing produce adequately before storage. Proper drying and cleaning are important. Grain which is not properly dried is easily attacked by insects and fungi and damage to grain during harvest may increase its susceptibility to attack by insects and fungi, so is inadequately cleaned grain mixed with foreign matter;

(vi) Bad packing - this may result in loss of produce through spilling during transportation or storage - with small grains such as sesame seed and sorghum, a torn bag means the loss of a considerable proportion of the contents.

(vii) Poor transportation facilities. This covers bad roads, lack of feeder roads, damaged bridges, etc. The improvement and efficient maintenance of farm to market roads is important since bad roads and damaged bridges delay transport of foodstuffs from farms to markets and cause the foodstuffs to rot unnecessarily.

(viii) Inefficient farm operations and ignorance of proper methods of food storage and preservation.

Poor storage: Poor storage conditions are said to be responsible for over 20 per cent wastage of stored food. In many African countries deterioration during storage accounts for as much as 25-30 per cent wastage in food production. Moulds, insect pests, fungi and rodents, between them are probably responsible for over 80 per cent of this wastage. In many countries weevils do a lot of damage to stored food products such as maize, corn, beans, millet and peas. This damage involves great loss in weight and in addition results in the unwholesome condition of the grains.

As an illustration of the amount of damage and loss that can be incurred through bad storage condi-

tions, a few examples, by no means the worst ones, can be quoted here.

Trials conducted in Northern Nigeria 3/ indicated that unthreshed sorghum stored for nine months without being disturbed suffered a mean corrected weight loss, due to insects, of about 8 per cent; in some cases, however, a quarter of the crop was lost. From this work, it was estimated that at least 4 per cent of the sorghum and millet grain in store was lost to insects each year. For sorghum, the loss in 1962 was 115,000 tons, valued at £2.6 million, and would have been sufficient to satisfy the usual cereal requirements of 1.3 million people.

Similarly, in a recent (1964) survey of maize storage carried out by the Entomological Section of the Ministry of Agriculture in Ghana covering storage scattered all over the country in cribs, pots, and earth granaries, the wastage due to insect pests of stored produce alone was put at 20 per cent. In terms of weight, this is between 35,000 and 40,000 tons valued at £1,080,000 to £1,200,000. This shows the extent of damage caused by insect pests on maize alone. Taking into account all the produce affected, the total loss must be enormous. Loss of quality is difficult to measure and losses in nutritive value even more so.

As FAO and international conferences are now pointing out, in many countries the extent and level of losses after harvest have not been fully assessed, but those assessments which have been made of the quantities of food which are damaged and lost indicate that there is a serious wastage. An FAO estimate of annual losses of produce in store in certain African countries has been given as about 30 per cent of the total subsistence agriculture production. Prevention of those losses would result in:

(a) More and better food for consumption;

(b) More food available for farmers to sell;

(c) Higher living standards for farmers;

(d) More food available for non-farming population;

(e) Higher quality and competitiveness of export produce in world trade;

(f) Sound economy for the country.

A reduction in losses of 20 to 10 per cent of the total crop may be all that is needed for the subsistence farmer to raise himself above that level.

3/ FAO, The State of Food and Agriculture, 1968, page 119.

Losses and wastage of food - suggested measures of reducing them

Any programme aimed at reducing losses and wastage of food, to be successful, needs to involve the participation of all farmers and any measures suggested must be well understood and applied by all farming communities. This calls for an extensive educational programme aimed at teaching farmers use of new or improved methods of food production and storage. In promoting such educational programme, use of the mass media - press, radio, T.V., etc. - as a means of reaching the greatest number of farmers has been found to be effective in a number of countries, especially when supplemented by a team of extension workers for demonstrating new techniques and assisting farmers in adopting them.

It is not possible to completely cut out all losses as a certain amount of losses and wastage is inevitable. However, various measures can be taken to reduce losses and wastage of foodstuffs. These measures, to be successful, should cover all phases of production, i.e. seeds, plant, harvesting, threshing, transportation, storage and consumption, the main emphasis being laid on an efficient and adequate storage system. Each of these phases requires individual attention.

Seeds: Use of high-yielding varieties, selected or bred by plant breeders to fit into the environment, eliminates wastage. Seeds should be stored under proper conditions of temperature and humidity with the necessary protection against damage to embryos by insect pests, fungi , etc. Sowing at the right time and under favourable conditions of weather and soil is also a very important factor in the success of the crop.

Plant: Protection of the growing plant by, among other things, spraying, dusting, and adequate weeding, is necessary to ensure a high yield.

Harvesting: Methods and time of harvesting are important factors in the deterioration of produce, though these vary with the country and the product. Harvesting before the crop matures usually means a lower yield, and also a higher proportion of immature seeds which deteriorate more rapidily.

Harvesting conditions should be such as to ensure that only mature crop is harvested. During harvesting, threshing, shelling, steeping, and cleaning, damage to the grain can occur which facilitates attack by pests. Care is required to reduce damage to the grain to a bare minimum. In the case of delicate and perishable produce special care should be exercised in handling the produce to avoid bruises, cracks and cuts which serve as easy openings for fungal and bacterial attack.

Harvesting should be followed by immediate and efficient drying of the grain to a safe moisture content

before storage 4/. In countries where maturity of the crop coincides with the beginning of a dry season, the most popular method of drying is by exposure to the sun. Drying may commence before the crop is harvested, e.g. maize cobs are left on the standing plant for 3 to 4 weeks after maturing before they are harvested; but other produce, like groundnuts, are dried by placing the freshly lifted plants with pods attached on the earth and left exposed to the sun for upwards of two weeks. In other cases scaffolds are constructed in the field and bunches of panicles of paddy are hung on these for between 1 and 4 weeks. But the most common practice is to spread the harvested, threshed or shelled crop on the ground or on a specially prepared area, e.g. matting, sacking or in some cases concrete, and expose it to the sun and wind.

4/ A 12 per cent moisture content is considered to be sufficient.

SOME OF THE TRADITIONAL METHODS OF DRYING GRAIN --

Unshucked maize cobs hung in a bunch from a tree

Food grains dried on a timber and grass platform over a fire, and covered by a thatched roof

Produce on a platform covered by a permanent thatched roof

These traditional methods have a number of defects and shortcomings. The effect of exposing products to contamination by dust, stones, animal droppings and other foreign material while drying on the ground or on matting spread on the ground accelerates deterioration because grain which has not been well cleaned is more likely to heat than sound grain of the same moisture content, thereby contributing to grain deterioration.

One of the traditional ways of winnowing is by throwing the grain into the wind which carries away the dead grains and chaff; this method however, allows stones, earth and a certain amount of extraneous matter to remain in the grain. In some countries special screens are used in an attempt to remove clods of earth and other foreign matter, but in very few countries is a sieve used at the village level to remove foreign bodies which are larger and smaller than the grain. Use of a sieve is highly recommended for this purpose.

Drying should be done in a shallow layer by exposure to the sun on a material which prevents dampness and dust from the ground from reaching the produce, such as trays or plastic sheeting. Breaking of the grain, during drying, can also be minimized by the use of trays, mats or plastic sheeting which provide ease of spreading, collecting and respreading. Care is required to avoid too rapid or overlong drying as some seed may become bleached, wrinkled or scorched; and, with some types of produce, «case-hardening», which damages the seed.

A variety of traditional drying methods can be made more efficient by simple modifications which are inexpensive and can be carried out by the farmer himself. For example, a simple wooden platform with matting or plastic sheeting spread on top would provide a safeguard against contamination by dust, stones, animal droppings, etc. These are used in a number of countries and can be adopted by many others.

A farming family threshing barley (Ethiopia)

The Allgate drier, showing the method of closing in order to give protection against rain and insects

Transportation: Produce is moved from one place to another in a variety of ways, all of which may affect its quality. Containers such as baskets, gourds and sacks made of natural fibres, such as jute, sisal, rice or wheat stalks, are used. Some of these containers are often unsatisfactory in preventing losses from spillage and quality deterioration especially when transported over long distances and on bad roads. Rupturing of sacks, soiled or wet sacks, result in losses of produce and deterioration in quality. There is a need to ensure that containers used for transporting grain can stand against rupture and dampness in order to minimize losses and preserve quality. A good transportation system, implying adequate transport and well-maintained feeder roads, is equally important.

There is a big problem of conserving perishable foodstuffs during transportation. Such foodstuffs require special precautions in the chain of operations from production to consumption in order to prevent or limit the deterioration they may suffer. A typical example is transporting fish from the sea or lake to the cities or other areas of consumption many miles away.

Perishable foodstuffs carried over long distances and on bad roads must be protected from mechanical damage or physiological disorders such as over-ripeness, and must be packed in such a way that they are properly protected during handling, transport and, where appropriate, storage. If these conditions are not fulfilled, there is a grave risk that the foodstuffs will be wholly

or partially unsuitable for consumption when they reach their destination, or in such a condition that their value is considerably reduced. Farmers would do well to seek extension workers' advice in this field.

Storage: In most African countries, insects such as beetles and moths are the main pests causing losses and deterioration to stored food grains. Rodents are also a great menace in a number of countries. Food grains are liable to suffer heavy losses during storage as a result of infestation by insects, even well dried produce is not normally immune from attack by insects. If maximum benefit is to be derived from the harvest, some attempt should be made to control insect pests, many of which commence infestation prior to harvest.

Rodents equally cause extensive damage to both standing crops and stored produce in many countries. Cereals are particularly vulnerable to rodent attack, and damage to stored grain is probably greatest while it is still on the farm; in large co-operative storage depots the rodent population seldom becomes large enough to cause severe losses, although in some countries this still happens.

Losses resulting from rodent damage to stored food are more serious because rodents consume a certain quantity of the produce and foul a much larger quantity with their excretions. One rat will eat 11 kilogrammes of grain per year and contaminate three times

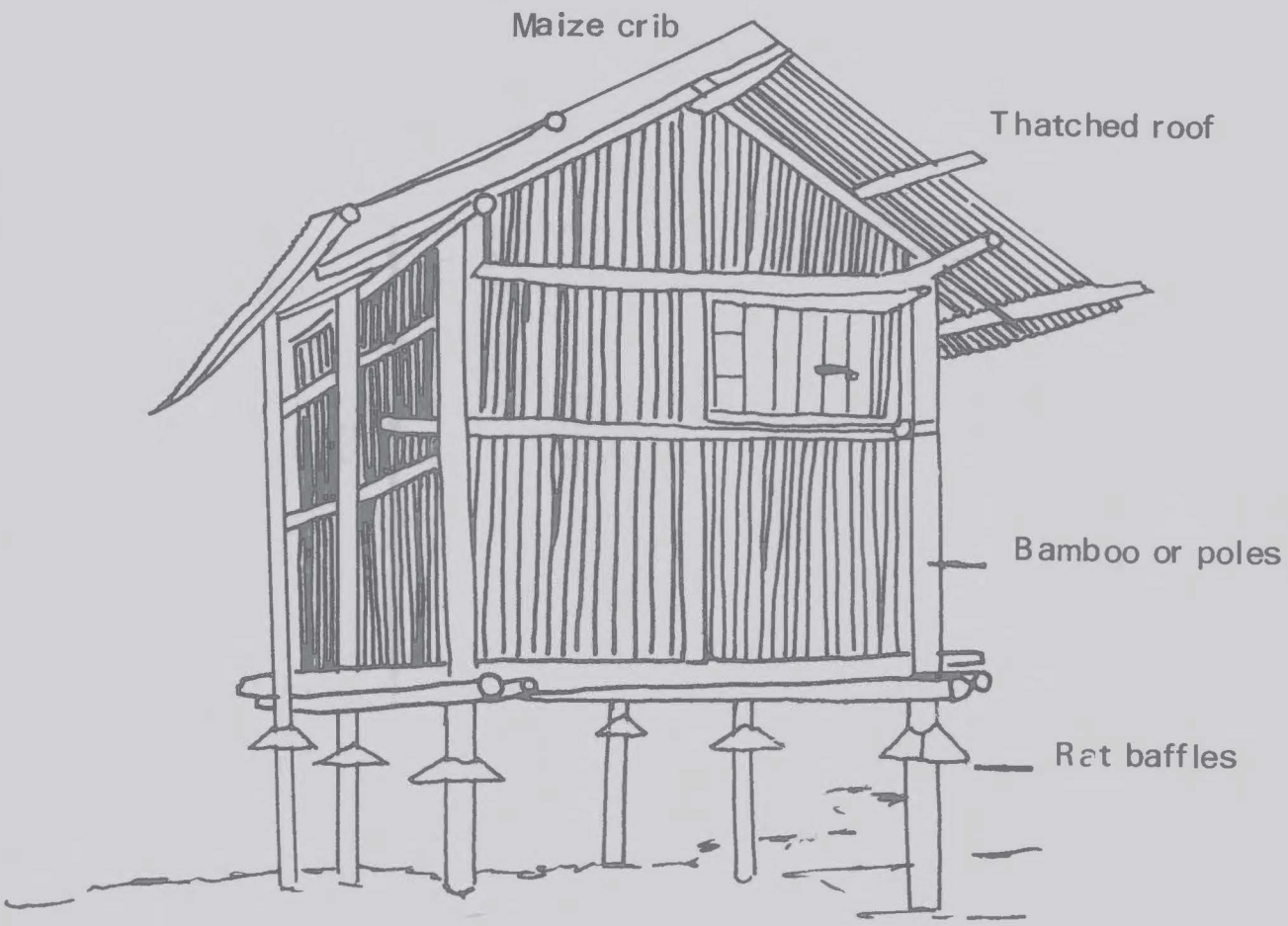
Harvest mice are so destructive to the farmer's wheat as can be seen, they not only eat the grain, but make their precarious-looking homes on the stalks. The nest is a ball of grass, woven around several stems.

as much 5/. Rodents gnaw holes in the containers; jute bags are particularly susceptible to this form of attack, frequently being damaged beyond repair. Rodents also often carry diseases which are transmissible to man. In this way, it is possible for stored food to become contaminated with rodent excretions or parasites and so become a potential source of danger to persons handling or eating it.

