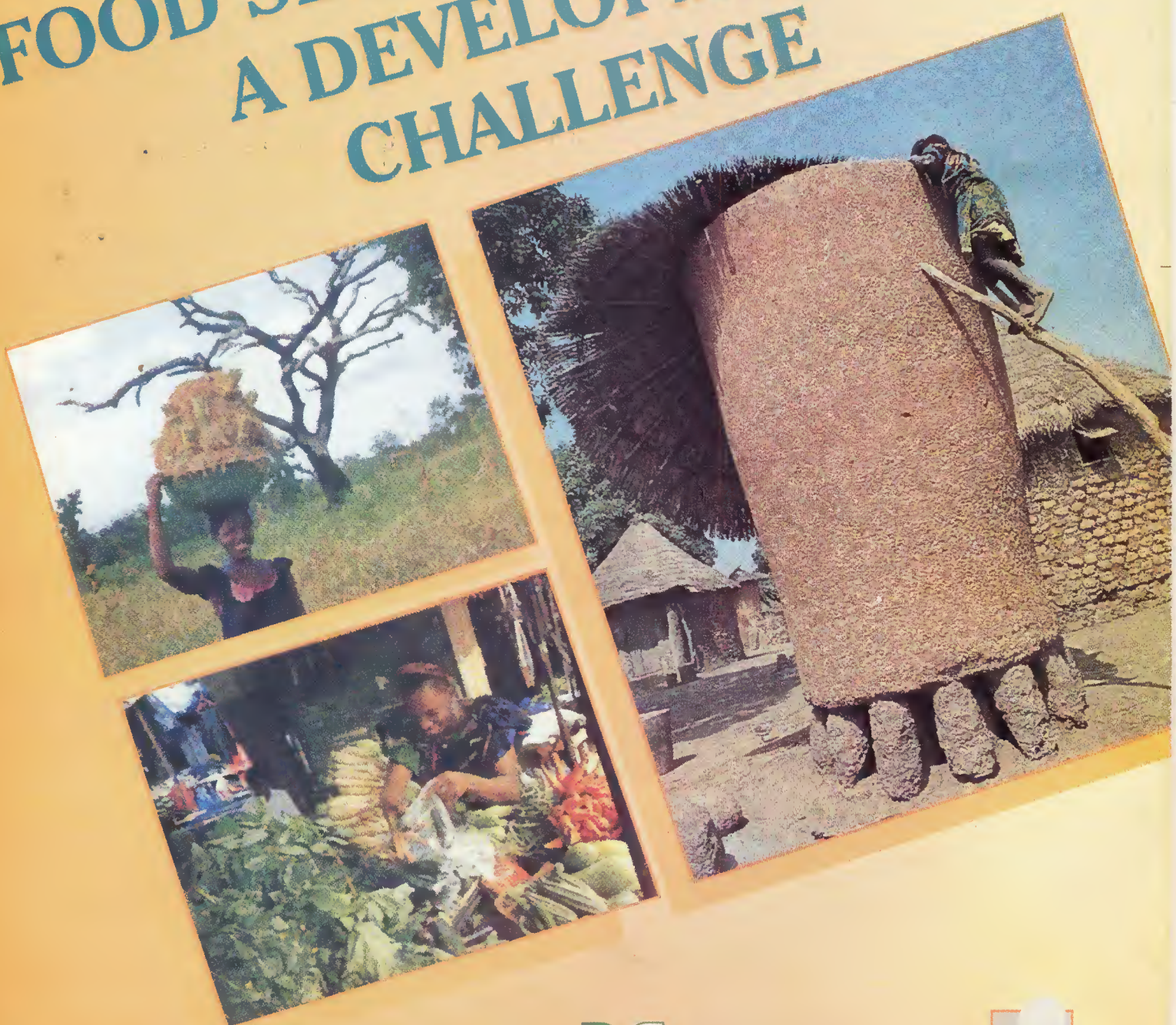
les DA dossiers de développement GRIPROMO

INADES FORMATION

FOOD SECURITY IN AFRICA : A DEVELOPMENT CHALLENGE



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INADES Formation is a non governmental and non profit organisation. Since 1962, it has been training rural adults in ten African countries : Burkina Faso, Burundi, Cameroon, Chad, Congo (The Democratic Republic), Côte d'Ivoire, Kenya, Rwanda, Tanzania and Togo.

It lays an emphasis on the knowledge and know-how of rural people with view to their self-advancement in a society where equitable relations prevail between men and women, and where men and women farmers are really empowered.

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The Technical Centre for Agricultural and Rural Cooperation (CTA) was established in 1983 under the Lomé Convention between the ACP (African, Caribbean and Pacific) Group of States and the European Union Member States. Since 2000, it has operated within the framework of the ACP-EC Cotonou Agreement.

CTA's tasks are to develop and provide services that improve access to information for agricultural and rural development, and to strengthen the capacity of ACP countries to produce, acquire, exchange and utilise information in this area. CTA's programmes are organised around four principal themes: developing information management and partnership strategies needed for policy formulation and implementation; promoting contact and exchange of experience; providing ACP partners with information on demand; and strengthening their information and communication capacities.

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TABLE OF CONTENTS

FROM "AGRIPROMO" TO "LES DOSSIERS DE DEVELOPPEMENT AGRIPROMO"

This is the maiden edition of "les Dossiers de Developpement AGRIPROMO". It examines food security in Africa and other developing countries.

"Les Dossiers de Developpement Agripromo" has come to replace the magazine "AGRIPROMO" magazine that has been in publication since 1975. This change is the product of a reflection we carried out - a reflection that was inevitable in the face of the changing rural world and the advent of new skill and capacities within Farmers' Organisations. It had also become necessary to refocus the role of INADES-FORMATION vis à vis these organisations.

Through the Dossiers de Developpement AGRIPROMO"we are seeking to attain the following goals :

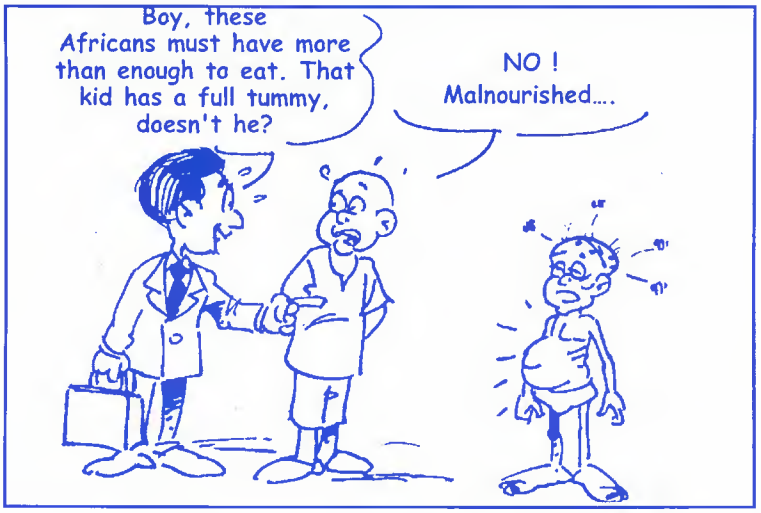
- help development workers to strengthen their capacity to critically analyse topical development issues;
- make available information that will enable them to make more responsible choices that are adapted to living conditions in the rural world; and
- contribute to build the capacity of rural farmers in the design of development strategies.

Who are the target readership of the Dossiers ?

The Dossiers de Developpement AGRIPROMO" are intended for rural farmers through the staff of NGOs, development projects of other development organisations. The Dossiers are also intended for young farmers who can read English.

What information do the Dossiers contain ?

Each "Dossiers de Developpement AGRIPROMO" focuses on a single theme - a current development issue. Forthcoming Dossiers would examine, for example : natural resources management, development financing, the organisation of the rural world, the marketing of agricultural produce, gender and development...



The selected theme is examined from various perspectives with the assistance of specialists (researchers, rural farmers, development workers) whose ideas are substantiated by testimonies and true-life experiences from Africa and beyond.

Each Development Dossier contains a 'technical' part intended to assist development workers as they help farmer organisations in the design of strategies for the implementation of development actions linked to the theme.

THE CHALLENGES OF FOOD SECURITY

This introductory sheet overviews all the key elements of this Dossier, and highlights the linkages between them. It refers the reader to the various sheets in which the topics are treated in detail.

Food security is a topical issue. It is so important that the Food and Agriculture Organisation of the United Nations (FAO) organised a world summit on this from 13 to 17 November 1996. The summit was attended by Heads of State, farmer organisations, NGOs and civil society organisations from the four corners of the planet. The purpose of the summit was to examine the world food situation which is deteriorating each passing day, despite the increase in food production.

The conclusions of the summit were a big disappointment to many of the participants, especially the representatives of NGOs and farmer organisations. These participants indeed realised that many industrialised countries were not concerned by the changing food situation of developing countries. In fact, the improvement of this situation hinges directly on the revision of the rules of international trade which at moment only favour the richest countries.

Yet, each person has the right to enough food so as to lead a healthy and active life. This right is enshrined in the Universal Declaration of Human Rights adopted in 1948. Food security is therefore a matter of social justice, not charity.

For the citizens of a country to fully enjoy this right, three key conditions have to be met:
- food must be produced in sufficient quantity and quality to meet the needs of the entire population;
- distribution channels must exist to make the food accessible to all;
- each person must have the possibility to provide himself, by buying if necessary, the food needed to live.

The food situation in the world

Generally speaking, world food resources have increased significantly since 1974 when the FAO (Food and Agriculture Organisation of the United Nations) waved the red flag for the very first time about the precarious world food situation. Thanks to scientific and technological progress, world food production today is enough to meet the daily needs of all the 6 billion inhabitants of the earth. The FAO holds that a balanced daily food intake is 2 400 calories. World food production is enough to provide each inhabitant of the earth with 2 700 calories each day (See Sheet 1C).

However, 840 million people are still living in an alarming situation of food insecurity. Seven million children die each year because they are malnourished or undernourished. This situation is the result of the uneven distribution of food resources between nations and peoples (See Sheet 1A).

In fact, the world produces about 1 600 tonnes of cereals each year, but three-quarters of this production is concentrated in Europe and America. At individual country level, food resources are always available in towns, even though they are produced in villages.

The poor distribution of these resources is further aggravated by the increasing monetisation of food which often pushes it out of the reach of the poor. The globalisation of trade and agriculture and the attendant significant reduction in world food stocks have also affected the food situation of countries with a food production deficit. This is compounded by the fact that the major exporting countries (the USA in particular) are actually encouraging their farmers to cut national food production so that their world market prices can increase. Food imports therefore cost much more for the countries that produce less than they need to meet their needs. Some people hold that this situation is transient, but it is helping to further weaken the already precarious economies of these countries.

The food situation in developing countries

Food production has increased in third world countries, as has been the case across the world. However, the inadequate technical and financial resources devoted to agriculture, the hostile natural environment (See Sheet 2A), the difficulty of access to the means of production, and the unending structural adjustment programmes imposed by international financial bodies have impeded these countries from adequately meeting the food needs of their fast growing population.

The situation is most critical in Africa and South Asia. In South Asia, 1 out of every 2 children suffers from malnutrition. In Sub -Saharan Africa the figure is 1 out of every 3 children. Each year, nutritional deficiencies and malnutrition-linked diseases claim the lives of millions of children or maim them for life. Other victims are the thousands of pregnant women, breastfeeding mothers and the aged, who constitute another vulnerable segment of the population of countries referred to as poor. (See Sheet 1D).
These regions are a fertile battleground for Malthusian and anti-Malthusian theories. Some of these theorists brandish birth control and even birth limitation as the absolute weapon against food insecurity. Others hold that abundant labour is rather an asset for developing food crop production and the country's economy, given that the machine has not yet replaced the human person in a number of essential agricultural tasks.

However, local food crop production cannot grow and prosper because it is facing unfair competition from subsidised products that flood the local market. Consider this example : in 1990 Africa imported 8 million tonnes of cereals. The FAO estimates that imports will stand at 19 million in 2010. The economies of these countries are therefore exposed to the negative repercussions of food imports and aid on national food crop production, making them forever dependent on food aid.

It is true that there are international trade rules that protect national economies from certain import-related threats (See Sheet 3A). The fact remains, however, that low income countries are generally too weak to enforce them. As such they often have to grapple with a dilemma: closing in either counting on home production for food self-sufficiency or specialising in producing and exporting products other countries need, even if it means relying on these other countries for food security.

Considering the results that have been obtained so far, none of these two options can really generate development. There is a third option which is currently being experimented by many developing countries : developing food crop production while at the same time cornering a share of the market for manufactured or semi-manufactured products to earn more foreign currency.

Producing more and better

To produce more and better, developing countries need to:
- redirect agricultural research towards food crop production;
- facilitate access by the population to factors of production such as land and water ;
- better define the role of national food security stocks and improve distribution channels;
- organise themselves to defend their rights.

Redirecting agricultural research

This could be an initial response to the food security problem in developing countries. In Asia, this reorientation led to the 'green revolution'. This revolution has not always been environment-friendly but thanks to it, China is able to meet the food needs of its one billion inhabitants. Many other developing countries could follow its lead while making sure they use sustainable methods of production even for high-yield varieties requiring high amounts of inputs.

The success of this 'new green revolution' hinges on improving the yield of local food crop varieties, which have so far been neglected (millet and sorghum for example), developing strains likely to attract domestic and foreign consumers, ensuring better use of areas with low production potential, taking into account environmental issues to ensure the sustainable management of resources, and bringing researchers closer to farmers (See Sheet 3B).

One way of bridging this gap could be by making better use of farmer research. Very often farmers better understand the specific conditions of their area. They are better placed to try out certain technical improvements that may come from agricultural research. If they carry out such trials, they may lead to technical reforms that are better adapted to the agro-ecological and cultural conditions of the area concerned. Such 'scientific' trials may involve traditional or modern techniques (See Sheet 5B).

It would also be necessary to lay special emphasis on the development of local agro-food industries, which often generate more income than exports of unprocessed produce.

Redirecting or adapting agricultural research is an enormous task requiring increased State intervention at a time when, partly because of the prevailing economic crisis, the State is only too willing to disengage from the activity and leave it solely in the hands of the private sector.

Facilitating access by the population to factors of production

This is another area in which State intervention is indispensable and urgently needed, especially with ever growing population pressure and increasing scarcity of these resources each day (See 3D). Managing and using the factors of production sometimes requires considerable financial investments which do not generate immediate returns. The private sector is therefore reluctant to invest in this area since private investments are guided by short term profits and do not pay much attention to the sustainable management of environmental resources.

It is also worth noting that the distribution of these resources could engender conflicts that result in the destruction of part or all of the development infrastructure the State has built. Such conflicts could further jeopardise an already precarious food security situation (See 2B). This is further reason why public authorities need to be involved in the development and management of the factors of production.

The need to better define the role of national food security stocks

While the issue relating to the role of the State in the promotion of agricultural research and the management of the factors of production is still the subject of debate, that of its role in the constitution and management of national food security stocks has been addressed in several West African countries. Structures set up to guarantee high producer prices and low consumer prices, and to regulate the distribution of food products in periods of scarcity, have repeatedly failled. This has forced States to increasingly limit their role to the management of the food security stocks they constitute (See Sheet 3C).

Some of these States have also sought, as a matter of priority, to encourage production by supplying seeds (selected or not) to food crop farmers. They help these farmers to constitute and manage community food stores and granaries so as to avoid the stranglehold of traders who sometimes create artificial scarcities in order to make profit. States also collect and disseminate information on the food needs and available food resources of the region.

They are assisted in this effort by NGOs whose primary objective is to make the farmer responsible for his food security. In Niger, Burkina Faso, Mali and Chad, the NGO **"Afrique verte"** whose slogan is "African agriculture can feed Africa", has developed a system of small farmer cereal exchanges. These exchanges enable farmers with surplus production to sell it in areas with a production deficit and in towns. It contributes to the development of food crop production across the country, thus reducing dependence on food aid and curbing the long term negative effects of such aid on national economies (See Sheet 3E). Through this action the efficiency of food crop distribution channels is improved, which is good not only for the farmer but for the country as a whole. It stimulates production because farmers are paid high prices without the consumer having to pay more to feed well (See Sheet 4B).

Getting organised to defend the right to food security

The defence of the right to food security has to be at two levels at least : by underpriviledged individuals vis à vis the State ; and underpriviledged States vis à vis the international system.

Each day, 1 320 million men, women and children toil to produce the food the world needs. More than 90% of these individuals live in developing countries and are often among the very first victims of hunger and malnutrition. Developing food crop production could help improve their lot, if and only if this is accompanied by a social, political and economic dispensation that is fairer to small farmers. These farmers and their organisations must be involved in the fight for increased visibility and more social justice. With the support of NGOs and other members of the civil society, they can impose their effective participation in decision-making and in actions that influence their existence (See Sheet 4A).

Jacques Diouf, the FAO Director General said that food security is a right and not a matter of charity. To enjoy this right, producers need to organise themselves to defend it. The same applies to developing countries which need to organise themselves to ensure compliance with the rules governing international trade in agricultural produce (See Sheet 3A). Even without the unfair competition, the globalisation of trade in these products is hitting these countries very hard indeed.

Marie Constance Houédanou

2. Decentralising wealth and power: this hinges on, among other things, agrarian reforms in favour of the rural poor and the promotion of integrated rural development.

3. Changing agricultural and food production systems that have a negative impact on the environment and promoting models that are based on sound agro-ecological principles.

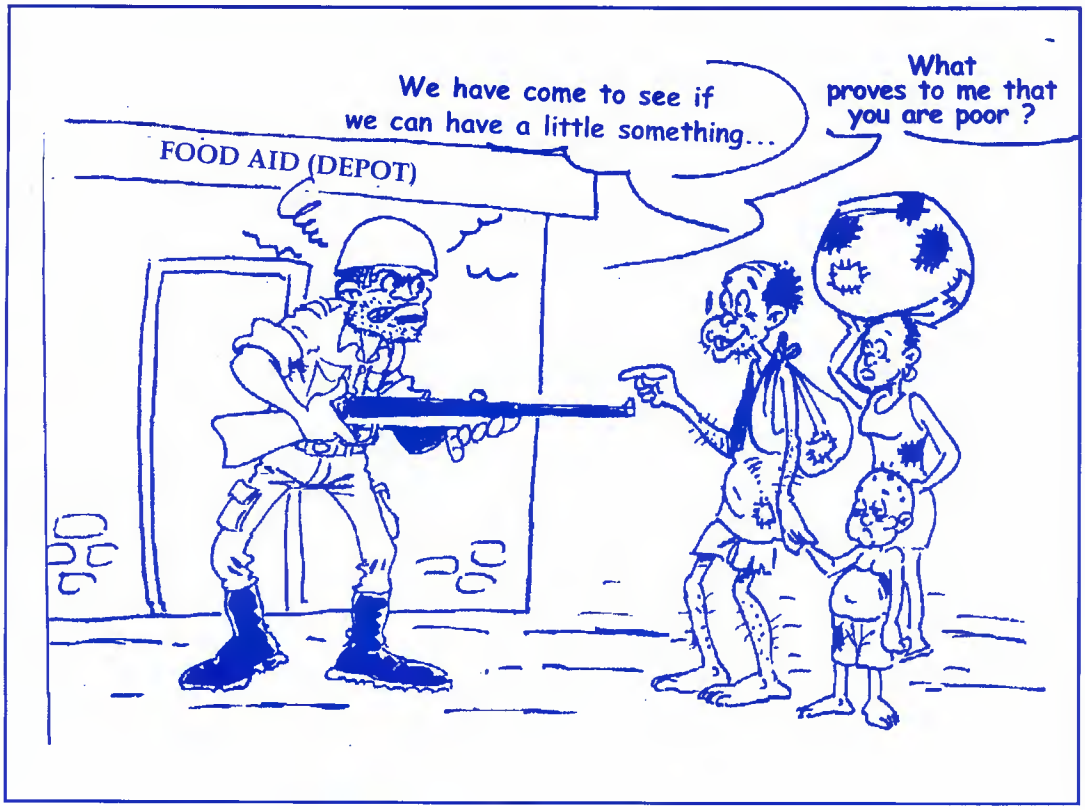
4. Strengthening the capacity of governments and States and the mechanisms through which they fulfil their role of guaranteeing the food security of the population. These authorities need to adopt and implement the necessary policies to eradicate poverty, guarantee sustainable means of existence to the population and enhance access by the poor to food products and resources earmarked for agriculture.