5/ FAO • Toward a strategy for agricultural development, No. 21, page 28.

Measures that can be used to improve storage methods include proofing storage containers against dampness and entry by pests, dusting, fumigation and attention to hygiene. Damage caused by rodents can

AN ILLUSTRATION OF DAMAGE PRODUCED BY RODENTS —



An improved method of storing grain. Use of rodent baffles made of a thin sheet of metal formed into a cone around the legs of a grain store or crib, placed about 45 cm above ground so that rats cannot jump over them, and away from trees or buildings from which rats can leap, afford complete protection from attack by rodents. The cribs should not be more than about 125 cm wide to allow good ventilation of the crops. If screening is used, this can also reduce insect infestation.

also be minimized through proofing, repelling, trapping and poisoning. Many traditional storage methods can be adapted to include rodent proofing, and this is being done in a number of countries.

Suitable storage should be technically capable of holding produce over a period, in good condition and at reasonable cost. If the amount of produce to be stored is small, capital scarce, and labour plentiful and cheap, very simple storage facilities built of local materials are likely to be the most economical. The main basic requirement is for improvements to make existing structures proof against rats, insects and other vermin and facilitate the use of suitable insecticides.

There is a need to study traditional storage methods and facilities aimed at obtaining low-cost structures particularly suitable for small farmers or groups of farmers. It would be advantageous if farmers could be able to acquire such structures on a self-help basis.

Experiments carried out in some countries show that wood, together with plywood and fibreboards, is particularly well-suited to the needs of low-cost storage facilities for food grains and other durable agricultural products. It is one of the most readily available materials for building and construction. When suitably treated, it is resistant to fungi and insect attacks and to weathering, though added protection is required to exclude rodents, and careful construction and good housekeeping to limit pest problems. It provides better thermal insulation than, say, concrete, and because it absorbs moisture, there is less risk of condensation within the container. The most attractive feature of these materials is their low cost.

Where improvements in storage facilities are difficult to achieve at the farmer's level, provision could be made, preferably on a co-operative basis, for the purchase and storage of all the surplus crop, that is, beyond the immediate needs of the farmer and his family. Such produce could then be stored in suitable containers and stores which are free of vermin, pests, etc. In this case efforts should be made to see that there are adequate and proper storage facilities at the various areas of production.

Products such as fruit, vegetables, fish, etc., being subject to rapid deterioration, can be stored in their natural state for any appreciable length of time only at artificially-maintained low temperatures. This storage method is rather expensive for the ordinary peasant farmer but can be effectively used by co-operatives. Traditional methods of drying, salting, smoking, etc., can, with certain improvements, be useful to the individual farmer. Dehydrating of cassava or plantain is also an effective traditional method of preserving food. This traditional method can be extensively used and expanded by setting up of dehydration cottage industries in various areas of the country. However, care should be taken to see that these industries are properly organized and operated, or else they can themselves be a source of considerable waste.

For predominantly agricultural countries, small industries could also be set up to process temporarily surplus produce, for example fish, fruit and vegetables. Most of these are plentiful only during certain months of the year. During these months considerable wastage occurs. Some form of processing,-canning for example, could take care of the surplus so that the processed product could be used during the periods of scarcity. This kind of activity is perhaps best carried out on a co-operative basis.

Irrespective of the type of storage structures or containers used, unless storage hygiene is practised, losses of stored produce will occur. Ignorance or neglect of hygiene provides an ideal set of circumstances for the rapid development of pests and deterioration of produce. Teaching storage hygiene and organization to the farmer, trader and in case of co-operatives, the warehouse foreman, is the first important step in raising storage standards and reducing losses.

Benefits accruing from use of improved storage methods may be summarized as follows:

(i) Savings in physical losses of food stuffs

(ii) Saving in quality deterioration

(iii) Increased ability to hold grain

(iv) Ability to take advantage of seasonal rises in prices

(v) Improved efficiency in grain marketing channels

Storage costs and returns: The election of new and efficient storage facilities and the purchase of equipment, application of pest-control measures, and possibly engagement of skilled staff, require an immediate input in capital. Most farmers lack this capital, so the question which must be asked before this investment is undertaken is: What will be the savings or income resulting from it and will this be sufficient to cover running and maintenance costs and possibly interest on capital used.

The cost of storage varies with the quantity of grain involved and the period over which the grain must be kept. From the information available it is clear that the small farmer, using locally-available material for the construction of a storage container, can provide himself with a satisfactory structure requiring only a few improvements in drying and insect infestation control methods.

There are many examples of the profit margin to farmers obtained through ability to store produce for several months without deterioration. Caswell (1961)

showed clearly that in Nigeria if farmers had the means to store cowpeas in good condition for six months, the results would be:

(a) A saving of foodstuffs (which at present are eaten by insects and not by man) of some 10 kilogrammes per ton;

(b) A gross profit of $12 to $24 per ton.

He points out that this could be achieved with a capital outlay of some $360 over a 10 year period, or an annual outlay (for a 25-ton silo bin with auger of about $1.50 per ton. If a simplified form of storage were used, the capital outlay would probably only be some $180. Caswell points out that in Ibadan the price of cowpeas on sale increased by some $24 to $48 per ton from the end of one harvest to the start of the next. Taking into consideration the price increase listed and the costs of providing storage, the net profit to the farmer would be over 8 per cent.

The role of storage in improving marketing: Produce should be stored at harvest when prices are low, and sold in periods of scarcity, when prices are high enough to make storage economic.

The first objective of any storage scheme should be to increase the income of the farmer without necessarily inflating the prices paid by customers. Farmers should therefore be trained in methods of storing produce safely and should be given financial assistance. Greater attention to development at this level, through local demonstration of improved handling and storage practices and the financial returns from adoption of these methods, would prepare a sound basis for raising agricultural production above the subsistence level.

Consumption: During the periods of plenty, food is often wasted by preparing more food than can be consumed. In the end, much of it becomes redundant and has to be discarded. Added to such losses are those which are due to poor methods of food preparation. Losses in this connection can be in weight or quality due, for example, to excessive peeling, or some vitamins destroyed by cooking. It is not uncommon to see over-boiled vegetables, resulting in destruction of certain nutrients. A proper knowledge of preparation of food and processing left-overs in the form of chicken or animal feed could effect a saving in food supplies.

Losses and wastage of food - State action in reducing them

Some legislation relating to the quality, storage and transportation of foodstuffs is required, at least to ensure minimum but efficient storage facilities and transportation of produce. This could involve periodic examination of storage places by the Ministry of Agriculture inspectors who could also give advice to farmers in storage methods and treatment of produce. Economic incentives for quality of produce are essential if standards of products are to be improved. There is also a need to publicize the efficient means of stopping wastage and loss of food and to educate food producers and those handling foodstuffs in one form or another, especially women who grow most of Africa's food.

An agricultural extension staff should, through proven extension methods, educate all concerned on the necessity to reduce losses and wastage in food production to the barest minimum. The educational process should be intensive and well-planned to embrace not only farmers but also those who buy the produce from the farmers soon after the harvest and, in case of co-operatives, those responsible for bulk storage in silos and warehouses. The long-term plans could be worked out for producers in general, through schools and colleges where Domestic Science or Home Economics is taught. Food and Nutritional Boards should also constantly emphasize the need to avoid wastage of food.

Appropriate Government policies, coupled with advisory and financial assistance in the construction of improved farm storage facilities, merit consideration by African Governments. Governments should also consider initiating programmes to establish local storage facilities where farmers may deposit grain and receive credit against it. The supply of credit on favourable terms to farmers, traders and co-operatives for the erection of improved storage facilities would contribute substantially to improving the situation. This is particularly important for co-operative storage involving long-term investments that are beyond the reach of membership financing. The general tendency hitherto has been to concentrate on direct purchasing at harvest time and to shoulder the consequent burden of central storage and financing.

There is an urgent need for governments to establish extensive storage construction programmes, including special training programmes (both formal and informal) for plant managers, advisers on farm storage and other specialists. Other government services which have proved effective in improving storage construction and procedures are the publication of technical information and the furnishing of practical advice by extension specialists.

International assistance

The United Nations and its agencies, together with a number of international voluntary agencies, have for a number of years been very active in this field giving both financial and technical assistance to African governments to improve their food supplies, including improvements in quality and storage methods.

The FAO and its FFHC, through national committees, have been concentrating on specific themes which they consider particularly important in the national

context, such as nutrition education, farmer training, etc. Such committees carry out much of their programmes with local resources, but also outside assistance is often provided to stimulate self-help action in rural communities by providing needed equipment and expert advice.

FFHC has been particularly anxious to help fight waste at the village level by introducing better methods for storing crops, the use of safe pesticides with which the farmer can destroy insects and rodents or prevent disease, and more efficient methods of processing crops, preserving food, etc.

On the part of voluntary agencies, latest information available indicates that in 1973 there were about 10,000 agricultural development projects in Africa involving millions of dollars, which were financed by international voluntary agencies 6/. Though most of these were concerned with agricultural development in general and improvement in food production, a number of projects were specifically concerned with the promotion and improvement of storage and preservation of produce. Examples of these are: The assistance given by Catholic Relief Services (CRS) to Senegal in the design and production of low-cost village granaries, the supply of equipment for village grain storage projects in Malawi and contribution to construction costs of a warehouse in Dapango, Togo, by OXFAM; work on repairing and reconditioning of the central warehouse for food protection in Tunis by Catholic Relief Services (CRS); and the International Co-operation for Socio-Economic Development (CIDSE) projects in Zaire and Tanzania concerned with the improvement of storage and preservation of food products at the village level.

The concern of international agencies in this field is well illustrated by these few examples. Their work, which includes financial assistance visits by experts, field workers, demonstration farms and farmers' forums, has contributed and continues to contribute substantially to the promotion and improvements in the handling and storage of food products at the village level. The development of agriculture and bringing about an increase in food production in African countries is a matter to which international agencies are paying special attention. Maximum co-operation between the agencies and the national governments is essential if any appreciable improvement is to be made in the situation.

Summation

In summing up, it could be said that the development of agriculture and the marketing of produce are still neglected in some African countries. In others they have to compete with educational programmes, defence, development of hydro-electric schemes, heavy industries, etc.

The cost of staple food commodities plays a vital part in the cost of living and in the living standards of the majority of the population. It is therefore indispensable for every country to take measures that would ensure improvement in food production, give the producer a fair price for his products, and make such products available to the consumer at a reasonable price. Efficient storage and marketing are key activities in safeguarding both consumer and producer interests. Detailed economic analyses of farmer and small-trader storage facilities have rarely been undertaken in most African countries. The local consumers' increasing demand for food and the always-present export demand for higher quality produce, the fluctuations of supplies available and the fluctuations in annual production, all require an operation of properly-organized storage facilities and marketing systems.

A strong tendency towards price instability is inherent in the storage and marketing of agricultural products because of the seasonal nature of output, and difficulties in adjusting production to demand for basic foodstuffs. Price fluctuations are particularly severe in African countries because producers are forced to sell immediately (or even before) harvest to meet living expenses, to repay debts, or because of lack of proper storage facilities. Farmers require not only facilities for handling and storing their produce, but also for marketing it, as well as facilities for credit if they are to be able to overcome the present pressures forcing them to sell the crop as soon as it is ready for harvesting. At present many peasant farmers store only the grain needed for their food and seed. Lack of capital may also mean that a farmer harvests a crop, such as coconuts or coffee before it is fully matured in order to obtain some money, so that on the one hand quality standards are not met, and on the other only a small financial return is obtained.

Credit and proper storage facilities would provide the farmer with means to overcome a situation which forces him to sell immediately after harvest when prices are low. At present the farmer's inability to sell when food is least plentiful prevents him from obtaining better prices and restricts the quantity grown to very little more than is needed to feed the farmer's own family. Consequently ability (however small or great) to increase production is limited, which in turn prevents the area or country concerned from adequately feeding the increasing urban population. In this way, the farming community loses money and the country loses income because it has to import food to fill the gap.

The problem of waste is widespread in African countries. A strategy of attack must depend, in the first instance, on the human and material resources that can be mobilized nationally and that can be allocated for

6/ ECA Directory of Activities of International Voluntary Agencies in Africa, April 1972 (as updated).

waging war on waste. It must also be based on the material and financial resources that can be mobilized and allocated from international sources. Finally, the strategy has to be related to the clearly defined objectives to be attained at the national or local level. The enemy «waste» must be identified in each country, together with the available resources and specific objectives, before priorities can be established and external resources brought in as reinforcements.

The main spheres of action to eliminate or reduce waste should include measures for:

(i) Control of animal diseases

(ii) Improvement of tillage and planting operations

(iii) Plant protection against disease, pests and weeds

(iv) Improved handling of produce from harvest through to consumption

(v) Improved storage and preservation of produce, cereals, pulses, and perishables

(vi) Biological control of rodents

(vii) Efficient marketing and transportation organization for all products

(viii) Economic utilization of by-products; and

(ix) Demonstration and training programmes in the avoidance of waste at the village level.

It is important that the human resources required for the production and use of agricultural products must be mobilized. People must be made aware of the magnitude and scope of the problem of waste and shown how to prevent or reduce losses. Then the vast wealth of knowledge already in existence must be harnessed. Ways and means of directing it where it is most needed must be found. Essentially this will be done through training programmes, through practical demonstrations, technical and non-technical publications, including the mass communications media of press, radio, and television. Knowledge, however, is not enough. Financial and material resources must also be mobilized and their use co-ordinated for optimum effectiveness. The goodwill, the available manpower, expertise and financial resources of all so committed must become part of a unified whole. The resources, particularly of multilateral and bilateral organizations, should be carefully phased and integrated to supplement those available nationally to implement projects for the war on waste.

CHAPTER IV

FISH FARMING

General observations

It is an established fact that protein from foods of animal origin is dangerously lacking in everyday diet of much of the population of Africa. This deficiency is responsible for a great deal of ill-health and many deaths each year in many African countries. Even in the absence of ill-health, protein deficiency leads to poor growth, muscular weakness, and an increased susceptibility to disease.

A WHO team which conducted a nutritional survey in Kenya during 1965 found that among the tribes in the thickly-populated central province only 50 per cent of the population ate meat, milk or eggs, and then only very occasionally, whilst the rest of the population was on a vegetable diet. The team indicated that, until recently, it was estimated that there were approximately 40,000 cases of kwashiorkor, the protein deficiency disease, amongst children in Kenya per year 1/. Furthermore, they thought that this figure might have to be revised upwards in the light of current surveys. Their general conclusion was that lack of animal proteins in the diet of the majority of the people of Kenya was very substantial. The Kenya example is typical of many African countries and is by no means the worst. Any steps which could be taken to increase protein production and its consumption would be welcomed on dietary and medical grounds.

The supply of meat from game and other various domestic animals is not only generally inadequate, but often very expensive for most people and has so far failed to provide the population with the balanced diet needed. Vegetable proteins available for the human diet do not contain adequate amounts of some of the essential nutrients required for growth and health. Thus, by themselves, they cannot provide the body's needs. It is therefore imperative to increase protein production, both by intensification of the existing means of production, and by the introduction and development of additional sources of protein in order to add the necessary proteins in the diet in sufficient quantities and at a low cost.

Although vegetables are widely used in Africa, vegetable proteins, as stated above, cannot fill fully the protein need in the human diet. Furthermore, the amount of land in many countries suitable for growing them is limited, and this limitation increases as the human population continues to increase and press upon the land. In some countries, cattle, or any other domestic animal for that matter, is raised for prestige purposes and not as a source of meat; whereupon despite the large number of cattle in some countries there is a scarcity of meat. In other countries, animal protein production can be expanded only with great difficulty in some instances because the land cannot be spared from production of other needed human foodstuffs, and in other instances because endemic animal diseases make the raising of livestock impracticable. Ultimately we are left with developing and utilizing water-produced protein supplies.

Fish is high quality food containing a high percentage of first class protein. It is rich in vitamins and also contains variable quantities of fat, calcium, phosphorus and other nutrients important to human health and growth. Fish in many ways is more nutritious than most meats from warm-blooded animals. Nutrition experts agree that fish, with the addition of a variety of vegetable products, constitute a completely balanced diet.

Fish culture, or rearing of fish in man-made water reservoirs is one of the ways of increasing the availability of food rich in protein. One of the advantages of fish culture is that the protein it produces is generally more economically obtained than that of agriculture, which calls for fertilizers and protein concentrate supplements for feeding livestock such as pigs, poultry, etc. Another advantage is that animal protein produced in fish ponds may exceed the production from agriculture on an equal area. That animal protein may be produced in ponds cheaply and in large quantities is important to a national economy and well-being. Low production costs mean low food prices, which, in turn, influences the general cost of living. Since a large part of the protein now lacking in the diets of many African families could be supplied by fish, a fuller and widespread development of fish culture should be encouraged.

The aim of fish culture is always to achieve the highest possible fish production in any given circumstances and in the most economical way. Complete control over the physical, chemical and biological factors, which either directly or indirectly influence fish production, can rarely be achieved by management in natural waters. Despite good management, production may be limited by such factors as water being too deep, absence of essential fertilizers, excessive invasion by water plants, etc. In man-made reservoirs, on the other hand, these adverse factors can easily be kept under control and high fish production achieved.

In a short chapter of limited scope such as this, it is not possible to cover the subject in depth, discussing in detail all aspects relating to the technicalities and an assessment of fisheries development potential. Equally, since thorough biological surveys and fish population studies have not been undertaken on the inland waters of most of Africa, the amount of fish available for catch is not known and similarly are the required production targets. In the circumstances, the following discussion comprises an attempt to show, in general terms, what advances have been made in the field of fish farming, the potentialities and what can be done in African countries, and the obstacles to its full realisation.

1/ FAO, Fisheries development possibilities. Report to the Kenya Government, No. TA 2144, page 4.

Construction and stocking of ponds

Although it is not intended to go into the mechanics of fish farming as stated earlier, some elementary knowledge of how it is done would be useful in the discussion of the subject.

A fish pond unit should be of economic size. It should be at least one-eighth of an acre 2/ (approximately 500 sq. meters) although topographic conditions may not permit this in some cases. An adequate water supply is important; if there is not enough water all the year round, the ponds will dry up and fish will die out.

If fish ponds are made at a suitable time, the work will be easier and the cost less than if they are made at another time. The best time of the year for making ponds in soils such as clay and laterite is at the end of the rain season when the soil is soft, rather than at the end of the dry season when it is very hard. The best time of the year for making ponds in swampy ground is in the dry season when the ground is not flooded with water.

Fish ponds should have a water inlet, outlet and an overflow where water can flow out of the pond in emergencies, such as when there is very heavy rain - without breaking the walls.

Fish for stocking ponds are best obtained from Government fish farms or fish breeding stations. It is possible sometimes to get fish for stocking ponds from other ponds, streams or rivers in the same area. This, however, should be done under expert supervision, because the wrong kind of fish can be used if the pond owners do it themselves. Ideally, there should be a small fish-breeding station for each area of fish farming development.

Young fish eat small animals in the water, small single-celled plants and some plants and small animals from the bottom of the pond. Fish over three inches ($7\frac{1}{2}$ cm) become feeders mainly on plants, some vegetation and bottom algae. Artificial foods, such as mill sweepings, bran, etc., are readily taken by fish in ponds. There are some young fish that feed on insects and others which eat snails.

A fence should be constructed around a pond to keep out predatory animals, such as otters, which eat a lot of fish from ponds. A wire mesh is often used, but wooden stakes can also be used.

It is possible to achieve a production of approximately half-a-ton of fish per acre (approximately 1,250 kg. per hectar) per year without supplementary feeding 3/. However, both the quality and quantity of fish can be improved by fertilizers, thus increasing the food available for fish to eat 4/. Phosphate is a good artificial fertilizer and can be put into a pond after the end of the rains. In smaller dams or larger ponds fish can be fed directly with wastes such as maize hullings, beer wastes, waste vegetables and so on.

Rearing of fish may be advantageously combined with other types of farming. This makes for over-all efficiency, as by-products from some of the activities are used «on site» in other branches. An ideal situation is to combine fish with a vegetable garden, perhaps under irrigation, and some form of intensive livestock-raising, such as pigs or poultry. Waste from the vegetable garden is used for the fish, as well as manure and food wastes from the animals, small, under-sized fish, and fish offal can be fed to the domestic animals, and excess mud from the bottom of the pond can be used for fertilizing the garden.

Some advances made in fish farming

Fish farming is well developed in some countries and not so well in others. A number of countries still regard it as a pastime and it is therefore not taken seriously.

Madagascar is one of the countries with a highly developed fish culture with a production of about 6,500 tons in 1972. In 1966 there were 55,000 ponds in Fianarantsoa and 22,000 in Tananarive provinces 5/. Fish ponds are often made in close connection with irrigated rice cultivation. In Madagascar, fish culture dates back to the middle of the 19th century.

Kenya also has an extensive fish ponds scheme, especially in Nyanza and Western provinces. No recent figures are available, but in 1966 it was estimated that there were 10,000 ponds in the Western Region alone. Kenya has a large number of dams built for supplying water to cattle during dry weather and many of them were stocked with fish. The dam at Aruba near Voi (100 - 200 acres in size depending on rainfall), is currently producing 25/30 tons of fish per year. Fish fingerlings from the fish culture farm at Sagana station - a Kenya Fisheries Department, 80 acres of ponds are used for stocking ponds and dams throughout the country.

The Bukumbi Fish Ponds in Tanzania, commissioned in 1958, have also achieved remarkable results, so have the fish ponds in Northern Ghana. A number of other countries pursue an active policy of stocking dams, etc. For instance, in 1961 Zambia had about 20,000 hectars of dams, mostly for water conservation and irrigation purpose; many of these were stocked with

2/ FAO, Kenya Report, No. TA 2144, page 52.

3/ Ibid., page 52.

4/ FAO - Fish Culture in Central East Africa, Rome, 1966, page 98.

5/ FAO - Fisheries Circular No. 103, October 1966, page 14.

fish. In Uganda some cattle-watering dams are being fished commercially, and these provide a good income to the farmers. In Tanzania, it was estimated that the cash income from fish from the Hambolo dam near Dodoma exceed the cash crop from agriculture, for which the dam was originally built. This goes to show that fish farming does not only provide ample food supplies, but is also a profitable undertaking.

Considerable attention is being given in some plans, particularly of Uganda and Madagascar, to the improvement of fish farming. In Uganda, plans aim at improving the facilities at the Government Kajansi Fish Farm and for the subsidized distribution of cropping equipment, such as nets and sluice gates, to fish pond owners. Notwith standing, in many African countries the importance of fish culture has not fully been recognized and its development has not been seriously pursued, mainly because of lack of interest, combined with lack of fisheries organization and shortage of professional and trained staff. It is in these countries that a concerted effort is needed to boost fish production. Fish production can be increased enormously, if not indefinitely, by introduction of new species into existing inland waters and an extensive programme of fish ponds. Fish farming, if well managed, can provide a buffer in fish supplies.

Whereas some countries have adequate supplies of fish from the sea, lakes and rivers, these are not readily available in some parts of the country for a number of reasons, e.g. defects in distribution facilities, poor communications and marketing problems. Fish farming would go a long way in alleviating the situation.

Many countries plan dams for the purposes of irrigation, water conservation and electricity generation. Such dams offer opportunities for increasing the fisheries resources of the country by stocking and cultivating fish. Utilization of the numerous hitherto useless mangrove swamps in many African countries could result in increased production by fish ponds if appropriate types of fish were introduced. A pilot project in Nigeria, by Shell International, clearly demonstrated the possibilities 6/. Man-made reservoirs have an important future significance in this field, especially in landlocked countries.

6/ In 1963-64, Shell International initiated a fish culture project in the then Eastern Nigeria. The objective of the project was to get the rural population to cultivate fish in local ponds or small lakes and thereby make fish farming an important source of food and income in areas where fishing had been unimportant. Selected areas already had ponds or water reservoirs, but these were uncared for and were inadequately stocked. Under the project, the ponds were developed and properly stocked with fish and owners were supplied with fishing equipment. A Fisheries Officer resided with the people and taught them on the spot how to cultivate the fish, as well as how to fish. The initial experiment proved successful, and plans were in hand to expand operations when the civil war started.

Ponds are particularly suitable in areas far from lakes where fish is expensive. They have a most useful function in some areas by introducing fish-eating amongst people who have not, to date, included fish in their diets. Small-scale trading in surplus fish supplies is also done by pond owners; this further stimulates the consumption of fish.

The cost of constructing and fishing the ponds is comparatively low; this gives it a big advantage over lake fishing which requires expensive gear. Fish farming can be done as a low cost sort of «spare-time» fish production by individual families. Even small home ponds could provide an economic way of improving the protein diets of rural populations.

There is a need to introduce and encourage fish farming amongst rural communities, especially those living in areas where the cost involved would be minimal. The mass media would be very useful in this respect in publishing and demonstrating the techniques involved to rural communities, especially those in remote areas of a country. This, plus a team of fisheries officers and extension workers to assist farmers on the spot, would meet the basic requirements. Credit facilities to farmers to enable them to buy the necessary equipment would facilitate fish production on a commercial scale.