5. Strengthening and deepening the participation of grassroot organisations and NGOs by guaranteeing the freedom of association. These organisations need to monitor the impact of the policies, programmes and actions of international trade and financial organisations on food security. Civil society has to be involved in the formulation and monitoring of national policies and programmes.

6. Guaranteeing the right to food through international law. This means that the population's right to food must take priority over macroeconomic policies and the liberalisation of international trade. It also means that food products cannot be considered as ordinary goods because they have a cultural and social dimension.

To ensure the implementation of these six key points, the civil society organisations undertook to follow up the World Food Summit, with special emphasis on the implementation of the commitments made at the summit and active participation in the "Food for All" campaign.

Source : Report of the World Food Summit, FAO - Rome 1997.



Food Security :
A MATTER OF JUSTICE, NOT CHARITY!

> ***It is important to state that the issue of hunger is not a matter of charity. It is a matter of justice.***
>
> *Dr Jacques Diouf*
> *Director General of FAO*

The notion of food security came to light in 1974 during the First World Food Summit organised by the FAO (Food and Agriculture Organisation of the United Nations). Food security refers to a situation in which each day, each person has sufficient food (in terms of quantity and quality) to lead a healthy and active life. For each person to enjoy this security, there must be sufficient food in the world and food reserves must be stable and accessible to all.

Food resources are available, but are unevenly shared.

FAO, World bank and IFPRI (International Food Policy Research Institute) statistics show that the world's food supply is enough to feed the whole world.

BOX 1

The Recommendations of the 1974 World Food Conference

The recommendations adopted at the first world food conference organised by the FAO in Rome were aimed at increasing food supply and reducing malnutrition in the world.

They centred on:
- setting up an information and early warning system for the detection of foreseeable production deficits;
- co-ordinating at the international level of a system for maintaining enough national food stocks to guarantee sufficient food supply at reasonable prices;
- commitment by States to offer at least 10 million tonnes of cereals as food aid to needy countries;
- urging developing countries to take the necessary measures to substantially increase their share of the international trade in agricultural products.

This last recommendation addressed to developing countries proposed a number of targets:
- increasing their food production by 6.7% annually (the increase had averaged 2.7% between 1962 and 1972);
- securing funds to launch new initiatives in the area of agricultural research, the production of fertilisers and pesticides;
- speeding up the agrarian reform process.

Source: Nourrir le monde
World Food Summit
Rome, 17 November 1996

The implementation of the resolutions adopted by Heads of State at the First World Food Conference (See Box 1) contributed to the significant reduction of food shortages in the world. Today, each person on earth could have an average of 2,700 calories to meet daily energy needs. The FAO deems that 2,400 calories are enough for the average human being to lead a healthy and active life.

However, the available food resources are not evenly shared among the countries of the earth: those of the North (America, Canada, Europe) are the "granary" of the world, while the majority of developing countries have a cereal production deficit (See Sheet 1C on the world food situation). Deficits are also found in some regions within a country, with some areas producing a lot of food crops while others do not produce enough. This is the case in most Sahel countries where the moist and fertile southern regions often need to supply the dry and less productive northern zones.

This uneven distribution of food production partly accounts for the fact that 800 million people are suffering from hunger and malnutrition in Africa, Asia and Latin America (See Box 2).

BOX 2

Malnutrition : a scourge

- In Sub-Saharan Africa, the number of malnourished people virtually doubled in 20 years, from 94 million in 1970 to 175 million in 1990. It is estimated that by 2010, 296 million of the children in the region, representing about 32% of the total population would be victims of this scourge.

-In East Asia, the number of malnourished people dropped by 40%, but South Asia still has 265 million victims of food deficiencies (25% of the population).

-In South-East Asia, 38% of children below the age of five are underweight. In India, 55% of the population suffers from severe malnutrition.

-In Latin America and the Caribbean, 60 million people suffer from malnutrition. In Brazil, which produces and exports food products, 30 million people are still undernourished.

-The countries of the North are also severely affected by this scourge. In the United States, 12% of the population was suffering from malnutrition in 1991. Four million children were victims of the condition as well. In France at least 2 million people are malnourished.

Source:
La sécurité alimentaire à long terme
Courrier de la Planète,/Solagral
septembre-octobre 1996.

World Food reserves are not stable

Another reason for the persistence of hunger is the instability of world agricultural food resources. They vary according to climatic conditions.

In the developing countries particularly, food stocks can be hardest hit by variation in climatic conditions. For example: in Côte d'Ivoire, 90% of rice production is rain-fed. Its yield therefore depends on the amount of rainfall. Similarly in Asia, farmers look forward to the monsoon each year with some trepidation as it may bring with it floods that destroy their crop or drought which also causes severe food shortages.

Population growth is another factor that influences food stock levels. IFPRI projections show that between now and 2020, world cereal production will increase by 1.5% yearly. Such a growth rate will not allow for a rapid improvement in the food security situation in developing countries. The food security situation will even worsen in Sub-Saharan African countries that are unable to master their population growth.

Other potential factors of instability include economic actors, market forces and strategies. The amount of food available in the world fluctuates depending on the abundance or scarcity of food products and on speculation. This instability has increased with the liberalisation of the market for agricultural products which has limited the scope of price regulation.

Access by all to food resources is not guaranteed

Access by the population to food products is facilitated if the country is food self-sufficient. This is often the case in industrialised countries which produce enough to feed their inhabitants. But even in these countries, many people suffer from hunger because they do not have the means to buy the food they need. In the United States for example, over 12% of the population, including some 4 million children aged less than 12, suffered from chronic malnutrition in 1991, even though America is the world leading exporter of agricultural products. Food insecurity in these countries is therefore often in terms of the quality of food to which the poor can have access. It is experienced as an individual tragedy. With growing unemployment in these countries, however, it may increasingly become a national concern.

In developing countries, the difficulty of access to food resources applies both to the individual and to the State. These difficulties stem primarily from insufficient food production or from the lack of funds to buy food on the domestic or international markets.

Developing countries still suffer severe food shortages which need to be filled by food imports or food aid. Unfortunately, the countries often do not have sufficient resources to import the quantities of food required to fully satisfy all their needs.

In fact, when these countries market their raw materials unprocessed or semi-processed, they do not earn enough foreign currency. Also, the prices of their exports have been dropping in recent years while those of their imports have been rising. The limited food supply on the local market keeps certain food products beyond the reach of the poorest segments of the population.

These poor are often the rural farmers who derive their financial income from the sale of agricultural products. They are the very first to suffer from falling export prices. Government policies to guarantee minimum prices for urban consumers also have an impact on the income levels of rural farmers.

The have-nots who inhabit the slums are another category of people who, because of no jobs and insufficient income, are often the first victims of the diseases linked to malnutrition and undernourishment.

Civil society proposals for the promotion of food security

The NGO forum proposed a six-point programme for the attainment of food security:

1. Building the capacity of smallholders and local and regional food systems. This requires better technical and financial support to family farms. It also requires enhancing access by farmers'groups to markets and taking measures in favour of women farmers who play a key role in food security.

BOX 3

The price of staple foodstuffs

Most non oil-exporting developing countries depend on agricultural exports for their foreign currency. However, the prices of the foodstuffs they export tend to drop while those of the processed or manufactured products they import tend to increase. For example: between 1975 and 1994, the export prices of wheat, sisal (fibre used to make bags) and tea dropped by 60, 57 and 45% respectively. That of plywood, a processed product, more than doubled.

In all, the 1980s witnessed a 40% loss in the value of the raw materials exported by developing countries as against the manufactured products they imported. To maintain their level of imports these countries had to increase their export production by two-thirds. Despite a slight increase in prices, they still remain lower in real terms than those of the 1970s.

Cereal prices are currently witnessing an upward trend because demand is extremely high compared to available stocks in the major exporting countries namely the USA and the European Union. This is the result of the reduction in the food reserves in these countries. It may be a passing situation, but which may occur with increasing frequency.

Source: Nourrir le monde
FAO, Rome 1996

FOOD INSECURITY THROUGH THE YEARS

Barely a few years ago, major famines used to ravage European, Asian and African countries. They have left their indelible marks on the civilisations of these countries.

Hunger is a natural biological phenomenon. It affects all living beings and is the manifestation of the need to feed in order to live. Hunger becomes a problem when the human being cannot adequately satisfy their food needs, and is manifested in the form of malnutrition, under-nourishment or famine (*See Sheet 1D on malnutrition*).

Thanks to better information, to the growth of humanitarian action and rapid means of communication, the major famines that plagued several African, Asian or European countries barely a few years ago can now be avoided. These famines came about mainly because of drought or floods, plant or livestock diseases and invasion by insects. Very often they revealed the shortfalls of a social and political set up that prevented certain portions of the population from satisfying their food needs.

Some past food crises in the world

IRELAND :
The potato blight (1845-1848)

In 1845 Ireland experienced one of the greatest famines of all times. This food crisis was caused by the destruction of the entire potato crop by *phytophtora infestans* or potato blight. The epidemic lasted three years and claimed a third of the population of Ireland.

In his book entitled **Une histoire des famines au Sahel** (A History of Famine in the Sahel), Nigerien historian Boureima Alpha Gado narrates the tale of one of the witnesses of the event: "I saw mothers snatching food from the hands of their children. I saw a father fight with his son to death for a potato. I saw parents watch the corpses of their sons without any remorse. One and a half million people perished and an equal number migrated to Canada or the United States".

Famine and emigration destroyed an entire social class and with it, one of the oldest civilisations in Europe.

The potato blight did not spare the other European countries, but nowhere else did it wreck as much havoc. In the 19th century potato was the staple food of the majority of the population of Ireland.

The organisation of colonial Irish society partly accounted for the scope of the disaster

The epidemic hit a society in which most of the land belonged to the Anglo-Irish Protestant elite. Next to these mostly absentee landlords came the well-to-do farmers who could rent about 6 hectares of land each. Most of the farmers, however, could only have 2 hectares of land, while farm workers could only rent 0.4 hectare each season. In return they had to pay high taxes in the form of agricultural products (sharecropping) to the owner of the land.

The English coloniser gave the Irish workers and farmers the poorest land. Only potatoes could grow on the land they had. By 1844 potatoes covered 1 million hectares for a yield of about 14 million tonnes. The blight that destroyed a third of the harvest was therefore a disaster. In the year that followed, the poorest farmers did not have any seed to plant. Production dropped that year by 80% and by a further 50% the third year. The farmers could not honour the sharecropping arrangement and were thrown out. Three million farmless farmers were out in the cold.

The famine led to a change in Ireland's agricultural policy

The impact of the crisis was cushioned in the first year by soup kitchens and a few public works projects. The coming into power of advocates of free trade in 1846 worsened the food situation of the peasants. They were abandoned by the government and could only rely on private charities.

The Irish famine was a forerunner of the famines in the 20th Century by virtue of the media attention it attracted. The media coverage of the famine was very moving. Collections were raised across the world. Gifts were pouring in from all over, especially from the United States. They sent money, maize and ships to transport emigrants to the United States. Emigration was the only hope for the Irish. For some landowners, it was a good opportunity to get rid of the "backward" farmers. Some of them even went as far as paying the passage to Canada for some of their tenants.

The famine and emigration hastened the pace of the agricultural reform initiated before 1845. Agriculture was increasingly modernised, farms were restructured, potato cultivation was shelved and replaced by cereal and stock farming which had better market prices.

SAHEL :
"The year of the locusts" (1931-1932)

Inhabitants of the Sahel often give very evocative names to calamities that befall the region. Some examples: "Broad Chest" [Grande poitrine] was the name given to the famine that ravaged the region in 1738: "The entire loop of the Niger was ravaged...The intensity of the scourge was such that people ate animal carcasses and human corpses. The dead were no longer buried.

They were simply carried away from their homes and dumped somewhere in the bush. During the crises called "Sale of Children", [Vente des enfants] a good number of parents traded their children for millet. "Throw Out Your Wife" [Chasser son épouse] was a period when men repudiated their wives because they could no longer feed them. During "Lying Around" [Traîner-traîner], those who survived were so weak and so many people were dying that the dead could no longer be buried.

All these names point to the fact that in the Sahel famine often takes dramatic proportions. This is because of the harsh climatic and production conditions in the region, coupled with rapid population growth. The region still suffers from severe food shortages today, but of all past famines, the one that impacted the history of the region most was "The Year of the Locusts".

Six years of hunger and famine

The famine started in 1931 with a migratory locust invasion. It lasted till 1934. This calamity occurred at a very critical period for the countries of the Niger loop (See map). In fact, since 1927 the region had undergone very many food crisis caused by successive droughts and epidemics of cattle and human plagues. Other epidemics such as Spanish flu, yellow fever, chicken pox and smallpox came to aggravate the consequences of the food scarcity.

During the "Year of the Locusts", the meagre available stocks were grabbed by traders and functionaries. Owing to the 1929 economic recession money was scarce. The farmers' crop had been ravaged so they were unable to buy food to survive. The hunger pushed several farmers to emigrate to what we know today as Côte d'Ivoire, Ghana and Nigeria. This is how one of the farmers describes what they went through during this famine: "In spite of the locusts, we could have been able to bear the shortage had it not been for the taxes and forced labour. We could have also been able to cope with the Whiteman's requirements, had it not been for the locusts, but not both at the same time... It is not every year that nature recovers its tax. That year it coincided with the Whitemen's tax which we had to pay each year, no matter what. We had two consecutive years of famine and thousands of people perished".

Source: Boureïma Alpha Gado
Une histoire des famines au Sahel.

CHINA : *"The Great Leap Forward" (1958-1962)*

For an entire generation, the picture that symbolised hunger was that of a small Chinese boy holding an empty rice bowl. China, however, is not the land of hunger par excellence, the image notwithstanding. The country has a long history of agricultural intensification and improvement. It was able to develop food scarcity management mechanisms at the same time as pre-industrial Europe. In spite of all this, each change of dynasty in China brought in its wake severe food crises. The advent of the communist regime was no exception.

In 1949 Chinese Communist Party troops entered Peking. In 1958 Mao decided that his people had to take a "Great Leap Forward". In 1960 famine ravaged the country and claimed some 30 million lives.

The introduction of collective production led to a drop in agricultural output

The 1950 agrarian reform made it possible for 300 million poor farmers to obtain land. Shortly after that, the re-establishment of the village economy led to the resumption of production. Smallholders had pride of place in the system. But with the introduction of collective farming in 1955, virtually all the 120 million rural households were grouped into co-operatives. The State granted itself a monopoly of the trade in cereals. The people's communes founded in 1958 were in charge of administration, representing the State and managing production in the fields and workshops.

The setting up of the communes was followed by the confiscation of the property of the smallholders who had enriched themselves. The property was shared among the co-operatives. Private cattle was slaughtered and the State reorganised production. Individual plots of land ceased to exist. All these measures generated distrust among the rural farmers who then worked less and produced much less. Furthermore, a significant part of the labour force was diverted from agriculture to decentralised steel production. Industrial farming was abandoned as well as secondary and handicraft activities.

The hasty and poorly managed irrigation of the Northern plain dramatically aggravated the salinification of the soil. The policy of regional cereal sufficiency led to ruptures in markets and a slowdown in production in the more productive regions. Agricultural collapse was imminent. However, thanks to exceptional climatic conditions, cereal production at first appeared to increase, reaching 195 million tonnes in 1958. But in 1959 it tumbled to 175 million tonnes and then to 150 million the next year. The food supply per inhabitant shrank from 203 to 163 kilos of cereal in 1960.

Natural disasters aggravate the situation

A series of natural disasters also befell the country. The North was hit by an exceptionally long and severe drought between 1959 and 1961. It spread to most of the districts in 1961. Typhoons also ravaged 40 million hectares of crops in 1960. The picture was bleak: drought in the North, floods in the South, hail storms, and grasshopper invasions combined to destroy 60% of the arable land while the cattle stock was decimated by disease.

The entire country was gripped by a statistics fever. Each official claimed to have exceeded his objectives. The central authorities were in no position to verify the statistics and could therefore not react in time. As such, between 1959 and 1960, the authorities believed they had 100 million tonnes of cereals more than they actually did. To feed the towns they exerted so much pressure on the rural areas that they could no longer bridge the hunger gap.

Between 1960 and 1962 there was hunger in most of the country, especially in the provinces. The mortality rate doubled, jumping from 1.08 to 2.54%. It is estimated that between 14 million and 30 million people died. To this figure should be added the deficit in births, which is about 30 million. The calorie intake dropped and only rose again in 1970. Even in 1973, Chinese cereal production had not bounced back to its 1958 level.

These "small famines" that attract no attention

Sylvie Brunel's book " Ceux qui vont mourir de faim" [Those Who Will Die From Hunger] is sprinkled with angry cries and settlement of scores. It also contains a testimony on food crises and the way they are managed. Given that the author is the director of the humanitarian NGO Action Against Hunger (Action contre la faim) she very well understands what she is talking about. An extract:

Must a hecatomb occur before people mobilise? It is clear that after the hecatomb has occurred it is easier to appeal to consciences so that people can dip their hands into their pockets. Thank God, hecatombs are increasingly few and far between these days. Early warning systems and humanitarian organisations are keeping the watch. They may be imperfect, but they are vigilant enough to make sure that any famine that occurs nowadays cannot be blamed on chance or the climate.

Unfortunately, tragedy averted is no tragedy at all: it only engenders suspicion. Those who gave begin to ask questions after the fact whether their generosity was worth the while. They begin to wonder whether they had not been swindled in reacting to a financial appeal which served no purpose since there were no deaths, or so few deaths that they went unnoticed. At least not enough deaths to give the signal for the collective indignation that will prove that they have done something useful.

When you can act before tragedy strikes, it is a non event

That is the tragedy of all food shortages: when the "pre-positioned" humanitarians react to them fast enough through the targeted distribution of food to the "vulnerable groups" (children, pregnant or breastfeeding women, the aged and the sick) and the treatment of the severely affected children, these shortages subside and disaster is averted. But when you can intervene upstream of the tragedy, there is a non event, and therefore no more financing, no more publicity. And paradoxically, your reputation takes a beating the next time you raise the alarm.