Problems

Fish farming is not without problems. One of the most important requirements for the successful development of fish ponds is an adequate water supply which is lacking in some countries. Water is required not only to fill up ponds in the first place, but also to replace water lost by evaporation and seepage. An adequate water supply for fish ponds is very important; if there is not enough water all the year round it is no good making ponds, as they may dry up and the fish die out. It is always better to overestimate, rather than underestimate, water requirements when initiating a pond construction programme.

Efforts have been made to introduce fish production in artificial ponds in a number of African countries with varying results. A major handicap to development is the lack of skill and experience among prospective fish farmers. Although there are many thousands of fish ponds in Africa, the results over a long period have been on the whole disappointing. Better results can only be achieved and maintained where guidance through extension work is provided to fish farmers.

Extension involves the use of trained staff to advise and assist farmers on the spot. This staff chooses sites, lays out fish ponds, advises and checks on construction, arranges for pond stocking and pays frequent visits to advise and assist in pond management. Extension work is very important and the provision of adequate staff is most essential.

Foumban Fisheries Station, Cameroon, had 37 ponds with total surface of 0.83 acres. Village women bring fish food (brewery wastes) in exchange for firewood they collect from station area.

Trainees at a fishery training centre in Bangui, Central African Republic, gather the fish from a pond for sale - UNDP project, with FAO as the executing agency

Some countries carry out extension work in fish culture from a central fish farm which usually functions as a research establishment, a demonstration farm and a fry distribution centre. In a number of countries, however, there is no qualified direction of the extension programme and little research is done into the best species or the most economic methods of cultivation.

In general, fish farming is still regarded as a pastime occupation by a number of people, even by those owning fish ponds, and most of their time is spent in farming and herding livestock. Very few are engaged in this activity full-time for a living. As a result, the fishing potential of a number of countries is not being exploited, although other factors, such as lack of credit facilities, access roads, transport and marketing facilities, also impose a severe limit on fisheries development and trade.

Taboo, prejudice and unfamiliarity still militate against fish-eating in some African communities. Some tribes or communities in Africa are highly conservative, as well as being broadly and sharply varied in respect of their food habits. For the most part, they know or care little about nutritional values of new forms of food. The conservatism increases normally in any particular society, with decrease in economic level in that society. Thus, it is frequently, if not normally, the case that the people who most urgently require more protein in their diets are the least amenable to taking it. This attitude inhibits fisheries development in some areas and needs to be changed through educational programmes.

There is a need for the launching of an «Eat More Fish» campaign in many countries. Work, possibly by home economists, to teach fish cookery and explaining the value of fish as food to people from traditionally non-fish-eating tribes, is essential. The demand for fish could be materially increased if potential users were appropriately informed of its total nutritional work in supplying critical nutrients.

The need for more active campaigns to promote consumption of fish as a source of protein should be stressed. Wider dissemination of nutritional knowledge is desirable and the high nutritive value of fish should be publicized. The promotion of any such campaigns should be undertaken co-operatively by the fish farmers, government, UN and other international agencies.

Government action

Training is both important and necessary for the success of any fisheries development programme. Because of this, the government's role in the training programme is vital. Governments should initiate, stimulate and co-ordinate training programmes and at least to some measure finance them. Training would confer maximum benefit if it covered all levels of people engaged in the fisheries development programme, i.e. from the professional fisheries officer to the village fish farmer.

Although fish farming is mainly a manpower investment, some form of capital is necessary and this could be a limiting factor in some rural communities to fish farming development. It is therefore important that, where necessary, governments should assist in establishing a revolving fund to be used specifically for meeting the credit needs of individual fish farmers and traders. Local administration of such a fund would be highly desirable in order to provide detailed appraisal of each applicant on the basis of character, ability, purpose of the loan, etc.

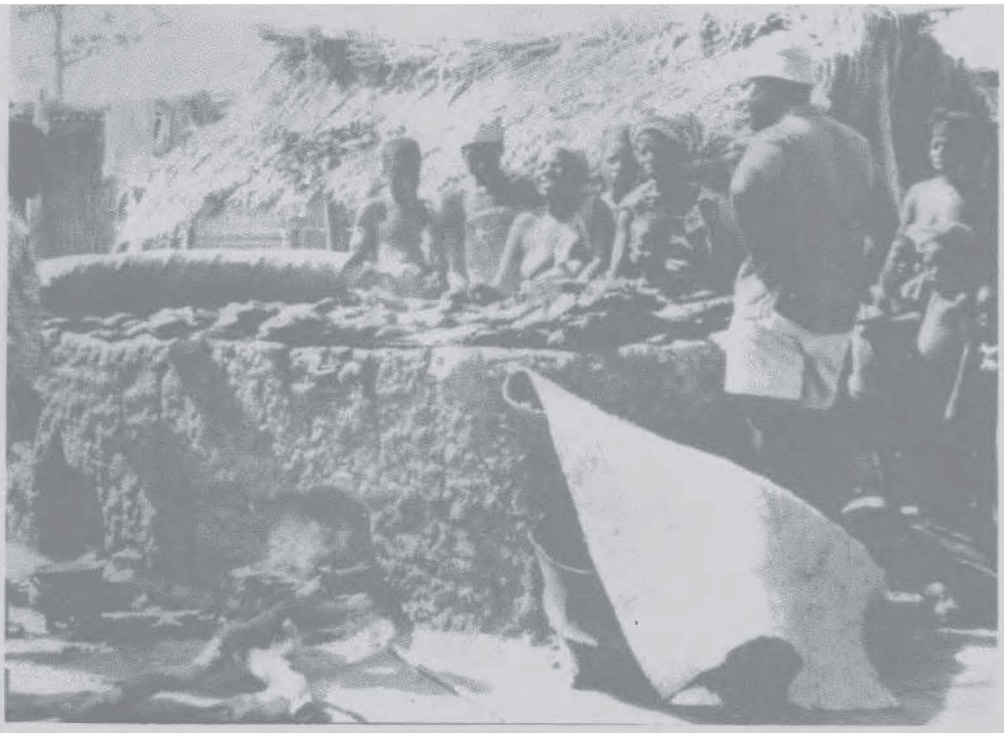
It is necessary for governments, with the assistance and advice of fishery experts, nutritionists and home economists, to take the lead in investigating ways and means of developing fish farming and increasing fish production and its acceptability as essential food among their populations. Governments should intensify their efforts to disseminate information concerning the special nutritive value of fish and its proper preparation, especially in areas where fish is not now used or is used in limited quantities. People should be educated in the benefits to be derived from this first-class protein source with a view to developing food habits which, in turn, would lead to the commercial establishment of fish and fish products. The United Nations and its agencies, and a number of international voluntary agencies, are always willing to render invaluable aid to African governments in the planning and implementation of this work.

There is a need for providing or improving the marketing system in many countries. Such improvement requires the provision of adequate infrastructure facilities. Government finance is needed to provide and improve this.

Fundamentally, national governments should assume the major responsibility for creating or encouraging the creation of the appropriate conditions for fisheries development. However, not all governments have readily available the funds or expertise essential for such operation; and, because of this, it is essential for governments to know sources on which they may call for assistance in their fisheries development programmes.

International aid

International aid in this field takes the form of multilateral or bilateral assistance, grants, loans, training centres, fellowships, experts, consultants, etc. The type of aid given often depends on the particular situation in the fisheries development of a country. More often aid is given in the form of technical experts supported by major agencies for assisting development like the FAO, FFHC, UNICEF, or the Special Fund of the United Nations. A number of international voluntary agencies are also rendering assistance in this field. Aid can be given to individual countries or to groups of countries joining in a common project.



Smoking of fish is commonly practised in many African countries. Smoking for several days preserves fish up to three months. Photo at Ampem fishing village on Volta Lake.

Preparing small fish for sale in the village of Anororo (Madagascar) under FAO and UNICEF assisted projects.

FAO experts are aiding fisheries development in several countries. A special fund Fisheries Development Project on Lake Kariba(Zambia), and a fishery development project, carried out on Lake Volta (Ghana), are but a few examples of many other projects carried out in inland waters in Africa.

The Department of Fisheries of FAO has tried to assist African countries in developing their fishery resources. A number of FAO experts are working in fishery projects in many countries. These projects cover practically all aspects of fisheries. They include research, training centres, fellowships for training abroad and participation in study tours. Fisheries education and training is receiving special attention. Consultants visit various countries and survey their requirements in this field, and, based on their observations, recommendations for action are made.

The initiative to develop and expand the fishery resources should be taken by the country itself or by private individuals. Various international organizations are available, however, to help African countries improve their economic and nutritional standards. FAO, for instance, can assist in fishery development programmes, programming and implementing of training schemes, fish culture training and research projects, administrative and extension personnel. As part of its applied nutrition programme in Africa in conjunction with FAO and WHO, UNICEF has also sponsored a number of manuals aimed at the improvement of nutritional standards.

Among the sources of assistance which might be utilized in the implementation of fishery development programmes are the FAO Food Production Resources Programme, UNDP, UN system, Freedom from Hunger Campaign, the World Food Programme and a number of international voluntary agencies active in this field, such as the International Co-operation for Socio-Economic Development (CIDSE), OXFAM, Lutheran World Federation (LWF), Co-operative for American Relief Everywhere (CARE), German Bishop's Development Aid Fund (MISEREOR), Technoserve, Inc., Christian Aid, to mention but a few.

A number of international voluntary agencies have for some years been actively engaged in assisting African countries in initiating and developing fisheries programmes. Such assistance has been in the form of grants, expert advice, equipment, training schemes, etc.

Information available on their activities in this field is rather sketchy, but it is sufficient to indicate that in recent years there have been hundreds of fisheries development projects in Africa involving about US $ 500,000, financed or assisted by international voluntary agencies. Although some of these are concerned with fishery development generally, a substantial number are specifically concerned with the development of fish farming. The OXFAM support of a fish ponds scheme and fish rearing station in Cameroon, and in Botswana, and also similar projects in Lesotho, and the fish farming schemes at Ilafy in Madagascar by the WCC are but a few examples of the concern of international voluntary agencies in assisting rural communities to take up fish farming as a means of improving their diets and earning some income.

A number of United Nations and other international agencies are actively engaged in this field and all the indications are that their activities are increasing both in size and the number of countries covered, so it is important that they co-ordinate their efforts in order to achieve the maximum benefit.

Summary and suggestions

The need for fishery development and services to help get more protein into the African diet is stressed by a number of governments and international organizations. It is well noted by administrators, scientists and economists all over the continent that fisheries are capable of considerable expansion and that countries are becoming more and more concerned with developing fisheries as a protein source. Fisheries development offers special opportunities for meeting one of the critical nutritional shortages in the region. Besides, they can make a substantial contribution to creating employment and raising incomes in certain areas. To combat malnutrition on a large scale, there is need for a comparatively cheap animal protein, and increased fish production offers the best hope. With improvements in organization, financing, training, expansion in trade, distribution and marketing, the fisheries can be expanded to provide the continent's necessary protein requirements. A recognition of this has resulted in a marked progress in fisheries development in recent years in some countries; however, in most countries much remains to be done, especially in the field of improving skills of those engaged in fish farming and fish distribution.

It is in the interest of the country, and especially its rural communities, that all man-made water reservoirs, such as dams, weirs, and irrigation schemes, should be utilized for producing fish. These waters can provide fish in areas where fresh fish is not readily available and animal protein deficiencies are apparent. Where perennial waters occur and can be utilized for fish ponds by farmers for providing fish for family feeding and limited cash sale, these activities should be encouraged. Extension work by fisheries staff is required to ensure the greatest productivity from these ponds.

The most serious obstacles to immediate fisheries development and increased production over most of Africa are lack of an efficient fishery staff, credit facilities, and, in some areas, traditions and customs that militate against fish-eating. Some of these can be solved fairly readily; others require time and planning. Priority should be given to the training of an adequate number of competent fishery officers to stimulate and

direct development. At present their number is very limited in many countries and almost non-existent in others. These officers eventually will have to train field staff who, in turn, will carry out extension work and be in direct contact with fish farmers, traders and consumers.

Fishery extension and training has so far received little attention. Accelerated economic and social development in fisheries, as in other sectors, requires that cadres of technical administrators and field staff be trained. Fishery staff is needed, not only for supervisory and extension work, but also for assistance in the establishment of an efficient distribution. Training and extension work are as basic to fisheries development as they are to agriculture. African countries could, in the initial stages, try to obtain one or two fish farming experts under bilateral or other aid programmes, to direct fish farming development.

Various national and international organizations are available to help African countries in developing and expanding their fishery programmes as a means of improving their economic and nutritional standards. The United Nations and its agencies, for instance, can assist in giving expert advice in establishing a fisheries programme, in training staff, and construction and stocking of ponds. A number of international voluntary agencies also give financial and technical assistance in fishery development programmes.

Among the measures required to stimulate the development of fish farming are: expert advice to farmers, financial assistance in the form of loans, development and expansion of domestic fish markets, a programme of feeder-road construction and improvements to help to bring most dams, reservoirs and other inland water areas into easy communication with the main centres of population. The use of motor transport would increase the distribution of fresh fish, which brings a higher unit price than dried fish. Establishment of well organized markets with wholesale and retail distribution facilities in consuming centres is also important.

Some tribes or communities in Africa do not eat fish because of a variety of reasons. Because of this, an educational programme is needed to introduce people to eating fish where it has not previously been eaten. An «Eat More Fish» campaign is required in many countries, especially in areas where non-fish-eaters live. It is necessary to build up local demand by vigorous campaigns, pointing to the nutritional benefits of fish, teaching fish cookery, etc., and to follow the campaign up by making available supplies of fish, if necessary, initially at subsidized prices. The mass media is very useful here in achieving maximum publicity in the shortest time possible. Educational institutions also might give some help, and where countries have organized pilot feeding schemes, a tie-in to the fish consumption campaign could easily be arranged.

Some fish farming programmes have failed because the effort to extend the construction and stocking of dams, ponds, etc., has taken precedence over the equally necessary programme to develop and publicize the best methods of getting more people to eat fish.

Fish farming, if well organized and administered, could mark a decisive step forward in the important struggle against under-development, hunger and malnutrition in which we are engaged in our countries. For the African countries engaged in the great economic struggle, the fight against hunger is certainly one of the most exciting aspects of development programmes.

CHAPTER V

THE ROLE OF CO-OPERATIVES IN RURAL DEVELOPMENT

General situation in rural areas

Rural development in most African countries necessitates a transformation of rural life and institutions, some customs and traditions and, most important of all, an improvement in agricultural production and marketing which is the main source of income, and therefore a necessary factor in the improvement of the general standard of living.

The majority of people in Africa are engaged in a kind of agriculture, the characteristic feature of which is consistent with the environmental and technological constraints: small-scale production. The prevalent production on a small piece of land does not admit any division of labour, any application of scientific methods, any variety of talent and social relationship. Each individual peasant remains almost self-sufficient.

With most countries still engaged in subsistence agriculture, mainly on an individual basis and with no infrastructures necessary for the marketing of farm products, there is very little an individual farmer can do to better his lot. This applies equally to other trades where the scope for improvement lies in people of the same trade coming together in a co-operative for their common good.

Popular participation in development, to be effective, must be so organized as to minimize the weakness inherent in smallness of scale and to maximize the benefits than can be derived from group action. The co-operative formula is eminently suited for this purpose. Its contribution is not only limited to spheres of production, consumption and income distribution, but its approach also emphasizes the active participation of the masses in the development effort and in the sharing of the benefits resulting from development. Equally important is the role which the co-operative movement can play in evolving a domestic society of people having attitudes and an outlook favourable to development.

What is a co-operative

A co-operative has been defined as «a business organization that is owned by those who use its services, the control of which rests equally with all its members and the surplus earnings of which are divided among the members (bonus) in proportion to the use they make of its services». However, this definition is not comprehensive. All it shows is the difference between a co-operative and other types of business organizations. To show that a co-operative is much more than a mere business organization, we can quote Dr. Fauquet, who said:

> «The primary aim of co-operative institutions is the improvement of its members' economic position. But, through the means which it employs and the qualities it demands of its members and develops in them, it achieves a higher purpose. The goal of a co-operative is to create a sense of individual and joint responsibility in all men. So that they may rise individually to a full personal life and collectively to a full social life.»

Co-operatives have also been defined as a system of social organizations based on the principle of unity, economy, equity and liberty. It has been said that co-operation is an economic movement employing educational action. The statement would be no less true if it were reversed. The co-operative is an educational movement employing economic action.

A co-operative could also be described as the defence of the community against the unchecked power of the individual capitalist, or as the defence of the individual against the omnipotence of the state in economic affairs.

Whatever definition is adopted, the factors common to all co-operative enterprises are the ideas of mutual help and working together and the ideas of freedom, democracy and mutual responsibility which make co-operatives distinct from all other kinds of business organizations.

Features and objectives of co-operatives

The essential features and objectives of co-operatives include:

(i) The provision of goods and services of high quality at low prices;

(ii) Elimination of the middleman (unnecessary profits in trade and commerce);

(iii) Prevention of exploitation of the weaker members of society (e.g. by money lenders);

(iv) Protection of the rights of the people, both as producers and consumers;

(v) Promotion of education and mutual understanding among their members, and

(vi) Promotion of social and economic well-being of their members, in the long run, among all people.

Types of co-operatives and what they can achieve in key areas of rural development

There are different types of co-operatives, the most frequent and numerous being:

(a) Agricultural production co-operatives (farmers' co-operatives);

(b) Marketing co-operatives (farm produce, handicrafts, etc.);

(c) Credit co-operatives;

(d) Co-operatives in fishery, stockbreeding, etc.;

(e) Housing co-operatives; and

(f) Consumer co-operatives.

Agricultural or farmers' co-operatives (which are widely spread in Africa), are based on a need to pool resources, reap the advantages of economies of scale, particularly in reducing overheads, and sharing the benefits of expensive facilities which would normally be beyond the reach of the individual farmer.

Marketing co-operatives are basically organized for the local marketing, through a single tunnel, of members' products; e.g., agricultural products, handicrafts, etc. Farmers' co-operatives often take on the marketing of their members' products (cocoa, cotton, tea, coffee, etc.), thus becoming agricultural produce marketing co-operatives.

Credit co-operatives assist to provide members with the necessary capital for development through pooling together small sums of money spread among members. They also assist in bringing sterile funds into productive use, especially in rural areas where individual savers tend to hoard their savings.

Co-operatives in fishery or livestock operate in about the same way as farmers' co-operatives, marketing their products, e.g., meat and dairy products, fish, poultry, etc.

Housing co-operatives appear in the form of building societies in a number of African countries, but these are, at the moment, mainly confined to the cities and urban areas.

Consumer co-operatives, which at the moment play a minor part in Africa, assist members in obtaining quality goods at reasonable prices, through buying in bulk and elimination of middlemen.

Co-operatives are, no doubt, one of the most effective means for the mobilization of peasants in the development efforts. They are a means of ensuring conscious participation by peasants in the process of agricultural modernization and therefore economic and social development.

In this short chapter, an attempt is made to review briefly what can be accomplished in African countries through the co-operative movement in selected key areas of development: land use, agriculture, industrialization, domestic savings, employment opportunities, spread of scientific knowledge and technology, human and social development, housing and social services. An attempt is also made to elicit some discussion on how best to utilize the full potentialities of the co-operative movement in economic and social development in African countries and the problems thereof.

(i) Land use

One of the most refractory obstacles to economic and social progress in the rural areas in many African countries is related to the patterns of land holding and land use. Demands in a number of countries for land reform stem from a recognition that peasants can be motivated for development only if they are given access to land on terms which make possible its economic exploitation. Holdings must be large enough to ensure an economic return, and they must be secure enough in tenure to justify investment of capital and labour in long-term improvements.

Where land reform is introduced, co-operatives can play a very important role in the implementation of the land reform and related measures or in bringing the benefits of land distribution to the new land-owners. Here the co-operatives will not only be an institution for channelling inputs formally supplied by the landlord, but also an institution through which the new land-owner can find some of the social and psychological support he received from the previous landlord. The co-operative organization is particularly appropriate in those instances where the farmers, the agricultural labourers and tenants, who are used to taking orders, are to be educated and trained to exercise initiative, make decisions and manage their new land holdings. Co-operatives have also been widely used in cases where consideration of land holdings became a prerequisite for better land utilization, leading to higher productivity.

A number of governments have adopted policies of land settlement whereby under-utilized human resources have been put to use in conjunction with land (and other natural resources) which are also underutilized. These settlers have migrated from different areas of the country and often from different environments. There is an immediate need to provide them with institutions through which they can establish social and economic relationships in an endeavour to create a sense of community and cohesion among them. In this respect, the co-operative organization, which is usually familiar to many of the settlers in their old environment, has been found to be quite effective as an initial step. The Ujamaa villages in the United Republic of Tanzania provide a good example of such organizations.

(ii) Agricultural development

Africa, being predominantly rural in character, with agriculture as the main economic activity, the conclusion is inevitable that in the search for a significant increased rate of economic and social development, special attention will have to be devoted to rural areas, and development will have to be accelerated in agriculture, if employment opportunities, human and social development and rural industrialization are to be expanded and sustained.

The first objective in agriculture is for increased production by means of improved methods of cultivation,

availability in large measures of the necessary inputs, such as irrigation, credit, fertilizers, better seeds, animal feeds, etc., the application of technology in the form of new machinery and tools and the diversification of production to meet the changing demands at national and international levels.

Attempts have been made along these lines. New agricultural inputs and techniques have been promoted in some cases by progressive farmers with sizeable farms, commercial plantations, and those able to command the necessary resources. However, the mass of the peasant farmers in rural areas is being by-passed by this new technology; involving the small farmers and the masses of the rest of the population in the development effort is becoming increasingly imperative. The masses of small and often illiterate peasants cannot be reached individually because of their number and dispersion. Co-operatives and other farmers' organizations are the best means of achieving this. They are the best means of providing technical and financial aid for agricultural development.

The goals and objectives of the development plans of most African countries envisage a substantial increase in agricultural output as a means of increasing the income and welfare of the rural population. The functions of agricultural co-operatives in providing farmers with credit and other inputs, with marketing and processing facilities and in providing a channel for the introduction of the results of research and improved farm practices endow them with the best means for the fulfilment of the goals and objectives envisaged by many African countries.

Modernization of rural areas, in terms of increased production, diversification of crops, introduction of new technology and new skills and work habits, agricultural processing and rural industrialization, implies that farmers in African countries need to change their habitual working practices and customs, to learn new methods, and to adapt themselves to new operational cycles with different forms of collaboration. This demands of the farmer a very considerable reorientation of his thinking, his traditional values and patterns of behaviour. He has to adapt himself to a completely different world of living and working. This is obviously difficult for the progressive-minded farmer unless he has the backing of a new group which can help him to overcome the scepticism of traditional-bound farmers in his community. Such a group constitutes at the same time a circle of learners who can benefit from mutual support and exchange of experience as well as from direct advice through agricultural officers and related development personnel. For a single farmer, it would be impossible - for organizational as well as financial reasons - to procure such aid. For both such functions, training and support, the co-operative society is a most appropriate form of organization.

Agricultural co-operatives can make a significant contribution to the development of human and natural resources, agricultural production and land use, diversification of production, the development and expansion of export-oriented industries and agricultural-processing industries as an important aspect of rural industrialization.

Marketing: Growth in agricultural production inevitably requires an elaborate and efficient marketing. In order to cope effectively with this growth, produce marketing co-operatives can play a big role both to stimulate production and to purchase the produce. In doing so, co-operatives do not only eliminate middlemen, but increase their members' ability to secure better prices for their crops. They also help to overcome the problems of efficiently assembling produce originating in small lots, often scattered and of varied qualities and applying to them modern techniques of grading, standardizing, processing and storing.

(iii) Rural industries

It is now generally recognized that agricultural development by itself cannot provide the basis for sustained economic growth in African countries without industrialization. Industries are needed to absorb part of the increased agricultural output, to supply modernizing agriculture with most of its inputs, and to supply manufactured goods in demand among rural and urban communities.

Notwithstanding the emergence of large industrial units, small-scale industry will continue for a very considerable time to occupy a large number of persons in most African countries. Therefore measures to enhance the viability of small-scale industrial enterprises are required for economic as well as social reasons. Here again, the co-operative formula is particularly appropriate and its various potential contributions are well known. For example, common facility or service co-operatives can make it possible for small units to work together in order to secure the advantages of scale with respect to certain operations, such as the purchase of inputs, marketing arrangements, financing and the like.

Small-scale industries can play an important part in rural development. Such industries can provide employment for redundant agricultural labourers, thus helping to retain them in the rural areas and reducing the flow of migration to overcrowded cities. The co-operative movement can greatly facilitate this process of rural industrialization. Small producers may establish a processing factory (for an agricultural product) or a finishing plant (for a handicraft) under their own management. This could ensure a steady market for their raw materials, better prices through processing or finishing, and elimination of middlemen. Or, the initiative can be taken by a number of local co-operative societies dealing with the same product.

The advantages in promoting the co-operative approach to rural industrialization lies in the fact that a closer interaction is established between the agricultural and industrial sectors with benefit to both the producer and the consumer. It has the effect of establishing and retaining in rural areas commercial and manufacturing industries based on local raw materials, skills and demands.

Craftsmen at work in a co-operative art studio, Lagos (Nigeria)

A Benin Ebony Co-operative Carvers' Society runs this art studio in a Lagos suburb. The membership is about fifty, plus a small number of apprentices employed by the more prosperous craftsmen.

(iv) Mobilization of financial resources for development

The demand for agricultural and other credits for development purposes increases every year. Much of this will have to come from domestic savings since the already inadequate private and governmental sources of credit are unlikely to increase substantially. Most African countries need to make a determined effort to replace the private, non-institutional, high-interest-bearing form of credit sources with a workable institutional system charging low interest rates and providing at least enough competition to the private lenders to force their interest rates downwards.