On the contrary, when the situation if left to deteriorate because local authorities are unwilling to let in assistance, because there is no funding; when the hecatomb is certainly going to happen, then it is manna for the media, charity broadcasts and humanitarian organisations. Many of them take the opportunity to build up their own resources thanks to the thousands of donations streaming into their headquarters. Belatedly, it is realised that you were right in raising the alarm, in pointing out that famine was imminent. Only that by then it is too late. Thousands of children who would otherwise have been saved have perished already. Had they received timely attention, all these human beings would have been rescued without difficulty, at little cost and in a remarkably efficient manner requiring very little means.

Help! Fire!

The mechanism of famines is similar to that of forest fires. Firemen will tell you that in the first few seconds following the outbreak of the fire, a single glass of water will put it out. After 10 seconds it will require a bucket of water. After one hour it will require Canadairs (aircraft that pour tonnes of water on fires to put them out). After one hour it is already too late. By then thousands of hectares of forest have already been destroyed.

The same is true of famines. In the beginning, it is enough to be there, to be on the lookout for any deterioration in the food situation by monitoring the health status of the young children. They are generally the first to be affected by hunger and are therefore the best indicators of any looming food shortage. If the findings of the food survey are alarming, the NGO takes the decision to distribute food to vulnerable groups. A few weeks later, it may be necessary to open therapeutic nutritional centres to treat the most severely affected children under medical supervision. Additional centres will also be required at which food (beans, maize, oil, protein-rich biscuits...) are distributed to families.

The Canadairs in this case is the international assistance armada that deploys in a region that is in the international spotlight because it has been hit by a spectacular famine. Because no one was able or willing to intervene earlier, the situation has become dramatic. The dead are piling up. Co-operation agencies, mobilised at long last by the media and public opinion, then start pouring in tonnes of food aid at exorbitant cost. Enormous means are deployed for meagre results: there is a lot of waste and misappropriation. The entire situation is confused and muddled, everyone falling over each other to show good will, with improvisation and amateurism reigning supreme.

Source: SYFIA No. 99A, 15 February 1997

WORLD FOOD SITUATION AND TRENDS

For there to be food security, the first condition to be fulfilled is that food production should be sufficient to meet food needs. Within a country, it is possible to import food to offset a deficit in national production. Taking the world as a whole, it is imperative for total food production to be high enough to cover all of mankind's food needs.

This indeed is the perspective from which food security issues are tackled at the international level. The two elements that are taken into account and whose trends are compared are:

- world food production (generally measured in the corresponding calorie intake); and
- world population.

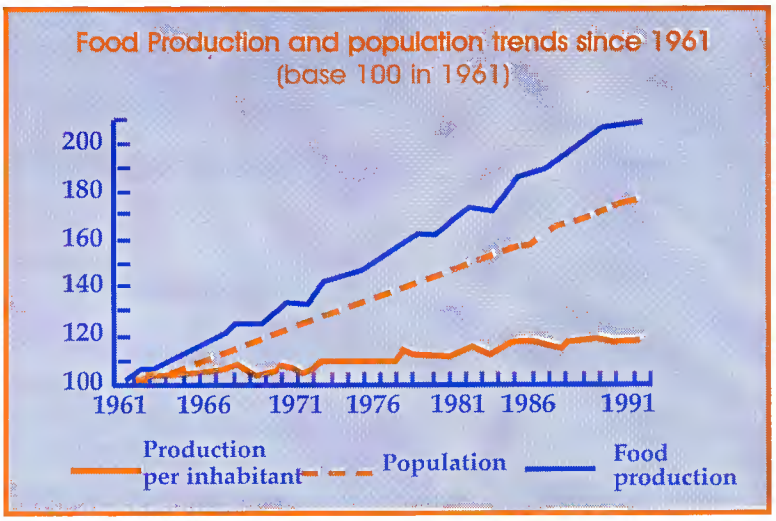
Food production matches population growth

It is estimated that world food production today stands at 2,700 calories per day per inhabitant of the earth. This means that globally, world food production is enough to feed all mankind since it is considered that the required average daily calorie intake for a person is 2,400 (for more details see Sheet 1D on nutrition).

These figures, however, do not imply that all the men and women on earth have enough to eat, because food production is not evenly spread across the globe. More on this later.

Food production today may be sufficient to feed the whole world. This has not always been the case in the past. In 1946, the newly formed Food and Agriculture Organisation of the United Nations (FAO) published its very first survey on world food production[1]. According to the survey, world production could supply 2,250 calories per day per inhabitant of the earth. Such a calorie intake was insufficient for a healthy life. It could therefore be said that world food production was insufficient.

Between 1946 and 1996 world food production grew faster than the population. The graph below compares both trends and also combines them to obtain the agricultural production per in habitant.



Source : Sheet C1 in Solagral "Vers un monde sans faim ?", Paris, Solagral, 1996

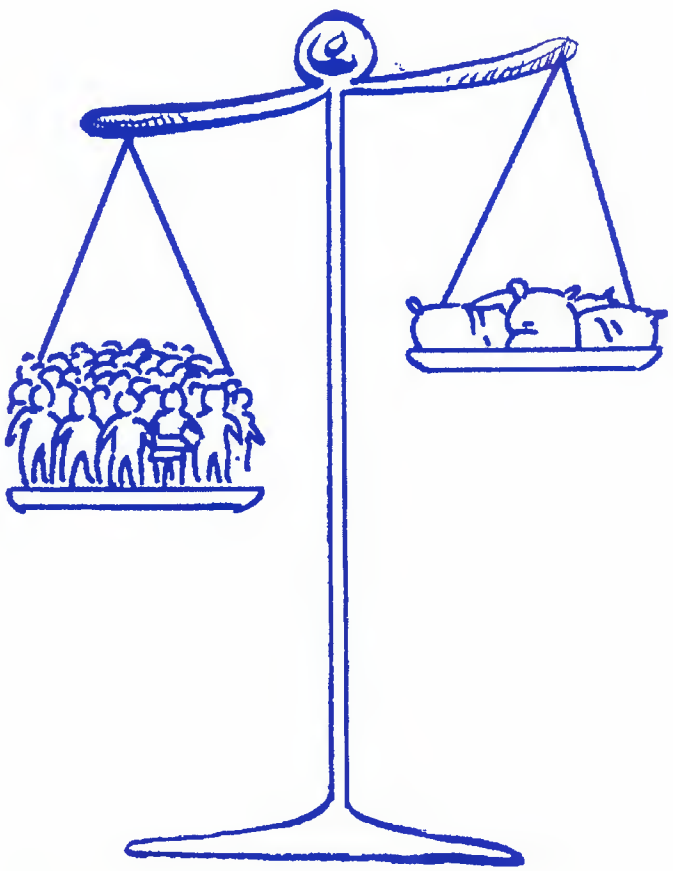
1. The survey used data collected before the Second World War and covered only 70 countries representing 90% of the world population.)

Uncertainties about the long term situation

Since food production grew faster than the population in the past 30 years, it was possible to improve the world food situation. However, there is no guarantee that the food supply per inhabitant will continue to increase in the future. The world population today stands at about 6 billion people. Projections put it at 8.5 billion in 2020. Even if the population growth rate is slightly lower than in the preceding years, feeding 2.5 billion new mouths remains a formidable challenge.

On the contrary, the pace of the increase in agricultural production is also slowing down. The three main cereals (rice, wheat and maize) have been the subject of considerable research and selection. Accordingly, the yields of these three cereals averaged an annual increase of 2.3% each year between 1970 and 1990. The FAO projections put the annual increase between 1990 and 2010 at not more than 1.5%.

The much needed increase in world food production is being impeded by a number of obstacles, namely: ecological difficulties faced by some producers, the lack of natural resources (water, arable land...) and the degradation of some soils which have become unsuitable for farming (See Box).

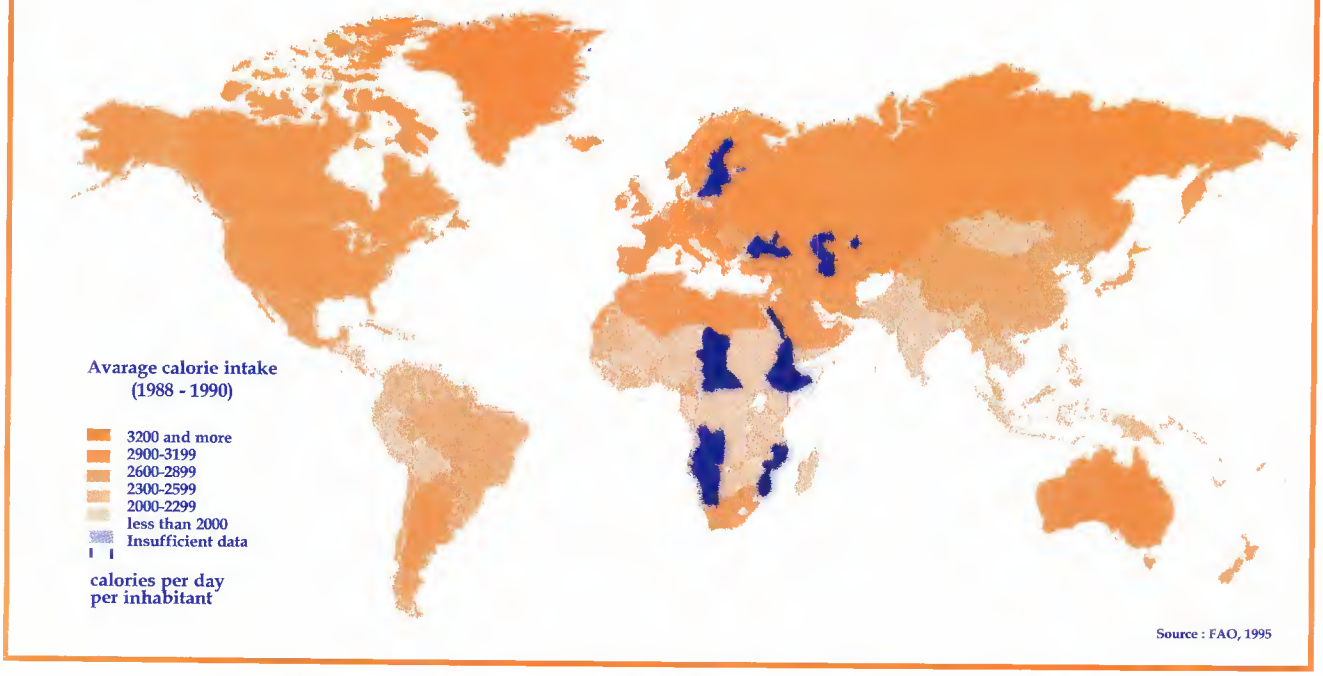


In many countries, the amount of food available is not enough to meet the needs of the population

Situations vary enormously

Although the overall food production trend is satisfactory, it is not evenly distributed across the regions of the world. The map below estimates the food supply per inhabitant for each country. While the average level may be satisfactory, the food supply in several countries cannot meet the needs of the population. This is the case for several countries in South Asia, Peru, Columbia, some Central American countries and numerous African countries in particular.

Average calorie intake per inhabitant (1988-1990)

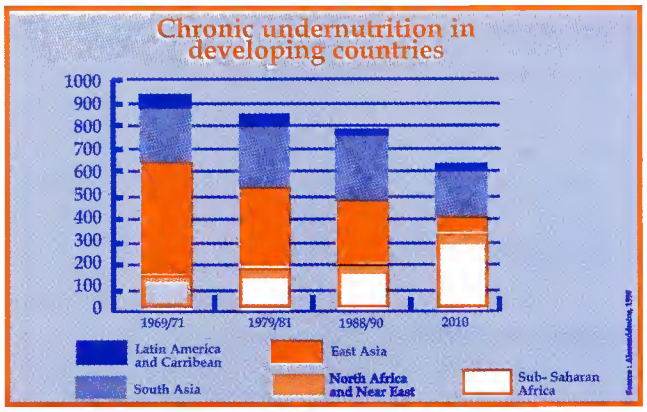


Source : Fiche C1 in Solagral "Vers un monde sans faim?, Paris Solagral, 1996

Despite the increase in production, undernourishment persists

It is necessary to go beyond the average amount of food available per inhabitant to carry out a more qualitative analysis of the people suffering from undernourishment. Such an analysis will highlight the disparities in the availability of food to various groups of people.

Today, it is estimated that some 800 million people in the world suffer from permanent or frequent undernourishment. Even though this figure may be dropping (in the early 1970s close to 950 million people were suffering from hunger), progress is too slow to be satisfactory. In some regions (Sub-Saharan Africa in particular), the number of undernourished people is growing year after year (See chart).



Sources : Fiche C1 in Solagral "Vers un monde sans faim ?", Paris,Solagral, 1996

Situations of severe food shortages stemming from climatic hazards and natural disasters are becoming increasingly rare. In fact, such disasters are foreseeable and necessary measures can therefore be taken to mitigate their impact. Furthermore, food is increasingly being traded between countries or regions, thus making the food supply of a given region less dependent on whether its harvest was good or bad. But trade requires that some form of wealth changes hands. Changes in climatic conditions therefore continue to be a factor only in those regions in which the only wealth is agricultural.

In a vast number of cases, undernourishment is a result of poverty. Hunger does not exist because there is no food, but because there is no money with which to buy food. Some categories of people are particularly vulnerable to undernourishment. These include:

◆ women, whose food needs are often high because of their workload, and much higher when they are pregnant or breastfeeding;

◆ children, who are particularly sensitive to malnutrition and undernourishment, both of which can result in serious pathological disorders and hamper their development. The consequences of undernourished during growth can be irreversible;

◆ elderly persons, who are very dependent in terms of their means of subsistence.

Lastly, wars and the resulting massive population displacement are the primary cause of severe food crises. They disrupt not only the agricultural production system, but also the transport and marketing network, as well as the entire economic and social fabric. In such circumstances, the only remedy is emergency food aid. However, the end of the crisis does not mean that the situation will immediately return to "normal" because restructuring the agricultural and food economy requires a lot of time and effort.

Population growth : a disaster

In 1798, Thomas Robert Malthus, an English pastor and economist, in his Essay on the Principle of Population, opined that the population was growing at twice the rate of food production and that a time will come when it will be impossible to satisfy its food needs. Such a situation will lead to famines and all types of disasters. To avoid them, it was necessary to take steps to check very rapid population growth. One of the most significant of these measures was birth limitation through late marriages and abstinence.

Even today, there are people advocating the same measures, especially in countries facing difficulties in meeting the food needs of the population. These neo-Malthusians often include those protecting the environment. They hold that "overpopulation" is chiefly responsible for environmental destruction as a result of the irrational use of its resources.

Birth control is therefore bandished to developing countries as the most efficient way of overcoming poverty and environmental problems. An ever-growing number of governments are adopting it in a bid to check population growth. Some even readily sterilise all people of child bearing age. Some Asian States have even instituted a single child policy, which brings with it all kinds of consequences: girl children are murdered because the family wants a boy child who will perpetuate the family name, women who already have the prescribed child have to commit abortion following any subsequent pregnancy.

Beyond the fact that such practices are morally reprehensible, it may rightfully be asked if birth limitation is really the most efficient weapon against poverty. Is it the most appropriate solution in countries where technological progress is such that the machine cannot yet replace the human person?

The fight against food insecurity : birth limitation or baby-boom ?

World food production today is enough to feed every inhabitant of the earth. But in developed and developing countries combined, a total of 800 million people still suffer from hunger or malnutrition. Even if overall food production is increasing (+60% between 1970 and 1990), will it still be sufficient in 15 to 20 years to cope with 1.5 to 2.5 billion new mouths to feed?

The answers to this question are contradictory. Some people hold that very rapid population increase endangers natural resources such as water, energy and food. Others believe on the contrary that significant population growth will fuel technological, economic and social innovation, and thereby food production.

Population growth : a factor of development

Without going as far as encouraging population explosion or a baby-boom, anti-Malthusians hold that population growth promotes development.

In fact, whenever man's survival has been at stake, he has always demonstrated great ingenuity. Edgar Faure once said: "Overpopulation engenders new needs; new needs engender new ideas; and new ideas engender resources that were unimaginable in the past". For example: Indonesia has a population density of 817 inhabitants/km² (1990). It produces enough rice to feed all its inhabitants and is forging ahead with its economic development.
To meet the ever-growing needs of its population, the country embarked on a strong agricultural production intensification policy. Emphasis was also laid on education and the migration of part of the population to less populated areas of the country. Today, this country is working on diversifying its agriculture.

Population growth can therefore be a strong incentive for increasing agricultural production. It can also enhance the intensification and improvement of production methods. A high population density often leads societies to open up to the outside world. This results in a cross-fertilising exchange of techniques.

Birth limitation programmes are not a panacea to poverty and food insecurity. Economic and social innovation is a more potent weapon against these scourges.

FEEDING PROPERLY IN AFRICA

Feeding properly means having food in sufficient quality and quantity in order to lead a healthy and active life. A proper diet should meet the growth, repair and protection needs of the body. It should also provide the energy the body needs to function. The body's energy needs are measured in calories. The FAO considers that a person weighing 75kg requires 2,400 to 2,500 calories per day. This daily requirement varies from person to person depending on the body weight, age, sex, physical built, the kind of activity engaged in and the climate in which the person lives. For example: it has been noted that the body's energy needs are higher when it is cold. Similarly, a pregnant or breastfeeding woman, a child in the growing phase and people doing work requiring a lot of force, have high energy needs.

There is no ideal diet, but a balanced food intake comprises foods that give energy (carbohydrates and fats), those that build the body (proteins) and those that protect it (mineral salts and vitamins).

Which food items make up a good food intake?

Food items that give strength and energy

These food items include cereals (rice, millet, sorghum, maize, wheat, etc...), roots and tubers (cassava, yams, taro, cocoyams, sweet potatoes, potatoes) and plantains. Fats, plant and animal oils, sugar and sugar products are good sources of strength and energy.

Staple foods (which "fill the stomach") generally fall in this category of food items. Depending on the region and culture, the staple food could be in the form of a bowl of millet or rice, pounded yam, cassava or plantain , a plate of rice, fonio, couscous, ground maize or cassava, a loaf of bread or a pancake made from wheat, barley, etc...

Strength and energy giving food items should be included in sufficient quantities in the diet of workers carrying out activities requiring a lot of physical effort.

Food items that build the body

These are proteins. Body building food items enable children to grow and develop properly; they produce the blood which carries nutrients to all parts of the body.

They protect the body against diseases, maintain it and help it to repair some organs of our body that may wear out. These foods also give us strength and energy. They include all animal products: meat from livestock, bush meat, fish, shrimps, crab, snails, insects, termites, caterpillars, eggs, milk, cheese. Legumes (grains, groundnuts, beans, peas, vouandzou, soybeans, melon seed, cotton seed, néré seed, sesame seed...) also contain good quantities of protein and can conveniently replace animal protein.

Pregnant and breastfeeding women also need large amounts of protein which enhance the development of the embryo they are carrying or the baby they are breastfeeding.

Food items that protect the body

The principal protection foods are vegetables: tomatoes, garden eggs, okro, onion, pepper, cabbage, carrots, all edible green leaves (cassava, baobab, taro, bean, melon, okro leaves, spinach, lettuce...).