This can be achieved through savings and credit co-operatives by pooling together personal savings out of seasonal profits made by the bulk of peasant farmers in the rural areas which should be encouraged, mobilized and channelled into productive enterprise by co-operative organization. Co-operative credit is the most important form of self-reliant institutional source of credit to African countries. Co-operative credit can therefore play a very significant role in the field of rural development. Efforts in this field are evident in a few countries, for example, in the case of the Rural Development Bank (formerly National Co-operative Bank) in the United Republic of Tanzania, and the Co-operative Bank in Kenya. Co-operative credit is a major and necessary factor in the field of rural development in African countries. It is extremely flexible in adapting to the requirements of local situations. This is because of the close contact that can be established between the co-operative and the potential borrowers. Through the co-operative, a loan can be directly linked to the purpose for which the money is intended. Moreover, the co-operative can help the member-borrower to make the best use of the loan. It can ensure that the borrower purchases materials and equipment of high quality and at reasonable prices. It can ensure, through co-operative and government extension service, technical guidance and careful supervision, that the most effective productive methods are used. It can, in effect, take a lien on the value of the future production of the borrower as security for the loan.

Co-operatives can generate savings for development. This is important especially in cases of the small producer in agriculture, animal husbandry, fishing and other rural trades who must be brought out of his quasi-subsistence and marginal production.

There is an intrinsic value in promoting savings through co-operatives. If the problem of rural development is going to be dealt with effectively, particularly in the direction of rural industrialization, their accumulated savings and reserves can be available for combining with credit made available by other sources or for attracting external finance. From the point of view of the individual, there is the educational influence of the co-operative in inculcating the savings habit by demonstrating to the poorer segments of the working population that it is possible through pooling of resources to make even very small savings multiply and work for their benefit.

This process of generating capital can occur even in communities at a subsistence level having no experience in accumulating surpluses. This is because the co-operative retains for its members the surplus which hitherto has gone to the exploitative middlemen and from there has usually drained into the cities. These surpluses can be channelled back into agriculture and agro-industry, thus laying the foundation for economic and social development of the rural areas.

(v) Promotion and expansion of employment opportunities

The co-operative method is well-suited to create new employment opportunities and to expand existing ones. Higher tangible returns accruing to the producer or worker through his co-operative is a strong motive to others to engage in similar activities. Employment practices of co-operative societies favour employment of local labour, thereby creating many new job opportunities; where the co-operatives enter actively into the process of rural industrialization, a whole new range of employment possibilities can be foreseen in such fields as supply of raw materials, industrial and technical jobs, transport services, construction, consumer services, etc.

(vi) Dissemination of scientific knowledge and technology

If the benefits of development are to be shared by the masses of the people, it is imperative that the knowledge and technology required for modernization should be channelled through those means which will have an impact on the largest number of potential users of such knowledge and technology. In that respect, the co-operative movement has a large network of institutions and services, both national and international, through which this kind of accelerated transfer of knowledge and technology to actual users can be made most effectively. This is not only in reference to modernization of agricultural production, but also in improving the quality and output of traditional artisans and the diffusion of modern techniques in management, accounting, processing, packing, transport, etc., which are essential to the process of modernization.

There is every reason to believe that transfer of scientific knowledge and technology through co-operatives is more effective than many other means of mass transfer. It is a pragmatic approach, techniques can be modified to suit local conditions, members are more prone to adopt them, as they would gain directly from any increase in output and quality of products. This, of course, depends on co-operatives adopting a policy of providing technical and advisory services on their own to supplement those provided by government and other international agencies.

(vii) Human and social development

In nearly all African countries the people, both as producers and consumers, form the most abundant factor for any development strategy. Many well-

A corner of the showroom - Benin Ebony Co-operative Carvers' Society

intentioned projects and programmes have failed to achieve the objectives set for them, because the human factor was not sufficiently dynamic to make optimum use of the knowledge and skills provided. By and large, the technical answers to the problems of increasing productivity are readily available; the difficulty is rather that of getting those known techniques adopted by millions of apathetic, conservative peasant farmers and rural artisans whose traditional beliefs, values and behaviour patterns make them disinterested in, or even resistant to, change and innovation required for development.

If the masses of the people are to be involved in sustained development, then any plan that is formulated should emphasize strategies to motivate and mobilize them to become aware of and utilize improved technology, to increase productivity, achieve higher levels of living and, by becoming more actively involved, to contribute to the economic, social and political progress of their country. This requires greater emphasis than hitherto on man, his organizations and his institutions which influence his outlook and condition his behaviour. It is futile to think that the concept of higher productivity and higher income will have any meaning to, or commitment from, the peasant or the rural artisan, unless and until there is a reorientation of his values, a positive change in his expectations and an awareness that there are new opportunities through which his higher income can be used to satisfy his needs, whether economic or social. Programmes of motivation and mobilization have to be attempted within, and in relation to, change, both spontaneous and engineered, occurring in the social context of living and labouring of the tradition-bound communities.

Economic growth and social development in African countries, and particularly in rural areas, are highly interdependent. Measures to increase productivity have to be sensitive to the social values underlying motivation, and programmes for social development have to be cognisant of the economic means needed to attain social objectives. In that respect, the co-operative form of organization is well-equipped to integrate the economic and social components that would facilitate a more meaningful involvement of the people in the development endeavour.

One of the greatest merits of co-operation in relation to development is its mobilization potential and its motivational impact. Co-operatives appeal to the self-interest of the producer as well as the consumer in a way that he can understand. They provide an institutional system for mutual assistance and support. Through tangible results they demonstrate to the small producer how he can pool his efforts and resources with others in order to lift himself gradually out of poverty and stagnation. To the consumer they provide a channel through which he can be assured of quality products at reasonable prices. Because of their close involvement in the management and operation of the co-operative society, members feel that they are working for themselves, and are motivated to improve their skills and attain higher levels of productivity.

Through the observance of co-operative principles, many members become sensitized to their social and civic roles in their own communities. Through close involvement in the day-to-day activities of the society, many others become more fully informed of the implications of co-operative endeavour, and become receptive to the general development goals, leading to further popular participation in economic and social development.

From the point of view of social development, co-operatives create the groundwork for genuine democracy. They play an important role in educating people for self-government and political and social responsibility. Through the operation of the co-operative principles of democratic control, equitable distribution of surplus and education for responsible participation, they provide a practical demonstration of the value of individual equality and reconciliation of self-management and individual initiative with national economic planning. In the intractable area of popular participation in planning, co-operatives can help the institutional framework which can ensure the feedback of information and influence the planning bodies and thereby facilitate the actual implementation of a national plan.

In order to achieve such basic social development objectives, the co-operatives have to be related to other social processes occurring in the community, and a conscious effort has to be made to assimilate the co-operative society into the institutional structure that is evolving in the community through other movements and programmes having primarily social goals and objectives. The co-operative, as an institution structured along business lines, has a legitimate function to perform in supporting and advancing the social goals of the community, particularly in respect of education and training, employment, housing, occupational and social risks and shortcomings.

(viii) Housing

Co-operative housing, which is an established practice in many developed countries in Europe, has not yet developed sufficiently in African countries so as to make a significant impact. Housing co-operatives take the form of building societies which attract capital from the small investor and enables the lending, on mortgage, for the building, buying or renovating of houses. Some well-established housing co-operatives do actually build houses or apartments for their members. In this way, housing co-operatives can do a lot in improving housing conditions. Through them, it is possible to improve the housing situation with participation of the people and with comparatively little capital outlay.

Although housing problems in rural areas differ from those in the cities and urban communities, there are many situations in which housing co-operatives can improve the standard of housing in rural areas. Not only do they provide loans for housing, they enable the bulk purchase of building materials for sale to members at comparatively lower prices than could be obtained from commercial concerns. For housing co-operatives to

An official of the Ministry of Labour (right) discusses the work of the Co-operative with the Vice-President of the Society (left) and one of the members

be successful in rural areas, they should be closely associated with other rural development projects.

Housing currently being built under the co-operative scheme in the United Republic of Tanzania has brought about a significant improvement in the housing situation. The scheme operates both in urban and in rural areas. In Ghana, similar schemes are operating in Tema area by the buying of building materials in bulk and selling them to members at reasonable prices. In Zambia, housing co-operatives are beginning to take root on the copper-belt. Notwithstanding these few examples, housing co-operatives are still rare and almost non-existent in many African countries. There is a need for the development of housing co-operatives in countries where they are non-existent, for they are the best means of achieving improvement in the rural housing situation.

(ix) Social services

In the field of social services, there are many instances in which the co-operative approach has been applied successfully to the provision of services directly needed in communities, particularly where government services or private efforts have failed to reach. There are co-operative schools, clinics, health centres, village halls, recreational centres, etc. These are, however, still few and far between and have so far failed to graft themselves on the national co-operative movements, being limited to the individual efforts of a few highly motivated and visionary co-operators. There is a wide scope and need for the development of co-operatives in this field which would benefit large numbers of people in rural areas.

Since co-operatives are organized for the purpose of serving the local people themselves and their communities, they are, in principle, logical institutions to assume greater responsibility in spreading knowledge in preventive medicine, nutrition, child-care facilities, etc., and in providing services to the under-privileged groups in the community within the financial means generated through the economic activities of the co-operative.

The importance of co-operatives is increasingly being recognized by many African Governments as a means of bringing about economic and social development in rural areas. A number of African Governments are now committed to the use of co-operative institutions for the purpose of rural development. As an example, the Kenya Government, in its Sessional Paper No. 10 of 1965, puts emphasis on the need for «mutual social responsibility» in the process of development. It is also implied that co-operatives are particularly well-suited for participation in rural development because they have «direct roots in African tradition». This and many other examples confirm the belief that there is no other type of organization which is so suited to the problems and concept of rural development as the co-operative movement. However, co-operative development has its own problems.

Problems of co-operative development

Because of the general state of under-development, co-operative development in Africa faces a number of problems. Experience shows that a number of major constraints have affected the growth of the co-operative movement in almost all African countries. These include:

(i) Lack of trained manpower - managers, treasurers, accountants, etc.;

(ii) Financial limitations; and

(iii) Apathy and suspicion of potential members.

The main constraint to co-operative development and expansion in practically all African countries is, at the present time, lack of trained personnel at all levels. This is generally acknowledged as the single, most severe bottle-neck in the development of the co-operative movement in Africa. Because of lack of educated and experienced personnel capable of managing co-operative enterprises, a number of co-operatives have had to be run by some government agency.

A pragmatic solution to this problem is urgently needed. Co-operative education and training should be the first priority of any promotion programme. Dissemination of co-operative principles and methods, stressing the limitations as well as the potentials of co-operation, need also to be undertaken by educational institutions, especially in rural areas. Of over-riding importance is the need to work out a systematic plan for education and training of members, committee-men, office bearers and other key personnel, such education and training should be of an eminently practical nature, i.e. work-oriented and adapted to the specific needs of the respective categories outlined above. Managerial ability is essential not only for operators of co-operative enterprises, but also for government officials in charge of supervision or operation of economic activities. In view of the strategic role of this kind of education and training, many national and international organizations are always willing to give generous support and assistance.

Administrative support is needed, especially in the early stages, to assist the co-operative movements with the necessary guidance in the various fields of their activity. In many a country there is not enough co-ordination among government departments in carrying out policies for the co-operative movement. This concerns all phases of co-operative activities, from planning to field services. Administrative support from the government should, however, not limit the main responsibility of the members and persons elected by them for the management and administration of co-operative affairs. Governments should nonetheless, make a special effort to generate in the members a gradually increasing understanding of the whole co-operative operation and a sense of involvement of the members in their collective effort. This is the essential role of any co-operative extension service.

Lack of financial resources or, in other words, inadequacy of funds, has been a limiting factor in the operation of many co-operatives. Co-operatives in African countries generally lack funds not only to provide the necessary credit to their members for development purposes, but also to finance the expertise and the good management which could bring them to a level of efficiency which would qualify them for substantial loans. This vicious circle must be broken. Ways must be found to assist them in formulating viable projects, for instance, in respect of rural co-operative industries, and in providing prospective financing agencies with some assurance that the enterprises would be competently managed. National govemments can do much to assist in this field.

Apathy and suspicion among potential members has often presented an obstacle to co-operative development. Peasant farmers have in certain instances been reluctant to form co-operatives, being suspicious of the benefits that may accrue to them, especially in areas where earlier similar organizations have failed, resulting in financial losses to the members.

The solution to this problem lies mainly in determined efforts to win the confidence of potential members through examples and demonstrations and co-operative educational programmes by trained and experienced personnel. It is important that people responsible for the development of co-operatives should concentrate their efforts to the motivation of the people and on the inducement of attitudes and understanding favourable to the acceptance of the idea of co-operatives. They should utilize all the available means of education, including use of extension services and community development.

General observations

Co-operation is not a magic formula which is capable of solving all economic and social problems of rural development. However, co-operation is a powerful instrument which through collective action has a significant contribution to make to the solution of some of the problems of underdevelopment. It is a means of helping to solve many problems through joint action by the people themselves, and it can contribute significantly to the raising of the living standards of the masses of the people.

For these reasons, co-operation has an important role to play in joint action for development, especially in rural areas. Its economic objectives make it a dynamic factor in all the machinery set up for rural development. The means which it employs to achieve this goal makes it possible for all the members of the community, even the poorest, to have a fair share in the product of economic activity on a mounting scale. Through the stress placed on education, it contributes in an important way to overall development.