Fruits provide mostly vitamins, sugar and some food fibres to the body. The most widely consumed fruits in Africa include: papaws, oranges, lemon fruit, grapefruit, pineapple, avocado, mangoes, bananas, dates, figs, grapes...

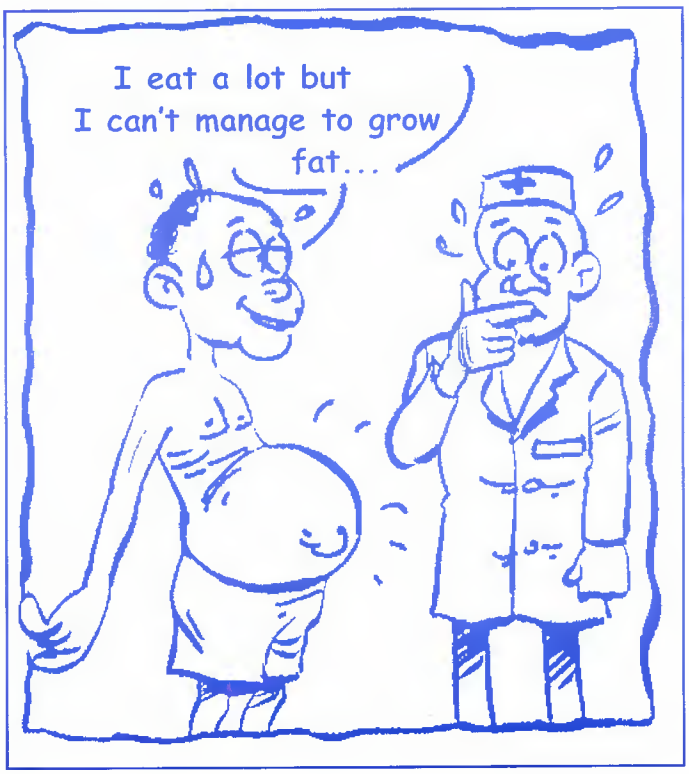
Protection food items provide the body with minerals such as iron and calcium. They also provide vitamins. They enable the body to protect itself and fight against diseases.

If the food we eat each day does not contain body building, body protection and strength and energy giving food items, then the food needs of our body are not satisfied. If this goes on for some time, we may no longer be healthy.

Malnutrition-related disorders are not only linked to the lack of food or of certain nutrients in our food intake. Excesses also cause serious diseases such as heart diseases, diabeties, obesity and certain cancers.

Getting the population to feed properly

Proper feeding does not require huge amounts of money. All year round, African agriculture offers a variety of products which can be used to enjoy a very affordable balanced diet. However, the population very often does not know how to use these products or they do not know how to adapt the food intake to the specific needs of each member of the family.



For example : children who have just been weaned and other young children often share the same meal with the other members of the family. Very often, such meals are not quite rich or are over spiced. This may sometimes provoke diarrhoea, infantile atrophy or kwashiorkor.

Box 1

Forms of malnutrition

A foetus in the mother's womb may suffer from malnutrition if the mother does not feed well. A pregnant woman requires a daily intake of 2,800 to 3,400 calories to meet her needs and those of the foetus.

Calories are found in various types of foods in the form of carbohydrates, fats, proteins, vitamins, minerals, water and fibres. These nutrients enable the body to function properly. Taking them in insufficient quantities or not taking them at all can cause disorders that may be fatal or handicap the victim irreversibly.

Vitamin A deficiency can cause foetal death (death of the child in the mother's womb). It is also one of the main causes of blindness in babies and young children.

Vitamin C deficiency (diet poor in fruits, fresh vegetables, lemon fruit) causes scurvy. A person with vitamin C deficiency is unable to resist diseases, even when such diseases are generally not very contagious.

An iodine deficient diet (iodine is got from salt, fish or other sea foods) retards mental development and causes goitre among infants and adults. In 1992, over 1 billion people were living in iodine deficient zones. Half of them were suffering from goitre and 26 million from a mental disease known as cretinism.

Iron deficiencies are responsible for anaemia, especially among pregnant women. They also account for the death of several mothers at the time of delivery. A child born of an anaemic mother runs the risk of retarded intellectual development. Children also suffer from anaemia when they are bottle-fed or after being weaned.

Calcium deficiency or insufficiency causes osteoporosis, a disease which makes bones fragile and brittle. A high number of women over 50 suffer from this condition.

Kwashiorkor and infantile atrophy are two other diseases that affect many children, especially after weaning. When a child is not breastfed, considering that the mother's milk is the only really complete food suitable for the child, it does not get all the nutrients it needs to develop normally from the substitute food.

Kwashiorkor or the "disease of the sad child" is caused by a deficiency in growth foods in the child's diet. A child with kwashiorkor cannot play. The feet, belly, face and eyelids are swollen; and the skin becomes lighter in colour especially on the arms and legs. The skin bears patches similar to burn scars. The hair loses its colour. Sometimes the child has diarrhoea accompanied by vomiting, and is further weakened.

Infantile atrophy affects children who do not eat to their full. These children grow thin and are just bone and skin. They always have a bright and worried look, like that of a frightened animal. Most often children suffering from infantile atrophy take a very long time before they can walk.

Box 2

The different types of nutritional status in the world

A good diet, which may even be too rich for some individuals, provides 2,800 to 3,400 calories a day to the body. These calories are sometimes obtained from the daily consumption of 20 to 70 grams of animal proteins: fish, meat, milk, eggs, or any other product containing this type of proteins.

A sufficient diet for the proper functioning of the body provides 2,400 to 2,800 calories a day, with 10 to 30 grams of animal proteins.

Malnutrition, which is the result of a qualitative deficiency in proteins, minerals and vitamins, starts when the daily intake provides less than 2,400 calories to the body. Very often, malnourished persons consume less than 20 grams of proteins per day.

Undernutrition is when food is not available in sufficient quantity. It prevails in areas where the daily intake is less than 2,000 calories and 10 grams of proteins. The average person on such a diet soon grows thin and is unable to carry out even slight physical activity.

Famine is characterised by the almost total lack of food, with a daily intake of less than 1,500 calories and 5 grams of proteins. Thanks to the early warning and food and systems put in place following the first World Food Conference, it is now possible to prevent such situations across the world.

Food taboos may also deprive pregnant and breastfeeding women and children of some food items such as eggs, the flesh of certain animals, some cereals, tubers or roots. These restrictions are disastrous to the health of those concerned especially when these cannot be replaced in the diet by other food items.

Several actions can be undertaken to help the population feed properly. Some of these action are at the community level.

Providing nutritional education to the population

This education consists in demonstrating to the segments of the population that are most vulnerable to malnutrition problems how to use local agricultural products to feed themselves properly. This education should target women preferably. They should be informed of the causes and consequences of poor feeding and taught how to put together and prepare balanced meals using products available on the local market. It is also very important to underline the need to properly feed small children and babies after weaning them.

In India, for example, there is a project that trains mothers with healthy children to become nutrition workers in their community. This project has already benefited 2 million women with children aged 6 to 36 months in 20,000 villages. It has helped bring down the number of malnutrition-related disorders by 55%. In Indonesia, another project encourages breastfeeding. The project also lays emphasis on the adding of green vegetables to rice meal, the traditional weaning food, to increase its nutritional value. This programme has made it possible to improve the nutritional status of 40% of children less than 2 years old.

In Africa, nutrition education programmes are often carried out at mother and child care centres. They target young mothers and their children below 5 years of age, and are part of the weekly chat on hygiene and family planning.

Children suffering from malnutrition may benefit from the nutritional rehabilitation programmes that these centres offer.

To encourage the women to practise what they are taught, the mother and child welfare centres sometimes organise "baby beauty contests". The mothers whose children are the best fed receive bathing and washing soap, baby cosmetic products, layettes, and foodstuff.

Unfortunately, the activities of these centres are limited to a few urban neighbourhoods. It would be good to extend such structures to all areas where they could be of service.

Another important element in the fight against malnutrition is the improvement of food processing and storage techniques. This will help preserve and even improve the nutritional value of food items (See Box 3: Nutritional value of some African foods).

Improving the health of the population

Particular attention needs to be paid to the health of the most vulnerable groups, with special emphasis on primary health care (sanitation of surroundings, fighting the most widespread diseases, individual and collective hygiene); increasing the number of well-equipped health centres, dispensaries and hospitals. A body in good health benefits more from proper nutrition.

Developing food crop cultivation

This is an equally important activity which makes it possible to increase the food supply and enhance the population's access to food resources.

Composition of some African foods

The table below shows the nutrinional value of 100 g of each of the food items. If, for example, you use 1 kg of a product, you have to multiply the nutritional value by 10. It should be noted that the method of preparation could reduce or destroy some nutrients contained in a food item. Vitamins A and C for example cannot survive very high tempeartures.

Product	Energy-giving Value				Mineral salts		Vitamins		
	Calories gr	Protéins gr	Fats gr	Carbohydrates gr	Calcium mgr	Iron mgr	A mgr	B mgr	C mgr
white rice	364	7.2	0.6	79.7	3	1.3	0	0.08	0
rice flour	366	6.4	0.8	80.4	24	1.9	0	0.10	0
fresh maize on the cob	192	3.3	0.8	27.4	113	0.8	33	0.14	48
corn flour	368	9.4	3.3	74.1	18	3.3	34	0.26	0
millet flour	387	9.3	4.2	76.3	17	6.4	0	0.27	0
sorghum flour	343	9.5	2.8	75.5	28	3.2	0	0.28	0
fresh cassava	149	0.8	0.3	36	35	1.1	2	0.06	36
cassava flour (garri)	354	1.7	0.3	86.4	61	3.1	0	0.08	14
early-maturing yam	138	1.7	0.3	32.3	15	0.8	2	0.08	10
late-maturing yam	173	1.8	0.6	45	13	0.8	2	0.08	10
fresh plantain	105	3.2	0.2	26.6	25	1.4	126	0.07	7
shelled groundnuts	549	23.2	44.8	23	49	3.8	5	0.79	1
groundnut butter	585	24.9	48.8	22.2	66	2.4	0	0.40	0
nere paste	431	32.6	26.4	23.6	278	33.0	0	0.94	0
palm nut	544	1.9	58.4	12.5	82	4.5	10 166	0.20	12
fresh okro	36	2.1	0,2	8.2	84	1.2	31	0.04	47
dry okro	282	10.7	0.8	69.7	968	36.4	28	0.26	10
melon	35	1.7	0.2	8.1	32	2.3	380	0.07	11
beef	146	21.5	6.1	0	12	3.2	0	0.09	0
mutton/goat meat	206	17.1	14.8	0	10	2.6	0	0.15	0
pork	276	16.7	22.7	0	10	2.5	4	0.81	0
chicken	124	22.0	3.3	0	12	1.3	0	0.07	0
fresh agouti	141	22.8	4.8	0	9	4.4	25	0.28	0
rat mole	94	19.4	1.3	0	17	2.6	24	0.06	0
dried fish	310	62.0	5.0	0	2 480	2.5	0	0.12	0
smoked fish	275	63.0	5.3	0	1 655	2.5	0	0.12	0
snail	107	17.7	3.5	0	132	4.1	0	0.04	0
termites	356	20.4	28.0	4.2	55	12.6	0	0.06	0
egg	163	12.9	11.5	0.8	61	3.2	530	0.10	0
traditional palm oil	878	0	99.1	0.4	7	5.5	13 800	0	0
industrial palm oil	881	0	99.7	0	0	0	0	0	0
shea butter	711	0	35.0	0	0	0	0	0	0
green vegetables	43	3.3	0.3	9.2	213	4.8	689	0.17	54
dried vegetables	258	8.2	0.3	34.8	530	2.2	147	0.12	80
fresh tomato	21	0.8	0.2	4.6	7	0.6	60	0.06	23
tomato paste	39	1.7	0.2	8.9	13	1.7	160	0.08	33
fresh pepper	94	4.1	2.3	18	58	2.9	1 356	0.25	121
onion	39	1.4	0.2	9.7	30	1.0	2	0.04	10
traditional beer	42	0.3	0	3.8	5	0.1	0	0.01	0

Observations

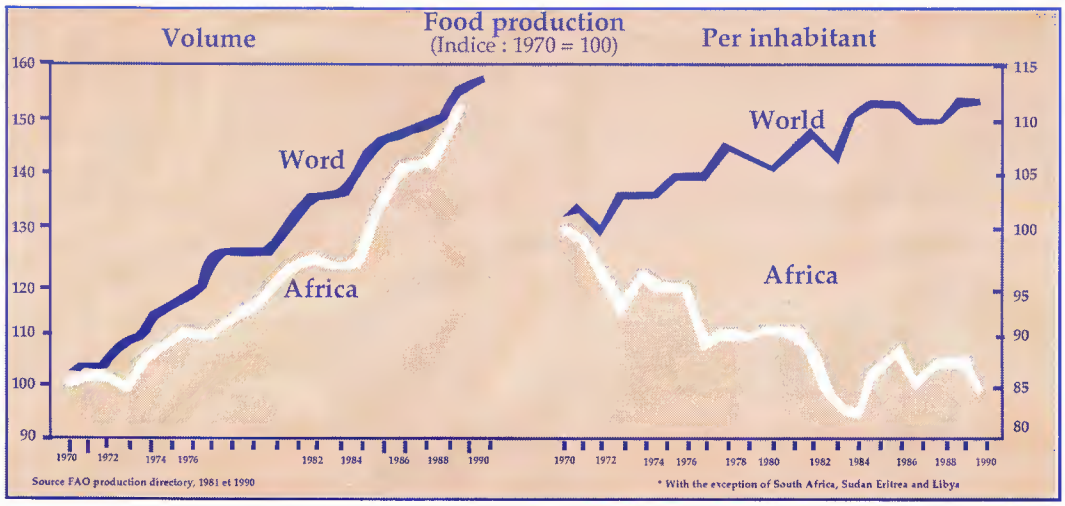
The table above shows that:
- maize, millet and cassava flour are relatively richer than white rice.
- 100g of shelled groundnuts or groundnut butter provide more calories, proteins, sugars and fats than the same quantity of beef, mutton or pork. Groundnuts are therefore more interesting from the nutritional and financial points of view.

FOOD PRODUCTION IN AFRICA IS ON THE RISE, BUT IS STILL INSUFFICIENT

By 2010 Sub-Saharan Africa will need to import close to 19 million tonnes of cereals to cope with its rapid population growth. Although food production has generally been increasing in the continent, production per inhabitant has been declining.

In the 1970s and 1980s, food production in Africa increased at almost the same rate as in the rest of the world. At the same time, however, the continent's population grew faster than that of the other regions of the world because of its very high birth rate. In 1992, the population of Africa grew by 2.9% annually. The overall impact of this trend is reflected in the food production per inhabitant. It dropped by about 15% between 1970 and 1990.

Sub-Saharan Africa's food self-supply fell below 90% by the end of the 1980s. International organisations estimate that the need for imports (cereals) will continue to rise. According to the FAO, Sub-Saharan Africa will need to import 19 million tonnes of cereals in 2010. In 1990 it only imported 8 million tonnes.



Food productionper inhabitant

Source : Sheet C1 in Solagral "Vers un monde sans faim?", Paris, Solagral, 1996

The agricultural and food geography of Sub-Saharan Africa

These general observations tend to conceal the great diversity of agricultural production systems and food consumption patterns. The region is made up of several major zones characterised by different climates which give rise to specific agricultural and food habits.

◆ **The Sahara and sub-Sahara zones** are marked by very low rainfall (less than 250 mm annually) and high temperatures that vary significantly in the course of the day. There is very little vegetation in these zones except in the oasis and along the banks of the Nile. The region is inhabited by nomadic herdsmen who live mainly on milk, melted butter, dates and some cereals (barley, millet, wheat). These zones cover all of North Africa (Morocco, Algeria, Libya, Egypt), most of Mauritania, the north of Mali, Niger, Chad, Sudan, Somalia

and the west of Namibia and South Africa.

◆ **Further south lies the sahel zone** which has more abundant rainfall (250 to 400 mm per annum). The rainy season is very short. The poor, shrubby and sparse vegetation is called the steppe. It is good for migratory cattle rearing. When the pasture is depleted in one area, the herdsmen drive their cattle farther south, towards the Sudan zone.

Farming without irrigation is only possible on river banks and in the inland delta of the River Niger. The zone produces millet and sorghum which are the staples of the population. This region covers Senegal, Mali, Niger, Chad and Sudan.

◆ **The tropical savannah zone**, with its open and gallery forests, has a tropical climate with two distinct seasons. It is made up of the South Sudan zone (the south of Mali, Burkina Faso, Niger, Chad, Sudan and a major part of Senegal, Nigeria, Gambia, Guinea-Bissau, the extreme south of Senegal, Mali, and Burkina Faso, Côte d'Ivoire, Ghana, Togo, Benin, central Nigeria, Cameroon, the south of Chad and the Central African Republic), the central plateaux of Kenya, Tanzania and Uganda as well as part of Southern Africa (Malawi, Zimbabwe, Zambia, Angola and South Africa).

The rainy season in this zone is 4 to 6 months long and the annual rainfall ranges from 400 to 1,500 mm. The main crops cultivated there are millet, sorghum, groundnuts, cowpea or beans, maize, yams and cassava.

◆ **The equatorial forest zone** covers the Congo basin and the countries in the Gulf of Guinea (Sierra Leone, Liberia, Equatorial Guinea, Gabon). It is marked by dense and stratified forest with trees sometimes as tall as 70 metres. Rain falls virtually throughout the year and can reach 2,000 mm a year. The main crops are roots and tubers (yams, cassava, taro) plantains and maize. Rice is also cultivated in the western part of the zone and Madagascar.

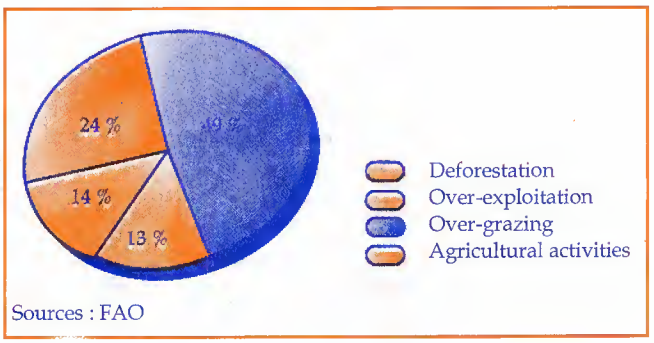
The main causes of food insecurity in Africa include civil or inter-State wars (See 2B), climatic hazards (droughts and floods), soil degradation and land management systems, rapid population growth and an unfavourable economic context.

Causes of food insecurity in Africa

Soil-related constraints

There are severe climatic constraints in Sub-Saharan Africa and because of the low technology used in the region, agricultural production is still very much dependent on rainfall. However, the fragility of the soil, soil degradation and unsuitable land management methods mostly account for the insufficient agricultural production in these zones. The soil is poorer in nitrogen and phosphorous than that of any other continent. More than 320 million hectares of land, which is about 14.4% of the total land surface, are severely degraded. The chart below shows the main causes of soil degradation in Sub-Saharan Africa.

Causes of soil degradation in Sub-Saharan Africa



Sources : FAO

Box 1

Causes of the cereal deficit in the northern zone of Burkina Faso.

Prior to the 1970 drought, Yatenga, which lies between the sudan and sahel climatic zones, was dominated by plant varieties with considerable cover associated with the sudan climate. However, since the drought, these species have been disappearing, and are being replaced by the spiniferous species of the sahel, which are more resistant to the harsh climatic conditions, the impoverishment of the soil and animal and human pressure. Apart from climatic aridification, other factors responsible for the desertification of the zone include : population growth, overgrazing, the traditional farming system (slash and burn, shifting cultivation), the poor use of modern agricultural techniques (ploughing), bushfires, sundry human needs (construction timber and fuelwood, pharmacopoeia, handicraft, etc...).

These natural and man-made factors contribute greatly to the rapid degradation of the plant cover. They have led to rain and wind erosion of the tropical ferrugenious soil which is fragile by nature. In the region today, the run-off coefficient is as high as 60%. Sheet wash has resulted in pellicular scraping which has eroded the "vital" part of the soils.

On the ground, the most spectacular manifestation of this insidious form of erosion are the tiny step-offs and the rills it has caused. In quantitative terms, soil scraping amounts to 5 tonnes/km² annually. The run-off sometimes concentrates in one place to form pools that may be as deep as 20 to 30 cm and gullies (0.5 to 2m deep and of varying width). The continuing impoverishment of the soil has further reduced the amount of scarce arable land available to the ever-growing population. Insufficient harvests (resulting mainly from vagaries of the weather) have given rise to a chronic cereal deficiency in the region.

The population of the region, especially those who are organised, such as the Groupements Naam (Naam Associations), have, with the assistance of sundry partners, undertaken actions to check the deterioration of the ecosystem. These actions include:

- the construction of 2,600 cattle dung and compost pits each year;
- the setting up of 215 cereal banks that store about 8,000 tonnes of potatoes each year;
- the production of over 1,000 tonnes of market garden produce including 600 tonnes of potatoes each year;
- the setting up of commercial action committees and traditional savings and credit banks for the mobilisation of local resources.

Three fundamental elements characterise actions for the restoration and protection of the environment:

- soil protection and restoration through the empowerment and involvement of the local population which initiates the programmes;
- stakeholder motivation through the sensitisation of local and foreign farmer-technicians;
- literacy and training programmes for villagers to impart new know-how.

B. Lédéa Ouédraogo
Union des groupements Naam

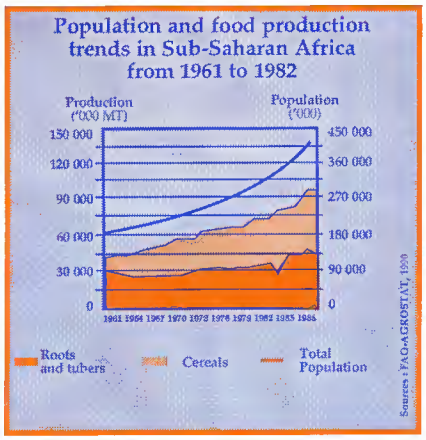
Unsuitable land management systems

The soil degradation problem is compounded by that of the land management systems. In many regions the traditional land tenure system still prevails. The land belongs to the community, and not to individuals. This often poses the problem of properly developing farms in order to protect the soil and increase its yield. The analysis made by Jean-Pierre Sawadogo, a lecturer and researcher at the University of Ouagadougou in Burkina Faso (See Sheet 3D) clearly explains why several farmers cannot develop the farm that has been "leased or loaned" to them. The example he gives is from Burkina Faso, but it can be generalised to most other countries of Sub-Saharan Africa.

Governments have been making efforts to apply more modern laws because they fully realise the need to have the land tenure system under control in order to achieve economic and social development and food security. Jean-Pierre Sawadogo writes: "Thirty years of legislative reforms, amendments, adaptations and tinkering have yielded instruments with original solutions. However, in the 1980s, the land, forestry and water legislation in the entire Sahel region was difficult to implement at local level".

Rapid population growth

Between 1970 and 1990, the number of people suffering from chronic undernourished in Sub-Saharan Africa rose from 95 to 175 million, in a total African population of 500 million inhabitants (1990). Production also rose, but the population growth was such that food production could not meet all the needs.



The very rapid growth of the population of Africa as compared to the available food resources imperils the continent's food security. However, some specialists hold that this population growth can be turned into an economic asset. According to these anti-Malthusians, the dark continent is underpopulated if, its average population density of 25 inhabitants/km², is compared to the 100 inhabitants/km² in Europe, 125/km² in Asia and 800/km² in Bangladesh. According to them, the fact that the inhabitants of Africa are thin-spread explains why there can be no economies of scale in health, infrastructure and communication expenditure.

One of these experts, Danish sociologist Ester Boserup underlines that "Once the population density exceeds a certain threshold, villages begin to be linked by communication networks, which give them access to bigger markets at little cost, and even if the regions remain distant, contacts with the external world increase, thus facilitating technology transfer. As such, agricultural production increases with the improvement of the quality of inputs, and the benefits are shared between farmers and producers in the other sectors".

According to these specialists, rapid population growth in Africa will, in the long run, allow for greater human concentrations that will enhance better economic development. It will also make available the necessary manpower to exploit the millions of hectares of arable land that are still lying idle.

From this perspective, and according to Ester Boserup,the fact that Africa's population is expected to double by 2025 (from 500 to 1,300 million) could instead be seen as an asset for increasing the continent's food production, on the condition, that "government policies create a conducive environment and that the technologies chosen are economical and clean".

A globally unfavourable economic context

The major economic crisis that characterised the 1980s can be considered to have been a major obstacle to the development of production systems. On the one hand, consumption stagnated while the purchasing power of Africans remained at the same level or even declined. On the other hand, the resulting financial difficulties did not allow farmers to invest in implements or inputs to increase their output. When rural producers find themselves in very precarious situations, they rather try to minimise their risk rather than seek to step up their production. In severe crisis situations, survival strategies are adopted in order to attend to immediate needs. Long term consequences (especially on the environment and therefore on future production) become a secondary consideration.

Several difficulties are involved in the marketing of food products. They include: the lack of transport infrastructure, storage problems, production and price fluctuations. Because of these reasons, some regions do not exploit their full production potential simply because transporting the products to the regions with a production deficit for sale would be too costly. Furthermore, since the marketing of cereals in particular is controlled by a few wealthy traders, they see no point in investing in the improvement of the efficiency of the distribution network, preferring instead to supply consumption poles which are commercially more profitable.

At the international level, the 1980s were marked by surplus agricultural production. The main producers (the USA and European Community in particular) dumped their production on the export markets, thereby causing a drop in the world prices of the principal food products. For the African farmer, this competition reversed the profitability of food production. In the Sahel zone, imported rice (from South-East Asia in particular, as well as from the USA) cost less than local rice.

Finally, the policy choices of African leaders (made sometimes under pressure from international institutions) are not always conducive to the development of food crop cultivation. They tend to focus their attention on export-oriented industrial production. Very often, private interests take precedence over the collective interest.

Yet, government policies in the area of food production and marketing can greatly enhance food security (See Sheet 3B).

WAR : THE MAIN CAUSE OF FOOD INSECURITY IN AFRICA

Almost everywhere in Africa people with the lowest incomes face the danger of undernourishment. But poverty is not the main cause of the food crises (famines) ravaging the continent. These crises are due to wars that destroy production systems and disrupt the habitual channels for accessing food products. Food crises are also the result of climatic hazards such as drought and floods. It should be said, however, that the consequences of climatic hazards are increasingly being brought under control (See Box 1). Civil and international wars remain the primary cause of food insecurity in Africa.

Conflicts disrupt food production systems and distribution channels

The three pillars of food security are: agricultural production, distribution channels and purchasing power (See Sheet 1A). Drought only affects agricultural production, while wars affect all three pillars at the same time. The disruption of distribution channels is often the very first perceptible consequence of conflicts. Communication networks (which are always considered strategic) are cut off at the battle lines between the belligerents. This could result in the isolation of some regions which can then only count on their reserves and production for their food supply.

Production often drops significantly during conflicts. Owing to the breakdown of the transport network, agricultural inputs are no longer available. The lack of seeds, fertilisers, phytosanitary products and even fuel can lead to a drop in the level of agricultural production.

Box 1

Climatic hazards are not the primary cause of food crises

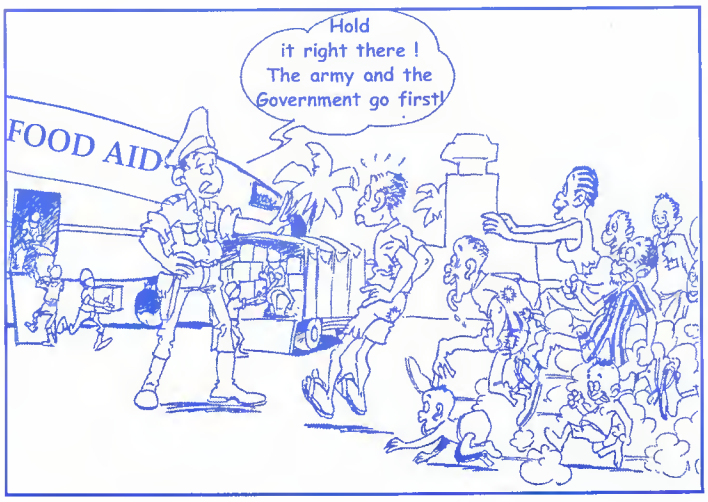
For several decades now, satellite observation and land surveys in food producing areas have made it possible to forecast rainfall deficits (or floods in some cases) which had been the primary causes of food crises in the past. Relatively good transport networks also make it possible to send the necessary assistance to zones which were isolated in the past. It is mainly because of its efficient transport and communication system as well as the constitution of security stocks that India has not experienced any famine since 1943. Today, a climatic hazard may only lead to a humanitarian disaster if the authorities fail to raise the alarm in time, if they intentionally ignore the situation, if they misappropriate the food aid or stop the victims from migrating to areas where they can find food. In 1984, Kenya suffered a severe drought which did not result in a food crisis. The government reacted efficiently by importing and distributing food to the entire population. In 1992 on the contrary, the drought that hit the north eastern part of the country was not anticipated and caused a major crisis: very little attention was paid to the Somali herdsmen who inhabit the region, priority was given to the inhabitants of Nairobi and the politically important ethnic groups. An economic crisis ensued, and the crisis was only acknowledged at the official level belatedly.

Extract from: "Long term food security" a joint edition of "Food for Development" and "Courrier de la planète" European Commission, Solagral, September-October 1996

Also, men (and very often those in the prime of their youth) may be mobilised for the conflict. This leads to a shortage of manpower. It could also be that access to farmland is compromised because it is under the control of hostile armed forces or because mines have been laid there.

The third pillar of food security, the capacity to access available food resources is destroyed by the destabilisation of the entire economic and social fabric. There are several activities that cannot be carried on during a conflict, either because the tools necessary for the activity have been destroyed or looted or because the closure of communication facilities makes it impossible to buy or sell, or simply because the level of insecurity is such that producing even the smallest amount of wealth makes the producer a choice target for the armed bands. The absence of economic activity means no purchasing power, and therefore no possibility to buy the food needed.

Displaced persons often go through the entire range of difficulties listed above. However, insecurity and the fear of violence and massacres, push people to flee the combat zones. They pile up in areas they consider safe from the fighting. Their survival then depends on international humanitarian assistance.



The United Nations High Commission for Refugees (UNHCR) deems that in the last decade, wars have caused the displacement of over 6.5 million people in Africa alone. This is the figure for the people who were forced to flee their country of habitual residence. To it should be added the millions of people who were displaced within their countries to "safer" regions. The 1993-94 conflict in Rwanda is one of the most striking examples of the massive displacement of people and the attendant risk of famine.

Although food insecurity is a consequence of conflict, it could also be the cause of further conflict. This is because when food becomes scarce and access is no longer following the normal distribution circuits, the law of force prevails in the sharing of the available food.

Conflicts bring about a "predatory economic system"

Militia and armed bands thrive on war and looting. It is in their interest for the war to drag on for as long as possible because it allows them to loot with impunity. Such a situation discourages the civilian population from carrying out any form of production. Indeed, what would be the point in producing knowing that the yield will be taken away at the very first opportunity?

With nothing left, the victims of the militia and armed bands survive under the most precarious conditions. Humanitarian organisations are often powerless in these situations because even food aid gets looted too. In some cases, it is by misappropriating this aid that the armed bands secure the financial resources they need to arm themselves. So, instead of helping the victims, food aid helps the fighters to carry on their acts of violence.

Box 2

SOMALIA : Systematic looting of public and private property.

The 1991-93 conflict in Somalia is a typical example of a predatory economic system. The warring factions systematically looted the country. In the towns, electrical installations, construction equipment, industrial equipment, telephone cables, in short, anything that could be sold was looted and exported to Kenya, Sudan or Saudi Arabia. In the rural areas, the militiamen first went after the cattle, pumps and jewellery. Once they were through with them, they fell on clothing and ordinary household items.

Extract from: "Long term food security" a joint edition of "Food for Development" and "Courrier de la planète" European Commission, Solagral, September-October 1996

Hunger : a military weapon

In many conflicts, hunger has not been a mere consequence of the fighting. It has rather been used as a weapon. Starving the enemy by depriving them access to food (by confining them to areas that are food deficient, for example) is a strategy aimed at wearing out the population until they give up. World history is full of stories of besieged cities. One of the most notorious examples is that of Leningrad during the Second World War. More recently, Sarajevo in former Yugoslavia was isolated from 1992 to 1995. In Africa, the Biafra war (1967-1970) gave rise to one of the most severe famines ever. It was provoked as part of the Nigerian government's strategy against the Biafra breakaway movement. No aircraft was allowed to fly over the region not even those transporting food aid. Although the strategy of the Nigerian authorities was to isolate Biafra, it should be stated that Colonel Ojukwu, the leader of the Biafra revolution "used" the famine of his supporters to move international public opinion and secure the support of foreign powers (See box).

Box 3

Hunger : a political weapon in Nigeria

◆ Hunger is a weapon being used by the federal government in its attempt to break the resistance of the Biafrans. It is also a weapon for the Biafran leaders who are hoping to save whatever still can be by political means. They are counting on the horror of the starving population - 13,000 deaths according to the Red Cross, perhaps 2 million in two months - to cause international mobilisation that will oblige the Nigerian government to accept a cease-fire and a settlement of the conflict.

In order to save most of these people from starving to death, it has become necessary to organise an airlift from the Island of Fernando Pô where OXFAM, a British NGO, has stocked food aid. A Hercules aircraft will have to be chattered to fly in 100 tonnes of food a day to a landing strip to be determined by the Biafrans.

The International Red Cross may supervise the operation which will be flying its flag. OXFAM insists that a programme for the shipment of food by land will be necessary in the longer term. It will take months to organise such a programme if it is accepted by the Biafrans.

The issue of an airlift or shipment of food by land is being examined this weekend by the Biafrans and the federal government with the mediation of Arnold Smith, the Commonwealth Secretary. The federal authorities have proposed opening a corridor with a limited cease-fire so that relief supplies could go through. The Biafrans have rejected this proposal partly because of the slow pace of such an operation and partly because they fear that the food may be poisoned when it is in the area controlled by the federal government...

Culled from an article by Dana Adams Schmidt in the Herald Tribune, 8/07/1968

Reconstructing the food production and distribution system after the war

The end of a conflict does not imply the immediate return to food security. Apart from the daily insecurity and physical violence, wars also cause lesions in the social fabric. The socio-economic organisation underpinning the production and marketing of agricultural products cannot be rebuilt overnight. First of all, the technical conditions for the resumption of the production and distribution of agricultural products need to be put in place. Mines have to be removed from farmland. Roads and bridges have to be rebuilt. Granaries have to be rehabilitated. These are all post-war priorities. And even that is not enough. It is necessary to re-establish trust in a context where distrust may have eroded solidarity and partnerships between the various actors in the agriculture and food sectors. This happens to be the most delicate task facing countries under reconstruction. As David Keen wrote in an article carried by the September-October 1996 edition of **Courrier de la planète**, page 44 "The issue of food security has to be considered at two levels. Firstly, it is necessary to tackle the needs that push civilians to resort to violence. This implies meeting their basic economic needs, increasing their level of education and ensuring at least their minimum physical security. The more international pressure weakens government institutions, the more difficult it becomes to meet these needs... Secondly, it is necessary to convince the elite who orchestrate the violence to adopt a more pacific attitude".

Box 4

Eritrea : a difficult reconstruction

During the war, many young people - very young men indeed - joined the Eritrean liberation forces in order to survive. The rigorous military discipline and organisation which were very useful during the war "regimented" all those living under the protection of the front to the extent that the prospect of having to fend for themselves came as a real shock to them. The former combatants needed both an economic and social reinsertion programme.

Eritrea is currently suffering from a chronic food shortage but it does not have the means to import the required 400 thousand tonnes of food. The conflict has totally wrecked the agricultural production system which, between the two world wars regularly exported fruits and vegetables to Europe and the Middle East. It is necessary now to rebuild an adapted water management system that will use the seasonal rivers to irrigate the arable areas of the country. The country's internal communication networks need to be rehabilitated and ports reconstructed because commercial networks were completely destroyed during the war.

Source: Van Brabant K.,
Bad borders make bad neighbours: the political economy of aid and rehabilitation in the 5th Somali region, central Ethiopia.
Réseau d'urgence et de réhabilitation, ODI/EuronAid, Dossier thématique No. 4, September 1994.

Box 5

Ensuring the food security of Liberian refugees and displaced persons.

For six years unrelenting civil war ravaged Liberia, despite the many peace agreements signed during the period, the last of which was on 19 August 1995. This conflict has claimed over 150,000 lives and caused 750,000 people (out of a total population of 2.5 million) to flee to neighbouring countries. Half of the population has also been displaced internally. The displacement of the population has led to major imbalances both within the country (the population of Monrovia the capital has doubled) and in the neighbouring countries hosting Liberian refugees: about 305,000 in Côte d'Ivoire, 385,000 in Guinea and a few thousands in Sierra Leone.

Food security is a problem both for the internally displaced people within Liberia and for the refugees outside the country. The Liberian economy is in ruins: people have fled the countryside and food production has plummeted; insecurity is impeding the transportation of food. In town, the population has swollen amidst economic chaos. With very weak purchasing power, the population does not have regular access to sufficient food.

The refugees in Côte d'Ivoire close to the border receive international food aid mainly financed by the European Commission, the International Red Cross and the World Food Programme. The European Commission is also financing triangular relief operations (See Sheet 3D on Food Aid). Compound flours and palm oil bought from Ivorian companies are conveyed by private transporters to the refugee zones for distribution.

Beyond this emergency relief, agricultural rehabilitation programmes are being implemented with European Commission support. These programmes help the beneficiaries (in Côte d'Ivoire and Liberia) to avoid depending on aid and to satisfy their needs themselves as much as possible.

For the refugees, this is no doubt the best they could make of a bad situation even though it raises problems about the future of the population. Does the start of agricultural activities in areas where the refugees sometimes outnumber the resident Ivorians, mean the beginning of their permanent settlement there? The Ivorian authorities who had initially welcomed the refugees "with open arms" are seemingly not keen about such a prospect. The competition for land between the refugees and the owners of oil palm and rubber plantations seems to have kindled the reticence of Ivorian authorities.