For a co-operative to be successful it needs well-chosen, democratically elected, trained committee members, capable of serious, honest and effective leadership. It needs a competent manager selected according to his qualities of character and training. A co-operative needs an adequate infrastructure for transport and communications, and in case of agricultural co-operatives, an effective marketing organization. There is a need for good supervision which not only covers auditing, but also a periodic survey of the total activities - social, economic and educational - of the co-operative. Supervisors should not only be competent inspectors of current activities, but also capable of initiating improvement to, and extension of, existing activities. There is a great need for honest and fair dealing by all - members, committee members, managers and staff at all levels.

A lack of such qualities or the necessary supporting services may lead to failures. Such failures have often resulted in big losses to members, with the result that co-operation falls into disrepute, and hence it may be difficult to re-introduce the idea for many years to come.

International assistance

The United Nations and its agencies, as well as a number of international agencies, are concerned with co-operatives as a major form of institution for economic and social development, and are giving both technical and financial assistance to the promotion of co-operatives as part of their contribution in social mobilization and human resources development in Africa. In addition, technical advice is being provided to governments and other organizations in encouraging and aiding co-operatives.

A number of international voluntary agencies operate in several ways to promote and assist co-operative development in African countries. Their activities have included assisting, among others, agricultural (plant and animal production), fisheries, housing, and various kinds of savings and credit co-operatives; all important elements of rural development. Some have also included in their work the influencing of public opinion and the creation of support to mobilize all available resources for co-operative development.

Information available indicates that a number of international voluntary agencies had, in the six-year period ending 1973, sponsored or assisted over 250 projects in the co-operative field involving a total expenditure of well over 3 million US dollars 1/. This is in addition to the salaries of experts, fieldmen, volunteers, and scholarships which they have offered to different countries and organizations. The contribution of international agencies in the field of co-operatives has been a very significant factor in the rural development effort in Africa.

As an illustration of the work being done by international agencies, one agency - Africa Co-operative Savings and Credit Association (ACOSCA), which started its operations in September 1968 and now oper-

1/ ECA, Directory of Activities of international voluntary agencies in Rural Development in Africa, 1972 (doc. E/CN.14/SWCD/61)(updated).

ating in 26 countries, had 36 co-operative projects in the West Africa sub-region in the period 1968 to 1973, with a total expenditure of just over half a million US dollars. In the Central Africa sub-region, they were involved in 10 projects totalling $US 459,650. In the East Africa sub-region they had 48 projects with a total expenditure of well over half a million US dollars 2/. ACOSCA's aid has mainly been concerned with supporting regional training centres as well as salaries for experts, and inter-lending schemes.

There is a need for a determined effort in all African countries to promote and expand the co-operative movement as a means of accelerating economic and social development, especially in rural areas. With the assistance provided by the United Nations and its agencies, and international voluntary agencies, there is every reason to believe that, given the necessary leadership, co-operatives will continue to grow and play a leading role in the economic and social development of African countries.

Some relevant questions

(i) At the time of the formation of a co-operative society, the problems of distrust, fear, suspicion, lack of confidence, etc., are usually evident among potential members. How can these be overcome?

(ii) Bad management and dishonesty have been a common problem in co-operative development; how can this problem be dealt with?

(iii) What are the principal qualities needed by the managers, committee members and other leaders in a co-operative organization? What are some of the problems and solutions in obtaining and training such people?

(iv) When co-operatives develop and expand, there is often a danger of the organization becoming so «bureaucratized» that managers and other leaders become totally removed from the day-to-day needs of their members (as tends to happen in some trade unions). How can this problem be remedied?

(v) A reform in patterns of land holdings and land use is considered a necessary factor in improving agricultural production in many countries. However, this has proved to be a very difficult problem for some countries. What are your suggestions on how to go about this problem?

(vi) How do co-operative organizations work and how do they aid rural development?

(vii) What has the co-operative movement achieved in the development effort in countries where it has existed for some years? Give a few examples.

(viii) How can national governments best assist the development of co-operative organizations?

(ix) In what way can international voluntary agencies' assistance be used to the best advantage in the development of co-operative organizations?

(x) What role should the United Nations and its agencies play in co-operative development?

2/ Idem.

CHAPTER VI

MOBILIZATION OF SAVINGS FOR RURAL DEVELOPMENT

An overview

Africa faces many problems of underdevelopment. There is widespread poverty, hunger, disease, ignorance, to mention but a few, and in spite of some efforts made, the general situation does not appear to be getting any better. Available evidence indicates that Africa is getting poorer while the rich industrialized countries are getting richer. Problems of development are more evident in rural areas, where the great majority of the population live.

Most African countries have an economy based on agriculture, and up to 85 per cent of the population in many countries live in rural areas and earn their livelihood from agriculture. Three-quarters of the gross national product comes from agriculture, much of which is on a subsistence level. Economic and social development of these countries, especially the rural areas, is tied up with the development in agriculture and increase in production. This requires, among other things, capital which is lacking in most African countries. Capital is required to buy the necessary agricultural inputs, machinery, and construction of the required infrastructure, etc.

Capital formation is still one of the major constraints of economic development in Africa. Ever since African governments achieved political independence well over a decade ago, they have all been heavily dependent on outside capital in their effort to bring forth economic and social change. Africa cannot be economically self-reliant unless it is able to generate and accumulate capital from within its internal resources to meet the heavy demands for the socio-economic development programme. In order to bring about sustained development without undue dependence on foreign capital, the population at large has to participate in minimizing consumption and save, so as to generate substantial capital which may be committed to development.

Capital, economic as well as human, has become the most important factor needed for the development of any country. As is quite evident in many African countries, however, the flow of foreign capital has not been on the level expected or desired. Therefore it is imperative for African countries to develop local capital and at the same time develop human resources for the administration of this capital. A form of self-reliance is needed in most African countries to enable accelerated development.

Lack of capital resources

Capital is a necessary and basic, although not a sufficient, condition for economic development of African countries. It is often urged that, because of the paucity and undeveloped nature of the human resources available to African countries, the value of capital as a factor of economic growth in these countries is seriously circumscribed. No one challenges the proposition that the factors of production must complement one another in the development process and that no one single factor can accomplish the development process unaided by one or more of the others. However, the availability of capital is, no doubt, a central element in the development process in African countries.

Much of the inability to improve conditions in Africa can be attributed to lack of capital needed for development. This is particularly so in the field of agriculture and animal husbandry, where peasant farmers cannot improve their holdings or output because of the expenses involved which they cannot afford.

Farmers need capital to improve their farms and increase production. They need better equipment, improved seeds, fertilizers, pesticides, etc. In order to do this, they need capital to finance such improvements. As most of them cannot obtain credit from commercial banks and other financial institutions, they are often compelled to work on a very modest scale with no prospect of improvements whatsoever, or go to moneylenders to whom they pay high interest rates, sometimes as much as 400 per cent per annum. This keeps them almost perpetually in debt, with little chance for advancement.

If capital is central to the development process, then the question arising is how can African countries obtain this capital when certain traditional mores exist which inhibit the process of capital accumulation, and *per capita* income is so low that significant capital cannot be realized by way of taxation. Institutions for providing credit for most countries' main industry - agriculture - are either non-existent or grossly inadequate. The few savings there are, are often hoarded instead of being invested. These hoarded savings require mobilization for the purpose of development. The mobilization of savings is the only way to generate capital locally and the bed-rock foundation of economic and social development in Africa. This can best be done through co-operative savings and credit unions.

Mobilization of savings

Mobilization of domestic resources and savings is one of the ways of effecting rapid economic and social changes in African countries. By this is meant a purposeful marshalling of national resources and effective mobilization of all sectors of the population for participation in activities which would lead to the integration of the vast, but less productive, traditional sector with its small modern (urban) sector.

There is a need to initiate measures by which personal savings from salaries and wages or profits derivable from business, and most important of all, personal saving out of seasonal profits made by the bulk of peasant farmers in the rural areas, can systematically be encouraged, mobilized and channelled into productive enterprise.

The initial steps in mobilization of internal capital have to be accomplished by using comparatively

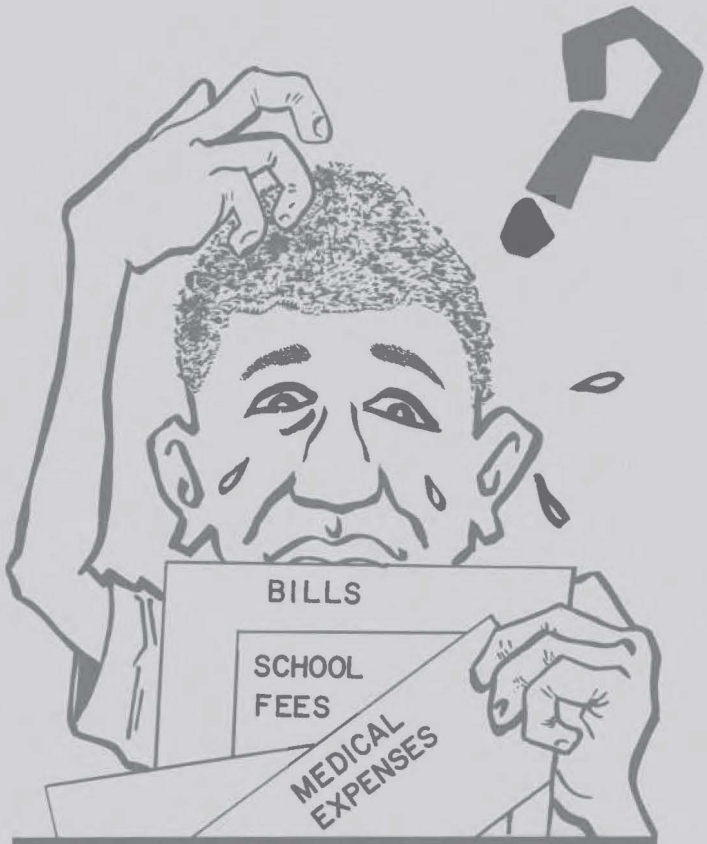
small sums of money in building a widespread network. Credit unions are one way, and a good way, in which this is feasible. Credit unions facilitate this by pooling together small sums of money now spread among many people. The establishment of credit unions assists in bringing sterile funds into productive use, especially in rural areas where individual savers tend to hoard their savings or convert them into livestock.

The role credit unions can play in achieving the development objectives of African countries is enormous. With the economy so geared to rural areas, credit unions are the main hope in bringing about the much needed socio-economic development which would bring them at par with their fellow-countrymen living in urban areas. Credit unions promote and manage limited capital assets to increase production and to channel resources in more effective ways, thus bringing a more equitable distribution of increasing goods and income.

DON'T SAVE THE OLD WAY

JOIN YOUR CREDIT UNION

NOW WHAT



YOUR CREDIT UNION IS THE SOLUTION

Credit unions, as co-operative associations, are organized to promote thrift among their members and to accumulate a fund from their savings to make loans to members for productive purposes at small rates of interest. They develop skills, understanding and attitudes for a programme of education of adults in savings. The capital which they conserve helps them to solve their problems of production, and to establish small businesses or farms which can grow and eventually become big ones.

Credit unions are also an invaluable tool in the education of rural people, because, in order to become a member of a credit union, it is often possible for the applicant to attend a training course and learn of thrift, family financial problems, and better utilization of local resources. Since most of the trainers and leaders in such courses are members of their own communities, the participation of the people is much more meaningful and more closely related to their prime needs than in formal educational institutions.

Some African countries seem to ignore local and rural savings, and some even think that local savings are infinitesimal or even non-existent. They therefore embark on requesting foreign aid while this aid should be supplementary and only of a temporary nature.

Substantial sums of money can be collected through co-operative savings or credit unions; e.g., Nigeria at the end of 1973 had 2,819 registered credit unions, with a total membership of 102,389 and a subscribed capital of US$6,156,161 1/. Ghana's comparable figures were 203, 29,385 and US$2,011,247; Tanzania - 223, 37,386 and US$ 1,149,685; Kenya - 101, 35,745, and US$2,348,385. Many other countries can do as well, if not better. A country's development, or, in other words, real development will come about only with its own national savings.

Experience shows that farmers and small-scale businessmen who receive loans from the State tend to consider these as grants, because they have not personally contributed in saving the money, they risk losing nothing, and because those who administer the loans are remote, recovery is often difficult. Credit unions are therefore an essential element in the populations' participation in national development.

How to initiate and encourage the credit union movement

In many African countries there already exist elementary forms of mutual aid and provident systems whose roots are securely embedded in the traditional and social organizations of their communities. These traditional forms of mutual aid can provide a solid basis for the establishment of more meaningful and profitable schemes of social protection against the hazards of rural living, and more meaningful local development and more meaningful integration ot the rural and urban population.

Plans for mobilizing savings, establishment and expansion of national credit unions may vary from country to country or area to area, depending of the peculiar problems and the standards of living of each country or area. Nevertheless, an important factor to consider when establishing a new society is to fully inform the people about the proposed society and explain the purposes and benefits. A team of competent and experienced field officers is very useful in this respect.