Source:
Interview with Stéphane Devaux,
Co-ordinator of the Regional Food Security and Aid Programme of the European Commission
1995/96 Report of the Food Security and Aid Programme of the European Commission

CHOOSING APPROPRIATE AGRICULTURAL AND TRADE POLICIES

To ensure the food security of the population of a country, the government must guarantee the stable supply of food and facilitate access by the poorest segments of the population to national and international food resources.

To guarantee the food security of the population, the government has two options:

- either promoting national food self-sufficiency by taking the necessary measures to ensure that the country produces enough food to meet all the needs of its inhabitants; or
- importing food to fill the national production deficit.

Each country strives to choose the most viable solution. In some highly populated countries like Rwanda and Burundi, importation is inevitable. The difficulty lies in developing the exploitation of other resources for new products while at the same time putting the country's agricultural potential to the best possible use. Such products could be exported and the income they generate used to pay for food imports.

For the countries with a competitive industrial sector, importing food may not be a major problem. Japan, for example, imports 63% of its total food consumption, yet it is one of the countries in the world with the smallest number of undernourished people. This is because of its level of industrial and technical development which makes it competitive in international trade.

The problem is quite different for most African countries with agriculture as the economic mainstay. Such countries often lack the resources with which to finance food imports.

No matter the option chosen, it cannot be viable without a coherent agricultural and trade policy hinging on agricultural research (See Sheet 3B), the constitution and management of food stocks (See Sheet 3C), the management of factors of production (land, water) as well as livestock, forest, maritime resources (See Sheet 3D) and food aid (See Sheet 3E).

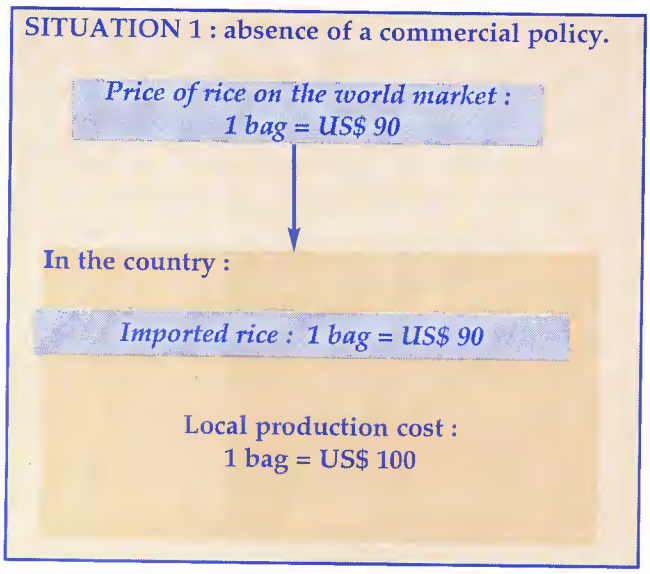
The government must also promote access to credit by smallholders, ensure that the prices of primary food commodities are stable and within the reach of the poor. Even if total food self-sufficiency of the country is not a priority objective, it is still necessary to protect the national agricultural sector from foreign competition.

Aspects of agricultural and trade policy

Facilitating access to credit

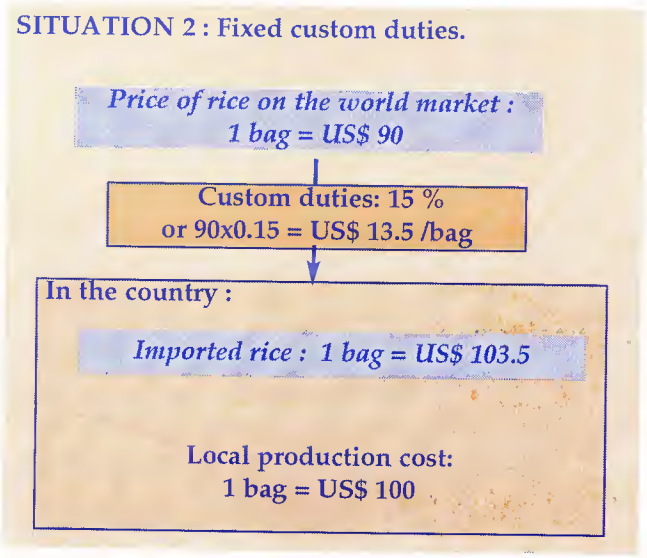
Smallholders generally need credit, sometimes to fill the hunger gap, but much more to buy the inputs necessary to improve their production. In fact, these smallholders account for the bulk of food production. Facilitating access to credit

This is indeed what happens in the absence of a commercial policy as indicated in the diagram depicting Situation 1 below. There is no outlet left for the local rice producers. Their production drops steadily. More rice has to be imported while the country's resources (domestic production activities) are shrinking.

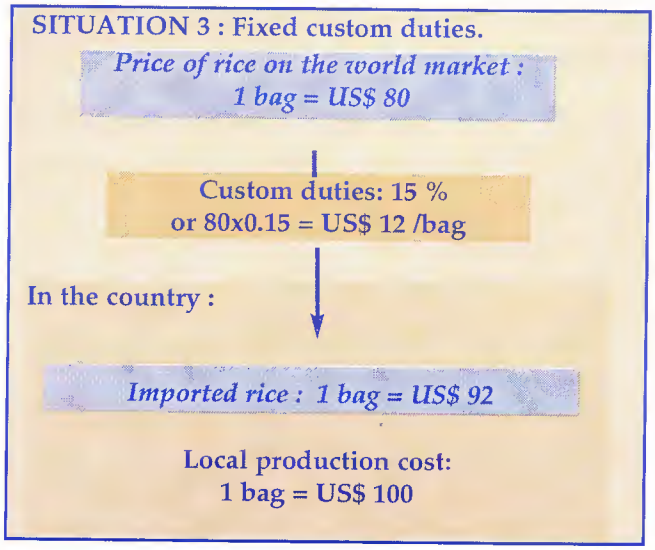


Fixed customs duties

To guarantee the survival of its rice production sector, the government can protect its domestic market against imports by artificially boosting the competitiveness of national production against imports. The first possible way of doing this is by imposing fixed customs duties on imported rice. For example: in the diagram on Situation 2, the importer has to pay to the government 15% of the value of the rice imported. This amount will add to the marketing costs. The cost of imported rice will therefore increase by a corresponding amount. If the price of a bag of rice on the world market is $90, the imported rice will sell at $103, which is higher than the local production cost. As such the local rice becomes quite competitive on the local market.



Fixed customs duties may procure some advantage local producers, but it does not completely shield them from foreign competition. In Situation 3, rice is produced in the country under the same conditions as in the previous case: production costs remain the same and the commercial policy is unchanged (15% tax on imports). What has changed is the price of a bag of rice on the world market, which has fallen to $80. Even with the 15% import tax, imported rice is still cheaper than local rice. Local producers are once more finding it difficult to sell their rice, and may decide to stop producing it.



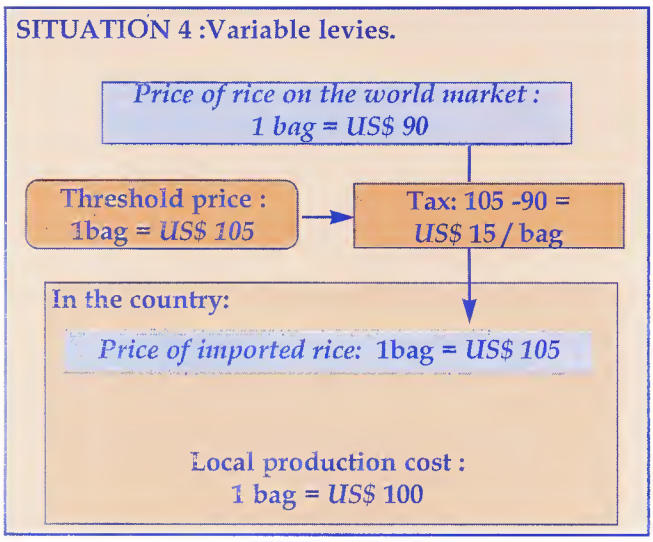
World cereal prices are generally very unstable. That is why the fixed custom duty does not offer local farmers any real protection.

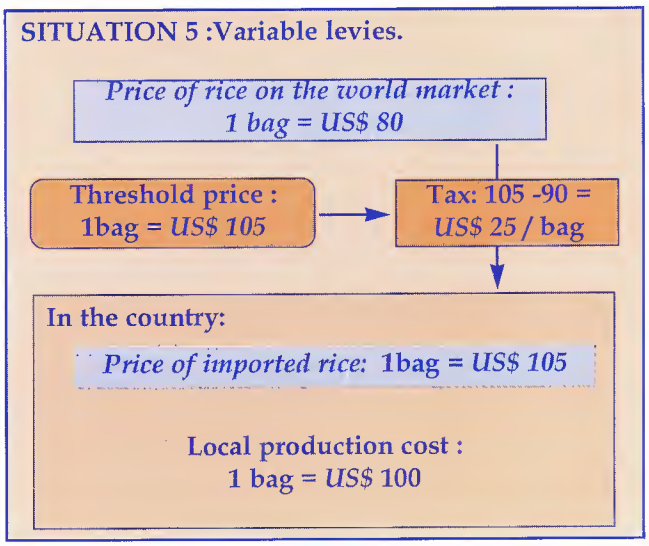
Variable levy

In order to protect local farmers more effectively from risks related to world food price fluctuations, the government may fix a price below which a product may not be imported. This is known as the floor or threshold price. For this type of protection to be effective, the threshold price must be higher than the local production cost. For example (Situation 4 in the diagram below), if the local cost of producing a bag of rice is $100, the government may fix the threshold price for each imported bag of rice at $105. If the price of a bag of rice on the world market is $90, then an import tax (called a variable levy) of $15 per bag is imposed on imported rice so that its sale price reaches the threshold.

If there is a deficit on the local market, then imports will become necessary, in which case the price on the local market will be about $105/bag of rice. With this price, the local producer should be able to make a profit. This encourages local production which will in the long run lead to a reduction in the national deficit.

If, as we saw earlier (Situations 2 and 3) the world price for a bag of rice drops to $80, then the variable levy will be raised accordingly (it will amount to $25 as shown in the diagram on Situation 5 below), such that rice imported into the country will still cost $105/bag. This is the advantage that the variable levies mechanism has over fixed customs duties. It makes it possible to better manage price fluctuations. The system of variable levies on imports was instituted in Europe as part of the common agricultural policy. It yielded good results because it helped the European Community to attain food self-sufficiency.



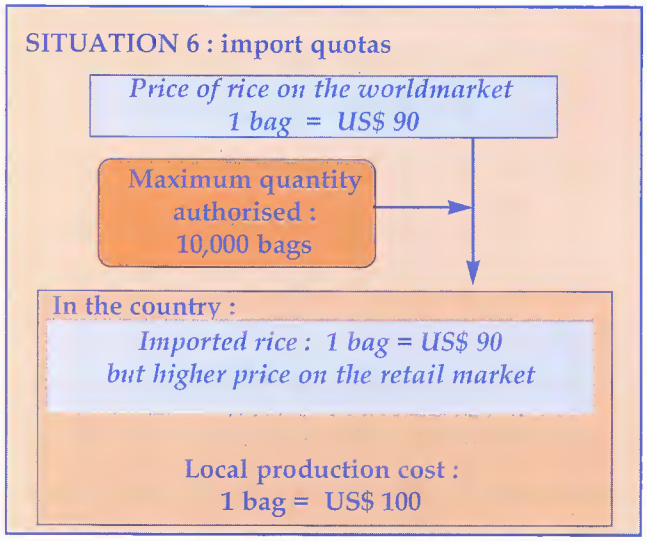


Import quotas

Finally, another method of protecting local producers against foreign competition consists in fixing import quotas, that is, a maximum volume of imports. In the diagram on page 37 (Situation 6), the quantity of rice imported in any year cannot exceed 10,000 tonnes. This means that all rice imports are subject to the authorisation of the customs department. Once the quota has been filled, no further imports are possible.

The authorised import volume is determined in such a way as to offset the national production deficit.

The imported rice may be bought at world prices, but on the domestic market its price is higher because rice is a relatively scarce commodity (there is no surplus). Price will stabilise at a level close to the real production cost (plus marketing costs, obviously).



Promoting direct support measures for agriculture.

Apart from protecting farmers from foreign competition, the government can also help them by financing (or co-financing) certain services or by giving them financial assistance.

Such services may be fully provided by the government or initiated by the government and then privatised (the government assumes the risk involved in launching a new activity). They may also be provided by private firms with possible government assistance (discounted loans, fee exemptions...). There are indeed, several fields in which the private sector is more efficient than the public service.

LIMITS TO GOVERNMENT ACTION

We have just discussed a number of tools the government can use to protect or support its agricultural sector (and food production in particular). While in theory these tools can be put to use, things are not so straightforward in practice. States are subject to several constraints that limit government action. We are going to examine three of them: constraints linked to the rules of international trade; those related to structural adjustment plans, and lastly, domestic policy contradictions.

Legal constraints: the new rules of international trade

International trade is governed by a number of rules laid down in 1947 by the General Agreement on Trade and Tariffs (GATT). For a long time, agricultural products benefited from a special regime under these rules. This made it possible for governments to use the protective measures examined above (import taxes, variable levy, quotas). But since 1st January 1995 (date of the entry into force of the Uruguay Round concluded in Marrakech in April 1994), food products also fall under the general rules. Even though countries have a period within which to adapt their trade policies to the new rules, this development significantly limits governments' elbow-room.

Box 2

New issues relating to food security in Côte d'Ivoire today

1. The main components of the food security policy

In the current macro-economic context marked by the implementation of various structural adjustment policies and especially following the devaluation of the CFA franc, the country's authorities are grappling with how to curb the amount of foreign currency being used to meet the population's food needs. They are therefore revisiting, with some nostalgia, the policy of food self-sufficiency (formulated in the early 1980s) as a key element of food security.

As a result, several food production development programmes which are as varied as they are ambitious, are being formulated. Some of them include:

- in the area of food supply and marketing: the development of collection centres, agricultural wholesale and retail markets, all under the supervision of the food crop marketing authority (OCPV);
- in the area of agronomy: improving the yield per hectare of the main crops (yams, plantains, maize, rice) through a more developed production system (mechanisation, irrigation, soil fertilisation, implementation of research findings);
- in the area of general policy: diversifying food production through, among others, an onion and soybean programme, and the development of potato and wheat production in the dry northern part of the country.

Similarly, a new course is being charted for livestock-farming, with the following objectives:

- raising the national cover rate of animal product needs (cows, sheep, goats, pigs, chicken) from 53 to 80% by the year 2000 and improving the distribution circuit (animal collection network, wholesale and retail sale network for animals on the hoof, building of suitable slaughter houses);
- promoting maritime and inland fishing and fish farming because in all, fish resources seem to be quite below national needs. The way forward in this area appears to be in fish farming, especially in rivers and lakes.

2. Analysis of some of the results

Before the currency devaluation, food price policy was marked by high taxes on rice, a lot of protection through several taxes and non tariff barriers as concerned wheat flour, sugar and palm oil. Following devaluation and economic liberalisation, products such as local rice became competitive on the domestic market as import substitutes.

The production of milk products, eggs, fish, crustacea and mollusca as well as staples such as yams, cassava and plantains rose because of a significant increase in demand. The year 1995 also witnessed an increase in food crop production.

As concerns the food crop marketing policy in general, the OCPV still has very weak operational capacity owing mainly to the lack of financial resources. This has resulted in very little action on the ground, its ambitions notwithstanding. One of its main activities is to provide information on the prices of food products and the various markets across the entire country. The organisation of these markets and the numerous economic operators involved in the sector should make it possible to supply consumers with good quality products in sufficient quantities and at the best prices possible.

3. The population's reaction to the new approach

As a result of the liberalisation of the economy and the devaluation of the CFA franc, local rice became competitive on the local market. Naturally, the demand for local rice among Ivorian consumers rose.

This general context also fuelled the demand for traditional staples such as yams, cassava, maize and plantains. Rural farmers were therefore motivated to produce more to sell in the urban markets which could be considered to be relatively solvent. Food production became as profitable in some rural areas as the traditional export crops whose prices fluctuated constantly and were sometimes unattractive.

Also, under the new agricultural diversification programme, young people (graduates, non graduates, inhabitants of urban and rural areas alike) started showing interest in non traditional sectors such as livestock-farming and fishing. In fact, several requests for training from rural youths were received at the new structure for the development of agriculture in Côte d'Ivoire, ANADER (national rural development support agency). Today, the market signals for these products (meat and fish) seem to be positive because imports account for a major part of the supply, and their prices are high.

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The new rules provide for the elimination of import quotas and the transformation of variable levies into fixed customs duties. So, of the three ways of protecting the market we examined earlier, only one can still be used by governments, namely the fixed customs duties. Even so, GATT rules provide that such duties must not exceed a ceiling fixed for each country and for each product. With time, the ceiling of these taxes are renegotiated by the member countries of the newly created World Trade Organisation (WTO)[1]. So far, revisions have all been downward. Increasing custom duties above the prescribed ceiling can only be allowed after negotiations, and in exchange for the reduction in the taxes on other products. Furthermore, there is provision for the taxation of a minimum quantity of imports. For developing countries, this quantity should stand at 4% of domestic consumption from 2005.

Also, a number of agricultural support measures will be phased out. These include mainly subsidies, income support measures or indemnities granted by certain countries to agricultural producers. This reduction in assistance to farmers is justifiable in the sense that it has an impact on competitiveness between countries. If a country subsidises the prices of inputs, production costs drop accordingly.

In return, the Marrakech agreement authorises governments to finance certain agricultural services that do not have a significant impact on competitiveness. Such services include agricultural research, agricultural training and the storage of food products for food security purposes.

Also, export subsidies will have to be reduced by 36% within six years by industrialised countries and by 24% within 10 years by developing countries. The "least developed countries" are exempted from this reduction. The fact, however, is that these countries hardly subsidise their exports.

Budgetary constraints : structural adjustment programmes

Although international trade rules authorise governments to finance a number of agricultural services, the structural adjustment plans imposed

Box 3

Is GATT good for the producers in the South?

The General Agreement on Trade and Tariffs (GATT) has led to the reduction of customs tariffs and prices that support domestic agricultural production. It has also resulted in the reduction of import subsidies.

After these agreements there was an increase in the prices of the main cereals and beef on the world market. However, developing regions hardly export these products. They rather import them in large quantities.

The increase in the prices of imports should push developing countries to increase their local production, make it more competitive and, in the long run succeed in reducing the cereal production deficit.

In the short term, however, the reduction of export subsidies results in an increase in the price paid by the importer. The importer's trade balance deficit increases as well. African countries will not reap any short term benefits from GATT because the measures relating to agricultural products only concern the products of temperate countries.

Source: Courrier de la planète September-October 1996.

1. Before 1 January 1995, GATT was the only agreement between the signatory countries. Today, the former signatories of this agreement have become members of a fully fledged organisation, the World Trade Organisation. The creation of this institution consolidates the implementation of the General Agreement (whose basic principles remain unchanged). The arbitration procedure in case of dispute in particular has been strengthened).