There is a need for national committees (where they do not exist) for the promotion of credit unions, to launch campaigns, create incentives and make available educational material for the credit union movement at the village level. The mass media can be of great help in achievina this objective. There is also a need for a national credit unions association, not only for co-ordination purpose, but also to be charged with the responsibilities of promotion, education, training and research in the credit union movement.

The real success of credit unions lies in the fact that they are organized and run by the people themselves. Therefore, honest and competent leaders are essential to their success. This calls for a programme of education, not only for the leaders, but also for the staff of credit unions. It is also important that such training should be well adapted to the realities of the society, otherwise the credit unions may easily become debit unions. Some of the vital qualities that are required in the leaders and members of a credit union movement are sincerity of purpose and honesty. Where these are present, there will be no thefts and no corrupt practices generally.

Establishing and developing the credit union movement in Africa is not without problems. Among the more urgent ones could be mentioned:

(i) Lack of financial resources;

(ii) Poor communications, especially in rural areas;

(iii) Scarcity of solid, strong leadership;

(iv) Failure of people in general to understand the objectives and workings of the thrift and credit co-operatives and their indifference to give the necessary support at the formation stage of the society;

(v) Lack of qualified staff: managers, accountants, treasures, book-keepers, etc;

(vi) Apathy of members;

(vii) Failure to repay loans on time;

(viii) Inclination of members not to take advantage of the credit facilities;

(ix) Unpopularity of credit unions in some areas, due to unpleasant past experiences of failure and loss of personal savings.

There are no ready solutions to the above problems, but a great deal can be achieved by effective co-operative educational programmes and guidance and increasing the number of trained and dedicated personnel at all levels.

It is important that governments should be aware of the usefulness of credit unions in the national development effort. An effort must be made to arouse interest and enthusiasm in the movement, especially in rural areas, through training programmes, illustrations in the form of literature, films, etc. Trained field officers should be appointed to work in close contact with the people - farmers, small traders, businessmen, etc., to give advice and assist in establishing credit

1/ Nigeria statistics include some pre-civil war information. Most of the Unions were in the East. A process of organizing State-wide credit associations in each of its twelve states is under way.

unions. Members of credit unions should choose their own leaders of proven ability and integrity and moral qualities, and who are ready to sacrifice their time for the benefit of the association.

Assistance by international agencies

Information available indicates that, at the end of 1973, credit unions were operating in nineteen African countries 2/, but there are still many countries where they do not exist. There are still millions of people who do not have the means, and hence benefits, of participating fully in the economic life of their own communities. There is therefore a great need for the mobilization of all resources, including domestic savings, in order to bring about greater participation of the population in the economic activity of their country and bring about a more rapid socio-economic development in African countries. Credit unions have proved an effective tool in mobilizing all the inhabitants of every country.

At the end of 1973, there were 4,037 *registered* credit unions in nineteen African countries (listed below) with a total membership of 280,485 and a subscribed capital of US$ 15,480,280 3/. In addition, there were a further 173 unions in different stages of establishment. There is no doubt that much effort is still needed to expand the movement to embrace a much larger number of the working population in every country.

2/ Botswana, Cameroon, Ethiopia, Ghana, Kenya, Lesotho, Liberia, Mauritius, Nigeria, Senegal, Seychelles, Sierra Leone, Swaziland, Tanzania, Togo, Uganda, Upper Volta, Zambia and Malawi.

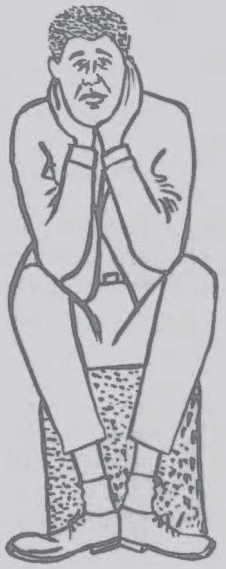
3/ Directory of the activities of international voluntary agencies in rural development in Africa 1972. (Updated)

Many of the existing credit unions seem to be working well, but lack of trained staff plagues some of them. There is also a general lack of competent leaders. This, as already explained, calls for an extensive training programme in many countries, not only to produce the necessary staff, but also mass education about credit unions will greatly assist the staff.

In this respect, many international agencies are doing useful work in providing both financial and technical assistance to the credit union movement in Africa. Besides the United Nations and its agencies, voluntary organizations like the World Council of Credit Unions Incorporated, Canadian International Development Agency (CIDA), Catholic Relief Services, OXFAM, Inter-Church Aid, Canadian Catholic Organization for Development Peace (CCODP), Misereor, Konrad Adenauer Foundation, the CUNA Foundation, and many others, are giving assistance in the form of loans, grants, expert personnel, training and scholarships, to a number of credit unions in Africa.

The symposium on rural development, held in Addis Ababa, 9 - 13 August 1971, and attended by over sixty representatives of twenty-seven major international agencies, as well as United Nations agencies, made certain important recommendations, one of which was on mobilization of domestic savings and credit. This drew attention to the need for African governments to encourage rural populations to mobilize their resources for financing of local development projects and individual private enterprises. It emphasized the need for African countries to foster the habit of thrift in order to mobilize local resources for financing of overall national development.

As a result of this recommendation, a number of international agencies are prepared to offer scholarships for training of personnel and others are in consultation with the ECA and ACOSCA on how best they can assist the credit union movement in Africa.



WAITING FOR THE LOTTERY TO SOLVE YOUR PROBLEMS ?

DON'T LOSE TIME,

YOUR CREDIT UNION WILL SERVE YOU.

The African Co-operative Savings and Credit Association (ACOSCA), the central organization for credit unions in Africa is doing useful work in fostering the organization of thrift and credit societies in Africa and to assist them to attain self-reliance and self-sufficiency as quickly as possible. They are placing great emphasis on education, training and exchange of information. They have, with the assistance of a number of international agencies, established sub-regional training centres in a number of African countries:

(a) Western Regional Training Centre at Bamenda, Cameroon. This centre caters for credit union personnel from Cameroon, Ghana, Nigeria, Liberia, Sierra Leone;

(b) Eastern Regional Training Centre at Nairobi, Kenya. This centre caters for trainees from Kenya, Uganda, Tanzania, Ethiopia, Zambia, Sudan, Seychelles and Somalia;

(c) Southern Regional Training Centre at Maseru, Lesotho. This centre covers Lesotho, Botswana, Malawi, Mauritius, Swaziland;

(d) North-western Regional Training Centre at Bobo Dioulasso, Upper Volta. This centre caters for francophone countries of Upper Volta, Dahomey, Togo, Ivory Coast, Senegal, Mali;

(e) Central African Regional Training Centre at Bukavu, Zaire. This covers Zaïre, Burundi, Rwanda and Madagascar.

The organization's other activities include:

(i) Assistance in the promotion of co-operative savings and credit societies in all African countries;

(ii) Assistance to such societies in their operational and technical problems, so as to ensure the establishment of successful organizations;

(iii) Advising and giving technical assistance regarding legal recognition of credit unions within each country;

(iv) Assisting in the establishment of national associations of co-operative savings and credit societies and helping them to plan and carry out their programmes to enable them to attain self-sufficiency in the shortest time possible;

(v) Co-ordinating the activities of co-operative savings and credit societies of various African countries.

The African Co-operative Savings and Credit Association, which has its headquarters in Nairobi, Kenya, needs all moral and material support from all African countries if it is to realize its full potential. Given this, it can be a major instrument in the development effort of African countries.

Future prospects

Much work is needed to ensure that credit unions take a leading place in the struggle to mobilize internal capital for the rapid economic and social development in Africa. There are rising expectations everywhere. Education is turning out many young people who are drifting to the glamour of the cities, searching for a livelihood in the wrong way and in the wrong places. Credit unions can help in this situation and in fostering and strengthening the economic independence of Africa.

Credit unions alone may not in themselves be able to provide all the services needed by the small farmer, but they are the necessary element to initiate other types of co-operatives for production and marketing, which can help the farmer to buy economically what he needs, and sell his produce advantageously and to gain control over his own money. Extension services that give farming advice and guidance to the farmer can become training programmes to bring advice on nutrition and health to the whole family.

There is a need to link up the extension services of the departments of agriculture and co-operatives with the promotion and supervision of credit unions. Loans to small farmers should be issued on the advice of extension workers and for larger farmers on the basis of fully-documented farm plans. This would ensure the maximum benefits to be derived from credit facilities and would also ensure that the size of the loan would be geared to the managerial ability of the farmer.

From the experience of countries that have gone through the development process, it is evident that mobilizing the capacity and potential of the bulk of the population through co-operative institutions is one of the solutions to many development problems. Mobilization of savings cannot be done better by any other method than through thrift and credit co-operative institutions. Thrift and credit co-operative institutions, other than generating capital accumulation, induce a sizeable sector of the population to participate in national building efforts.

There is a need to extend new technology to small farmers. With this, some answers may be found to the mounting problem of rural unemployment and underemployment and the flight of young people from the farms to the cities. Credit unions will enable traditional farmers to adopt modern methods of farming with clear benefits to them. Given the benefit to double or triple their yields, these farmers will eagerly adopt new methods.

A credit union is a movement of self-help and development by the common man himself, for a better and fuller life for himself, his family, his community and his country at large. The movement based on voluntary mobilization of local capital would, no doubt, have a great impact on the development of self-reliance, confidence, and self-dependable communities, which for a long time, have depended upon outside official assistance.

Some relevant questions

1. Economists speak in general terms about economic growth and GNP and *per capita* income. One begins to think that money alone can transform Africa. What is the relationship between human and financial resources for development?

2. One hears of massive loans to governments from the World Bank and governments outside Africa making little headway in the development effort. One then wonders what impact the tiny peasant farmers' savings can have on development. How can these two be reconciled?

3. Why cannot peasant farmers borrow from development banks and other financial institutions, instead of creating their own organizations?

4. People living at a subsistence level often save any money they may get. How can they be persuaded to part with their savings and then take loans?

5. What has the credit union movement achieved in the development effort in countries where it has existed for some years?

6. What are the main problems in promoting and organizing credit unions in rural areas? Give some suggestions as to how these can be overcome?

7. What role should the United Nations and its agencies play in promoting and encouraging credit unions?

8. In what way do you think international voluntary agencies can assist most in promoting the credit union movement in Africa?

9. What role do you think national governments should play in this field?

10. Self-reliance is being emphasized in a number of African countries. How best do you think this can be achieved?

CONCLUSIONS

Many African countries have now had more than a decade of political independence, and have gone through two or three national development plans. There is no doubt that, broadly speaking, the productive capacity of African countries has increased significantly in the last decade. However, on the other hand, it has to be emphasized that such development has not been evenly shared. There has been a marked disparity among the rates of growth in the different areas of the same country. Development schemes have tendered to be concentrated in cities and major urban areas, and as a result, the underlying heterogeneity of economic and social conditions has generally remained unchanged, especially in rural areas.

There has been very little change, if at all, in the general living standards of the masses of the people in rural areas. In a few countries, such standards as there were have been falling, due to a high rate of increase in population and low agricultural production. Poverty is rampant, famine is a seasonal occurance and starvation is always looming on the horizon.

In so far as poverty leads to ill-health, inertia, and lethargy, it is very difficult to tap human resources to break out of the cycle of poverty and inadequate growth. It is in this respect that Development Education seeks not only to arouse peoples' interest and involve them in the development schemes of their communities through self-help methods, but also to give inspired leadership that can turn indifference and fatalism to a sharpened interest in new possibilities.

Development Education is especially aimed at helping peasant farmers and villagers to improve their own lives through informal education, better production methods and increased income. Technical information is a necessary factor in improving agricultural production and general progress. This monograph is therefore conceived as a means of bridging the «national information gap» which keeps African villagers from adopting improved methods of production or learning from one another's experience. The monograph tries to gather in one publication information collected by the Economic Commission for Africa which has been found helpful in some countries and can be adopted in others to advantage.

Besides relating the work being done on some development projects in a number of countries and citing some specific examples, the monograph tries, in some cases, to describe techniques and methods in general terms, and simply, which can be used in improving the general living standards of people in rural areas. It does not however, in any way, purport to be an authority on the subjects discussed or to replace extension services necessary in all these fields. Hopefully, it will generate new ideas as well as pass on information which has already been tried and found useful. Whilst some of the practices suggested can be tried on an individual basis, in many cases it would be well to seek out extension services existing in the area.

In order to achieve an appreciable impact in national rural development programmes, an educational input is necessary. Massive national campaigns are needed through the radio, television, and the press to convey the rural development message to the masses in rural areas. This may be supplemented by exhibitions, talks, film shows, forums and debates.

Complementing the mass media rural development message, there is a need for a face-to-face motivation programme whereby peasant farmers are motivated towards accepting change in their production methods by a team of extension workers.

Development Education is a new and an on-going project whose benefits have not yet been fully assessed. An evaluation is being undertaken to determine its impact and effectiveness. Consultations are also being made with a number of national broadcasting authorities in the region and the Union of National Radio and Television Organization of Africa (URTNA), in order to review the programme, assess benefits and see what improvements can be made. It is hoped that this monograph would be an inspiration to people involved in rural development to try out new ideas and techniques in order to bring about the much-needed accelerated development of rural areas.