Box 4

Are adjustment policies implemented in Africa in line with development imperatives?

The stabilisation and adjustment measures supported by the International Monetary Fund (IMF) and World Bank considerably shaped the major decisions concerning Africa throughout the 1980s. It appears, however, that the formulation of these policies did not take into consideration Africa's long term needs. In fact, the primary long term objective of development should be sustainable economic growth with social justice. It appears that adjustment programmes discarded issues such as the promotion of equity and participation.

It can obviously be said that the biggest error committed in the 60s, 70s and 80s was to neglect agriculture. In fact, agriculture only received a tiny portion of investments, research and development, infrastructure and price support efforts. The consequences have been endemic poverty in rural areas and malnourished children. As for the gamut of adjustment policies, they have generally led to a deterioration in the supply of inputs and a reduction in state investment. They have also affected agricultural extension programmes and subsidies for fertilisers, and reduced access to credit. Expenditure on the building of human capacity (health, education, training) has also been sacrificed. This has resulted in a deterioration in income distribution in the agricultural sector.

It is essential for agriculture to be at the centre of the development process with a strategy built around smallholders. Any equity-conscious strategy targeting the primary sector should focus on three areas of intervention:

- land reform: the land tenure system in each country should be reviewed to enhance efficiency and equity;
- improving access to inputs: research and development efforts for the benefit of smallholders, extension services, the supply of inputs and access to credit should be improved. All this requires institutional reforms and a better flow of resources;
- price reform: the agricultural sector should enjoy more price incentives both for food and export crops.

Lastly, it is necessary to implement a support programme for the most vulnerable groups, especially through well-targeted initiatives in the area of food subsidies and through job creation and the promotion of income-generating activities.

Source: D.E.E.P., September 1995

on several developing countries by the World Bank and the International Monetary Fund (IMF) have considerably reduced their means of action in this area. The doctrine of the World Bank and IMF is privatisation of these services. Their privatisation should lead to the efficient use of resources (competition between private firms stimulates optimum resource utilisation) on the one hand, and also a reduction in government spending in countries under adjustment, on the other hand. It is true that the budgets of these States are often in deficit and the financing of government services is really problematic.

These budget restrictions, however, tend to limit the governments ability to uphold its policy priorities and to acquire the means for implementing these priorities. Food security is one of these priorities: in 1980, the member States of the Organisation of African Unity (OAU) had underscored this in the Lagos Plan of Action and outlined a policy known as the "food strategy".

This entailed taking stock of the food situation of each OAU member country, defining objectives to be attained by each of the countries (in terms of agricultural production) and deploying the necessary resources to attain these objectives. Structural adjustments programmes came on the heels of this Plan of Action and put an early end to its implementation.

Political constraints : the weight of the urban population

The third constraint to the implementation of trade policies that favour rural farmers is political. To remain in power, governments must strive to satisfy the most influential segments of the country's population. Apart from the main economic and other heavyweights, the urban population has relatively more political weight than the rural population, by mere virtue of its concentration. Opposition movements that pose the greatest threat to the government are often founded in town, where the capacity for mobilisation is higher.

It is therefore in the interest of political leaders to try to satisfy as much as possible the demands of the urban population. Access to cheap food products is one of the priority expectations of the urban dwellers, especially among the low-income segments which make up the vast majority of the urban population in Africa. But, as we have seen earlier, supporting the rural farmer by protecting him from foreign competition entails increasing food prices. Trade policies that favour the interest of the rural population can therefore go against the interest of urban dwellers. When the country has big towns, the government often decides in favour of the urban dweller whose discontent may be more of a threat to social peace than that of the rural population.

Though this choice may satisfy the leaders in the short term, it ends up aggravating the problem. Maintaining low food prices reduces the profitability of agricultural activities. This causes the rural population to migrate to town where their integration in the economic fabric is obviously not easy. As a result, urban poverty increases, which is a factor of political instability.

Box 5

Managing food security in Burkina Faso

The overall development objective of the agri-food sector is for the agricultural sub-sector to attain a higher rate of growth than the population. This objective has been translated into economic policies, and each of these policies entails a number of specific measures. They are:

- policies for the intensification of production and natural resource management;
- commercial and price policies;
- institutional reform policies;
- food security policies.

Policies for the intensification of production and natural resource management

Through these policies the government seeks to promote the organisation and training of farmers, the use of inputs, the development and dissemination of adapted technologies and security of land tenure by formulating a new land tenure policy.

Commercial and price policies

These policies consist in phasing out the system of official consumer prices, (the system requiring the approval of prices of agro-industrial products, commercial margins and official farmer prices).
The second component of these policies is the restructuring of the stabilisation system to ensure private sector pre-eminence in the management of cereal depots and stocks (individual or collective village stocks, commercial stocks) and commercial imports.
Through these measures the State aims at increasing the circulation of agricultural products and allowing prices to reflect the opportunity cost of the resources. They amount to reducing distortions in the functioning of the market.

Institutional reform policies

Institutional reforms aim at redefining the role of the State and various economic operators. The State will limit its role to giving the major orientations and ensuring monitoring and control. Private sector economic operators will handle implementation because according to the World Bank, the role played by the State in the area of food security (regulation of domestic and external trade) has impeded the arbitration of the domestic market, reduced the gains the country could make from external trade and hampered the development of its comparative advantage. Apart from the general equalisation fund (CGP) which is deemed to be playing a positive role, the other State bodies in the sector received a rather negative rating (OFNACER, CSPPA, ONERA).

It has therefore been proposed that these marketing agencies be restructured. Accordingly, OFNACER will no longer be in charge of cereal price stabilisation. It will only be responsible for setting up and managing a market information system and the management of security stocks. OFNACER has been replaced by a national security stocks management corporation (SONAGESS).

The CSPPA (agricultural prices stabilisation fund) has been earmarked for liquidation or privatisation. Its functions will be transferred to private enterprises or professional bodies involved in the marketing and export of food. A national emergency relief and rehabilitation committee (CONASUR) has been created, with offices at provincial level. It is responsible for managing and coordinating emergency relief.

The CGP's role has been curtailed and limited to importing rice and selling it to wholesalers.

Other institutional reforms envisaged include: setting up a comprehensive food security information system to monitor the overall situation in the country and in households (collecting and analysing data on consumer preferences, nutrition, markets and external trade).

The improvement of the management of food aid had also become a major priority, with the objective of turning food aid into an efficient instrument for mobilising external resources and managing the balance of payments. To this end, it was recommended that the mechanisms for the planning, co-ordination and distribution of aid be improved. This required close co-operation between the government and donors, between donors and NGOs, fixing aid allocations to certain target groups, fixing the price at which it would be sold on the market, as well as procedures relating to price determination, supply, distribution and stocks management.

Food security policies

As part of the agricultural sector adjustment policy, the government has defined an overall food security programme hinging on the seven main agricultural products (dry cereals, rice, livestock, fruits and vegetables, other industrial crops).

The overall objectives of the food security policy are:

- increasing and diversifying production, marketing and exports;
- improving access to better nutrition in all zones, and in deficit zones in particular ;
- ensuring better management of information and aid with a view to improving the co-ordination of interventions.

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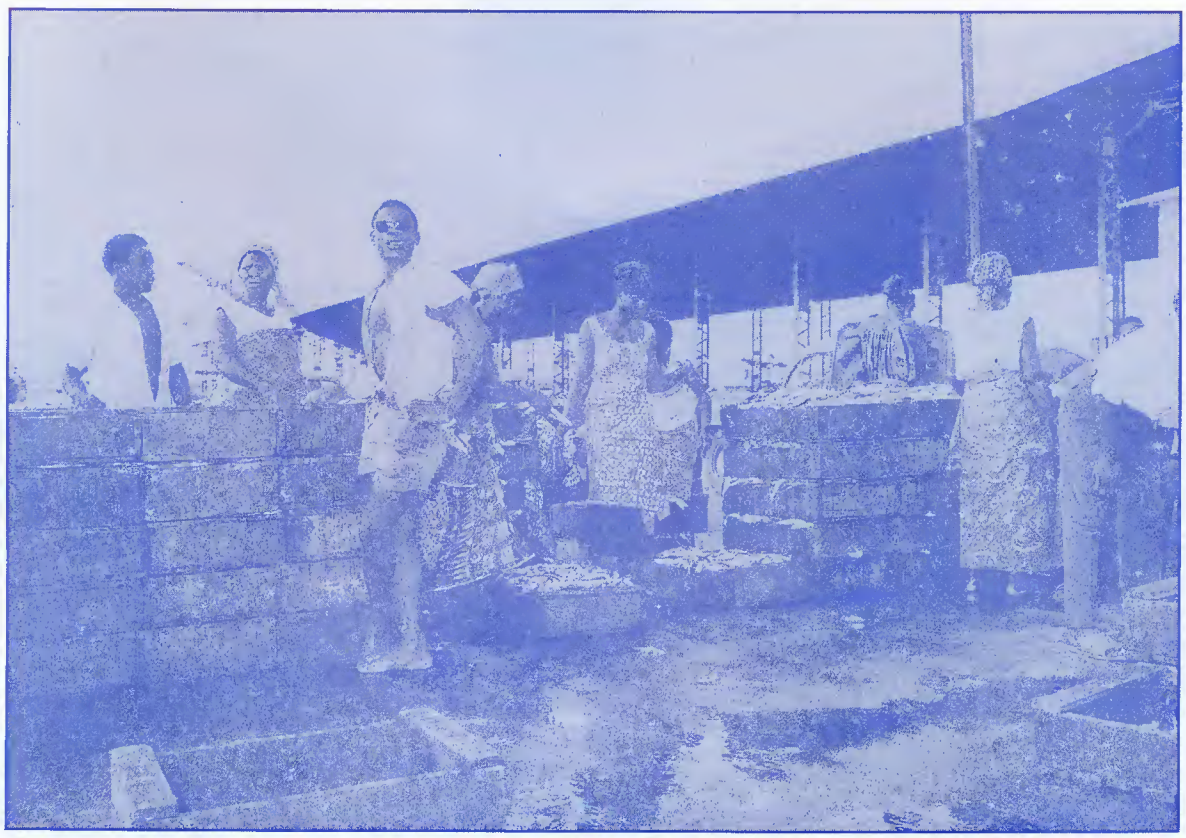


REDIRECTING AGRICULTURAL RESEARCH

In recent decades, world food production has been rising faster than the population. Today, however, yields are not increasing as rapidly as in the 1970s (See Sheet 1). In Africa, the population is increasing so rapidly that current productivity gains do not match the growing demand.

"The Green Revolution" : glory and demise of agricultural research

Agricultural research contributed significantly to improving agricultural yields during the 1960s and 1970s. The talk of the day was the "Green Revolution", especially in Asia where the production deficit was very considerable and where the research effort was particularly sustained. The objective was to increase world production as rapidly as possible. The approach adopted was the intensive exploitation of areas with high potential. International research (See box) focussed on the improvement of varieties of the main cereals grown in the world: rice, wheat and maize. The improved varieties brought along with them the increased use of agricultural inputs (fertilisers and pesticides). Irrigated areas were also more extensive. The results were impressive. In the 1970s, the yields of Asian rice farms averaged a 6% yearly increase.

Today, however, the "Green Revolution" is beginning to show its limits. The increasing scarcity of water is impeding the extension of irrigation. The intensification of monoculture has sometimes fuelled erosion, thus leading to the degradation of once fertile soils. It has also enhanced the proliferation of certain crop pests and diseases. Also, the massive use of fertilisers and pesticides has created serious water pollution problems in some areas.

The effects of the green revolution in social terms have also come under heavy criticism. In fact, the use of high yield varieties required a certain initial purchasing power to buy the necessary seeds, fertilisers and pesticides and to carry out the required works, especially as concerns irrigation.

Box 1

International research

International agricultural research centres were created in the 1960s at the behest of the big American foundations. There are 18 such centres today. Each of them is specialised in a given crop or type of agriculture. IRRI in the Philippines works on rice. CIMMY (in Mexico) works on wheat and maize; CIAT (in Colombia) on tropical agriculture and so on. These centres together make up the Consultative Group on International Agricultural Research (CGIAR). It is within this group that the major research orientations are defined and negotiated between researchers and donors.

The methods of these international research centres are currently under fire and their financing is being called to question. That is why they have to redirect their activities to give greater consideration to environmental issues and the socio-economic constraints of rural farmers.

Smallholders in areas with low production potential or with no savings were excluded from this progress. Their situation was further worsened by the improved performance of other farmers who then became more competitive.

The new challenges

In the face of stagnating yields of the main cereals and difficulties encountered by smallholders, the need to redirect agricultural research is becoming increasingly clear. Researchers should focus their attention on five areas:

◆*Improving the production of species that have so far been neglected by research centres.*

Rice, wheat and maize were clearly the focus of research centres, especially as concerned selection. The slowdown of progress in these crops and the importance of other staple foods should lead these centres to turn their attention to other products. Cassava, yams and millet could be important research subjects. This will help increase food production in Africa, a region in which the gap between food demand and food production is tends to widen..

◆*Enhancing the utilisation of areas with low production potential*

The improved varieties obtained in research centres perform best in fertile areas with very good climate. New research work could aim at developing varieties or production methods for harsher areas (dry or mountainous areas, for example). This will have a number of social repercussions as well. The harsh areas are very often also the poorest areas. Improving production in these areas therefore amounts to fighting poverty, malnutrition and rural exodus.

Mozambique : "*rediscovering" local varieties to cope with the food crisis*

The war that raged in Mozambique for over 20 years destroyed the agricultural input supply system. The government used to supply subsidised seeds, which were mainly high yield varieties requiring the intensive use of fertilisers. As it became impossible for farmers to obtain the required inputs, production fell sharply. To solve this problem, a specific action research programme was carried out. It mobilised farmers, the ministry of agriculture, European NGOs and various technical and financial partners. The research effort focussed on upgrading the local maize varieties traditionally used in the production system. These varieties had satisfactory yields and did not require the use of fertilisers. The same approach was then extended to other crops (legumes in particular).

The reintroduction of the abandoned species made it possible for farmers to overcome the technical constraints imposed by the high yield varieties. The war had made it impossible to cope with the constraint. The farmers thus had better control of their activity since they no longer depended on the government for seeds, fertilisers and pesticides.

Culled from Antonio Onorati (Crocevia)
Biodiveristé: une gestion collective
In Courrier de la Planète No 29, Solagral
July-August 1995

◆ *Giving greater consideration to environmental issues to promote the sustainable management of natural resources*

The degradation of some soils, the depletion of water resources and increased pollution of agricultural origin all put a question mark on the "productivist" agricultural model by showing that the progress achieved may be disastrous in the long term. Instead of reproducing a single production model, it is henceforth necessary to take into account the ecosystem and adapt agricultural production to the features of each area. While it is necessary to use the available potential, it is also useful to consider the fragility of the environment.

◆ *Making researchers more responsive to the concerns of farmers*

It is necessary to reverse the communication process between research and the agricultural world: information should not only flow from researchers to farmers, but also from farmers to researchers, so that the latter can better integrate in their work, constraints relating to the area and the difficulties encountered by farmers. Researchers also need to make better use of the farmers' know-how and give greater consideration to the socio-economic constraints facing agriculture.

◆ *Encouraging farmer research*

Researchers also have to grapple with a number of constraints such as the profitability of private research centres and budget restrictions for government research services. Because of these constraints, trade-offs have to be made. Research centres cannot possibly test the performance of an innovation in the specific conditions of each area, or even carry out trials of all the possible technical improvements.

However, the farmer can handle some trials that will help them obtain the technical information adapted to their agro-ecological conditions. Such trials may involve new techniques or the adaptation of traditional techniques (as the zaï technique practised in Burkina Faso - See Box). Sometimes it does not require enormous resources to obtain interesting results (See sheet 5B).

Private research is only interested in technical improvements if they can be profitable, that is, if the centre that carried out the research can earn royalties from users of the improvement. For this to happen, the technical improvement has to be protected by a patent. This is what happens when a new variety is discovered and for which a new plant variety certificate is issued.

Public versus private research

Some techniques, how-ever, cannot be granted a patent and can be disseminated rapidly (for example, improving the way in which the soil is worked before planting a given crop). Such research work can therefore only be carried out by public research bodies or by farmers themselves. Public research therefore has a special role to play if the non profitable areas of research that can lead to progress are to be encouraged as well.

But generally speaking, considering the financial crisis facing public research, international bodies are proposing that the privatisation of agricultural research be hastened.

Farmer Zoromé digging zaï

Box 3

The zaï : a traditional technique improved and updated

Farmers too can sometimes act as researchers with the help of "supervisors". They often draw their inspiration from traditional practices. By improving them year after year they may end up with original and sometimes very effective techniques. Zoromé Ousséini (Somaga , north-west Burkina Faso) has been able to obtain good yields from land that was unfit for agriculture in the past thanks to the zaï traditional system which he improved.

The traditional zaï system consists in planting a group of seeds in a hole containing organic matter. This technique had been abandoned. So when Zoromé Ousséini started using it again, the villagers did not understand him right away. "They made fun of me," he said. "Some said I was mad, even though the zaï had been used by our ancestors in times of aridity".

The improved zaï used by Zoromé Ousséini is based on the same principle, but the holes are arranged in staggered rows, the organic matter is obtained from composts and the building of dikelets helps to reduce erosion and improve water retention. Crop association also helps improve yields.

Zoromé Ousséini improved the technique progressively following a series of trials and the advice of development workers.

Culled from Agripromo No. 83, October 1993

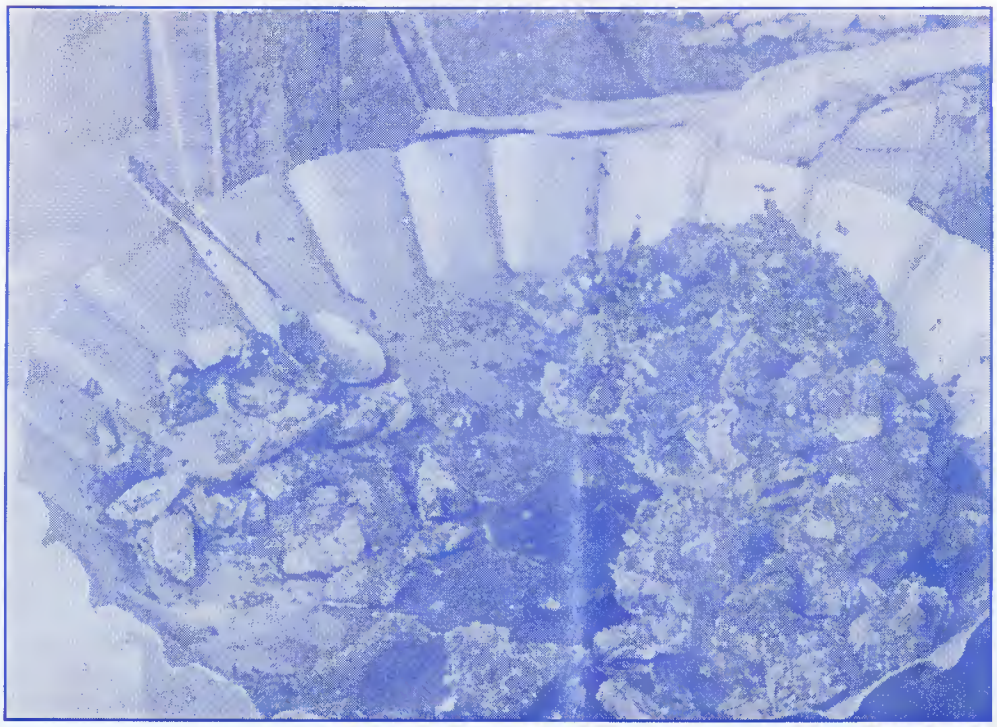
This is the subject of a lot of debate. In fact, there is a contradiction between such privatisation and the need to redirect research to focus on secondary varieties for the benefit of areas with low production potential. Private research targets big markets characterised by high returns on investment and minimum risks. For private research, the niche area remains the major crops of the industrialised countries. The production capacity is high and the market is solvent. Investment in agricultural research can therefore have a high rate of return (between 20 and 40% according to FAO). On the contrary, the adaptation of plant species to arid climatic conditions, though important in terms of food security, is of no interest to investors.

Recommendations of the World Food Summit on research

In the Rome Declaration on World Food Security, world governments identified in the area of agricultural research the need, among others, to:

- strengthen national research systems in order to increase the productivity potential of agriculture, fisheries, including aquaculture, and forestry while maintaining the natural resource base;
- strengthen international research systems (in particular international research centres)
- support international co-operation in research, in particular in developing countries, with special emphasis on underutilized food crops in these countries;
- enhance the institutional framework allowing for the full participation of all interested parties, including indigenous people and their communities, local people, consumers, farmers, fishermen and foresters and their organisations and the private sector in the identification of research needs;
- promote research and development leading to the use of appropriate technologies.

From: Rome Declaration on World Food Security and World Food Summit Plan of Action



PROMOTING THE STORAGE OF FOOD PRODUCTS

The storage of food products is an efficient way of managing seasonal variations in food production. It also allows for the stabilisation of food prices thereby ensuring that they remain accessible to the majority of the population. This is one of the conditions for sustaining a country's food security situation.

Governments also consider it a factor of their very own stability because, as Laurence D. Smith points out in the September-October 1996 edition of **Courrier de la Planète** published by **Solagral**: "the instability of food production creates problems for most segments of society, from farmers to government officials, through private entrepreneurs and consumers. Investment decisions are postponed, the food situation of the poor deteriorates and the stability of the government may be affected".

The storage of food products therefore fulfils several inter-related functions which also enable the government to ensure the food security of the country. But for food storage to play its role, it first must be made possible.

Increasing storage possibilities

In Africa and developing countries in general, the rural population and the urban poor are the first victims of food shortages resulting from a shortfall in national production. In fact, in most African countries, staple food production (maize, millet, sorghum, rice, yams, cassava) is cyclical. This means that each farming season corresponds to one or two crops. The favourable climate in the countries of the forest zone is conducive to the diversification of their production and the harvesting of sufficient quantities of food to meet their food needs for a major portion of the year. On the contrary, cereal production does not cover the whole year in the dry countries of the Sahel. The food that is imported to make up for the deficit is hardly accessible to the poorest segments of the population, because it is too expensive or because the food does not reach the consumers, especially those in villages. To cope with their needs during this period of the year when they do not produce anything, village farmers have, through the centuries, developed some efficient preservation and storage methods (See Sheet 5C).

For the population to have sufficient quantities to store, emphasis must be laid on raising food crop production. To attain this objective, it is necessary to redirect agricultural research to this area as indicated in Sheet 2C.

Governments and NGOs also have an important role to play in developing structures that make it possible to "withhold part of the production from the market in times of abundance in order to release it in times of scarcity. In Chad, for example, the national rural development authority (ONDR), Casier B of Bangor and the cotton research institute of Chad are respectively specialised in the storage, the distribution of selected rice seeds to farmers and research on cotton and millet varieties.

In this country, development NGOs help farmers to constitute and manage what they call community granaries.

Farmers also set up cereal banks and stores with democratically elected management committees. The farmers who deposit their products in the granary pay a storage fee in kind (cereals). To consolidate stocks, the officials buy the surplus production of villagers using money from the community fund. The granary is only opened once and no member may remove his products prior to the opening date.

In the towns of Chad, some traders own cereal stores where they stock cereals bought from farmers. These traders often have monopolies and can create artificial shortages to benefit from the sale of the stocks they have constituted. If food storage is in the hands of a single individual, it may, although still increasing supply in times of scarcity, be used to accentuate price fluctuations and instability. These are cases of speculation and they only benefit a few people.

Box 1

Burkina Faso's cereal banks

Cereal banks are village socio-economic units managed by the villagers themselves. They were initiated by the government of Burkina Faso, NGOs and various food security associations. The population very quickly took over and continued the activity, especially following the famine in the Sahel region in 1973.

A cereal bank comprises: a building in which to store the grain; some small equipment (weighing equipment, pallets...) and a management unit. Its principal administrative organs are:

- the general meeting of farmers who are often in groups;
- the management committee comprising 4 members: a president, a secretary-treasurer, a storekeeper and a person in charge of buying and selling;
- the audit committee.

The cereal banks enable villagers to:

- buy staples at the time of harvest and thresh for storage purposes;
- market this food at reasonable prices during the hunger gap and thereby check the gradual indebtedness of farmers to uncanny traders who used to buy the standing crop of farmers at give-away prices or lend them money at exorbitant interest rates.

These banks also generate income for farmer organisations.

Cereal banks therefore contribute to food security at the local level in Burkina Faso. The national strategy for promoting these banks was outlined in 1993. But even before that, in 1992, the country already had 1600 cereal banks with a total initial working capital of 1,500 million CFA francs. At the time, they had a storage capacity of 60,000 tonnes.

Dieudonné Nikiéma
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To encourage farmers to produce more food it is necessary to guarantee them a market outlet. This can be done by reducing the importation of subsidised food products which compete unfairly on the local market, or by complying with international trade agreements (See Sheet 3A).

Guaranteeing a market for producers

Production can also be encouraged by putting farmers in areas with a production surplus in contact with buyers from areas with a production deficit (See Box 2). **Afrique verte**, a French NGO that has been operating in Burkina Faso since 1990, lends support to village associations managing local cereal banks. Its basic philosophy is that "Africa can feed Africa". In fact, if all the equalisation is carried out between the zones with surplus production and those with a deficit, (desert areas and towns), the cereal deficit will have less of an impact on the inhabitants of the Sahel region. To attain this objective, **Afrique verte** puts its know-how at the disposal of village associations by:

- ◆giving training in accounting and management;
- ◆ looking for outlets to enable farmer organisations to sell their cereal surpluses at market conditions;
- ◆ organising cereal exchanges in order to enhance cereal transactions and trade between zones with surplus production and those with a deficit;
- ◆ facilitating access to credit by supervised village groups; and
- ◆ the coming together of village groups to form associations in order to make full use of the marketing instruments put in place by **Afrique verte.**

In the 1996/97 season, the **Afrique verte** team in Burkina Faso lent support to some 50 farmer organisations.

Clearly defining the role of the State in the management of food surpluses

National cereal agencies were set up in most West African countries in the 1970s. They made it possible for the State to intervene to regulate the quantity of food available on the market and thereby curb supply and demand uncertainties. These uncertainties indeed cause significant price increases that could put staple foods in most of these countries beyond the reach of the poor.

After 20 years of existence, it must be acknowledged, however, that these agencies have not succeeded in cushioning the effect of inter-annual fluctuations in production. Many of these cereal agencies have instead recorded deficits amounting to billions of CFA francs because they were often outdone by private businessmen to whom the farmers preferred to sell their products (See Box 3: The National Cereal Agency of Burkina Faso).

Furthermore, structural adjustment programmes and the general movement towards economic liberalisation are obliging governments to intervene less in the market. This has led to a reduction in government food stocks and far-reaching reforms in marketing systems. Today, the bodies set up by governments are increasingly geared towards gathering and disseminating information on food supply. The case of Mali deserves further analysis, as this country has carried out an extensive cereal market restructuring programme (PRMC). This programme could serve as an example for the liberalisation of the cereal sector. It is implemented jointly by he government of Mali and the main food aid donors. It was initiated in 1981 with the objective of improving food

Box 2

Afrique verte and the farmer cereal exchanges

The Afrique verte concept

Afrique verte is the outcome of a European public awareness campaign and pressure on political decision-makers. In the 1980s, the objectives of NGOs included the conversion of food aid shipments into financial resources for the marketing of African food production. At a round table in 1983, the minister of co-operation made a commitment concerning the gradual conversion of 10% of France's food aid resources into actions for the marketing of cereals produced in Sub-Saharan Africa. In 1990, the food aid charter was signed between the Sahel countries and donors.

Mans World (Terres des Hommes), Peuples Solidaires, Brothers to All Men (Frères des Hommes), Association française des volontaires du progrès, Comité catholique contre la Faim et pour le développement (the Catholic Committee Against Hunger and for Development) pooled their skills and created **Afrique verte**. Objective: materialising the 10% and sensitising the public to the fact that the economic development of Africa is possible if meaningful financial assistance is made available for the utilisation of existing potential. In the Sahel, **Afrique verte** put in place support structures for training and marketing with a view to their being taken over by Sahel farmer organisations.

Source: Aider les paysans sahéliens à nourir le Sahel
Afrique verte, 49, rue de la Glacière, 75013 Paris, France

Burkina Faso's cereal exchanges

The cereal exchanges were initiated by **Afrique verte**. The first one took place in Burkina Faso in 1991. Another one took place in Niger in the same year.

The cereal exchange is a choice forum for discussion and exchange of products between farmers, traders, financial institutions (the national agricultural credit fund, Union régionale des caisses populaires du centre) and NGOs. These organisations and institutions meet for commercial transactions involving cereals. For example: the March 1995 exchange made it possible to transact on 766 tonnes of cereals (maize, sorghum and millet) for a turnover of 58 million CFA francs.

The exchange brings the supplier and buyer into direct contact. It takes place once a year, in February or March. It is generally preceded by a pre-exchange which is held at the end of the harvest in November and December. The exchange brings together farmer organisations from areas with a production surplus and deficit. The March 1997 exchange session gave farmers the opportunity to make their offers, determine their needs and indicate the available quantity of cereals.

The supply from the zones with surplus production was 1,093 tonnes, while the demand from farmers was 658 tonnes. Working on the basis of the expected supply and demand made it possible to envisage transactions on 279 tonnes. Between the exchange and the pre-exchange, 173 tonnes of cereals were sold. All transactions respect market conditions.

Each exchange session lasts 3 to 4 days during which the producers also learn how to bid, to better organise themselves. They also receive information on the type of technical and financial assistance their partners are willing to give them and the conditions they have to fulfil to get it. The transactions are facilitated by the financial support of financial institutions and NGOs.

To promote the development of the exchange, special emphasis is laid on strengthening the capacity of producers to handle the organisation and running of future exchanges, as well as their capacity to establish lasting co-operation ties with their partners.

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security in the country by increasing local cereal production while easing the burden of the sector on public finances and formulating a concerted and coherent food aid policy.

As underlined in the D.E.E.P. issue of September 1995: The gradual liberalisation of the market is almost complete. The agricultural products agency of Mali (OPAM) has lost its marketing monopoly and its role as regulator. Its interventions, as is the case in other countries of the Sahel, is limited to the management of food aid, the management of the national security stock and supplying food to areas with a deficit. Equally, administered producer and consumer prices have been phased out. A feature specific to the PRMC is that the accompanying measures of the policy are financed not by the government, but by a common fund pooling the various food aid counterpart funds or financial subsidies. Where food aid in kind is not required, the donors' commitment is converted in to cash...

A system for drying millet in Chad

...For five years now, the supply and disposition of cereals in the country has generally recorded a surplus, despite an increase (25%) in human consumption. Even if the share of the cereal production that is really secure today is not enough to guarantee the country's self-sufficiency no matter the meteorological conditions, Mali's policy squarely raises the issue of surplus management. How can it be ensured that surpluses do not bring down prices and thus have a negative impact on the income of farmers? How can the surpluses be best used to improve the population's food security? What policies should be adopted in the event of a structural deficit? The measures adopted by PRMC were as follows:

- financing the reconstitution of the national security stock (58,000 tonnes) using local production (as a priority);
- launching, through the banking network, of a major credit programme allowing private traders and village associations to finance the storage and marketing of cereals;
- supporting the artisanal and semi-industrial processing of local cereals;
- granting ad hoc subsidies for cereal exports within the sub-region (millet in 1990 and rice in 1992);
- supporting the marketing of local rice by granting credits to local private operators and financial assistance to public marketing bodies.

The measures adopted made it possible to find momentary solutions to the surpluses, either by making it possible to store them for a longer period or by facilitating their immediate marketing, through exportation, for example. Furthermore, the PRMC credit programme made it possible to support farmer prices in the years with large production surpluses. The carrying forward of the maturity of these credits from year to year (as was the case in 1989 and 1992) helped village associations not to sell their stocks at very low prices. All this notwithstanding, the problem of surplus management still remains unresolved, even if some actions to that end have been identified, such as the processing of local cereals in order to corner parts of the urban markets or using them as animal feed

Source: D.E.EP., September 1995

Box 1

Burkina Faso's national cereal agency (OFNACER)

Burkina Faso's national cereal agency (OFNACER) was in charge of managing the country's food security stock and regulating the cereal market. It was dissolved because it was bankrupt and also because the government had decided to liberalise agricultural prices under the agricultural structural adjustment programme (ASAP) instituted by the IMF and World Bank.

OFNACER was replaced in 1993 by the national security stock management corporation (SONAGES). The government endowed SONAGES with a capital of 200 million CFA francs so that it could carry out its three main functions, namely: management of the national food security stock; storage and preservation of food aid granted to Burkina Faso; and running the cereal market information system. Unlike OFNACER, SONAGES is no longer responsible for price stabilisation.

The national food security stock comprises 55,000 tonnes of cereals (of which 35,000 tonnes are local cereals) and financial stock (money) estimated at 25,000 tonnes of cereals.

The 35,000 tonnes of cereals (millet, sorghum and white maize) are kept in the north and centre of the country which are the main areas with risks of severe food shortages: Ouagadougou the capital, Kaya, Gorom-Gorom, Ouahigouya... In the event of a food crisis and at the request of the government, SONAGES is required to make its stock available to the State. The government has to reconstitute the stock once the crisis is over. In 1993 SONAGES released 14,000 tonnes of cereals which were distributed in 2/3 of the country's provinces.

The financial stock estimated at 25,000 tonnes of cereals is deposited in financial institutions in the country. The government can use it to import food in case of shortages.

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FACILITATING ACCESS TO THE MEANS OF PRODUCTION

The principal means of agricultural production are land and water. Access to these means of production is of key importance to food security at the individual level. It enables a farmer to produce for subsistence or to sell the crops produced to get an income which can then be used to feed the family. In Africa, however, "land law" is not always quite clear and the interference between national regulations and local customs does not allow for optimal land regulation. The availability of water is another factor that limits the continent's capacity to feed all its inhabitants. How then can these resources be managed rationally under such circumstances?

Land : a source of conflict

Land is wealth and is in great demand. When the population grows, or when land quality degrades, the sharing of land can be the source of very sharp tensions. For example: high population density is often given as one of the reasons for the murderous conflicts that rock Rwanda and Burundi sporadically. At times, it is farmers and grazers who are in conflict because they have very different conceptions of the relationship between man and land. Farmers are sedentary, settled on the land they exploit and which they consider to belong exclusively to them. Grazers have a different relationship with land. They are less sedentary and even nomadic, and consider land as a collective belonging that can be used by several people. Because of these different conceptions, it is not often easy to find common ground between the two groups. The resolution of conflicts may take a long time, as is the case between farmers and the Bororo and Aku cattlemen in the north-west of Cameroon.

Regulation systems exist. But rising population pressure, recurrent drought in the Sahel and soil degradation have increased the competition for access to land and rekindled disputes. Land disputes also occur between the native population of a given area and migrants who come to settle there, when land resources become scarce. This is often the case when there is sudden and massive population displacement, especially when large numbers of people have to flee wars to settle elsewhere, albeit temporarily (See, for example, the box on Liberian refugees in Sheet 2C).

Regulating access to land

Access to land is governed by several rules that are defined and implemented by village, regional and State authorities. These authorities are, in principle, responsible for settling land disputes. The problem, however, is that in many African countries, several land tenure systems co-exist.

◆ **Customary systems** are based on the principle of membership of a community (a family, a lineage...). Depending on this membership and the position occupied in the community, one is granted the right to use village land. This right may also be granted to strangers who are not part of the lineage. The decision of the person overseeing the village land (chef de terre) is the law.

◆ **State laws** are more rigid. They are based on membership of the national community. During the colonial period, land was controlled by the State.

After decolonisation, the independent States adopted a land management system that was close to that of the colonial era. Philippe Lavigne Delville points out that "in all francophone countries, all land was declared national land, with all forms of customary authority abolished [...] The State declared that land belonged to whoever was working it".

In reality, however, traditional authorities continue to be consulted. This kind of "decentralised" system allows for a better allocation of land than official regulation. In case of a disagreement, however, it is difficult to reach a compromise if one party invokes customary law and the other national legislation.

Difficulties become even more insurmountable if the civil servants supposed to resolve the dispute yield to corruption.

Box 1

Traditional land management in Burkina Faso

Traditional land tenure systems generally bring to mind systems in which an authority of the community or local political entity exercises administrative powers over the land. Individuals have the right to cultivate the land by virtue of their membership of the social group. Individual rights are generally in the form of long term usufruct. In areas where land is abundant, an individual can exercise this right simply by clearing up any piece of vacant land.

In areas where land is less abundant, an authorised administrator, who may be the village or tribal chief, may either share out the land or ensure compliance with the land law. The individual's rights do not include the right to sell the land, but cover a variety of transactions and transfers between farmers, within families and between generations.

Some farmers may have more land rights than others. Farmers who are not members of the community are treated as guests and their rights to farm the land are restricted in time. In some cases, they may be easily absorbed by marriage or by the hereditary system. In some cases, however, carrying out permanent improvements on the land is seen as assertion of permanent ownership rights by such strangers, which is not acceptable to their host community.
Women generally are not entitled to the right to use land for themselves. Their access to land is through the husband, and they may lose it in case of divorce or the death of the husband.

Since traditional land is managed by local institutions and is sometimes still tied to complicated social relations and obligations, local political intrigues could hamper the fair application of the rules. In some rare cases, an individual may lose his land if he is opposed to the chief. Since such fears may give a general feeling of insecurity, the traditional land tenure system may discourage farmers from investing in the land.

Traditional land tenure systems are not static. They have been changing in some regions of Burkina Faso to the extent of granting the individual a broader range of rights. A real estate market is beginning to grow in the regions where land is scarce, where young farmers can no longer accede to land by the traditional method of sharing because the inherited piece of land would be too tiny to be economically viable.

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Sustainable mana - gement of land resources

Apart from the issue of sharing the means of production among individuals, the regulation of access to land is also important in terms of natural resource management. In fact, if a resource is accessible to all, and if there is no agreement on how to best manage it, individual interests will be put above the collective interest. For example: if access to the forest is unrestricted, timber will be harvested in a disorderly manner. As a result, the forest resources will soon be depleted instead of being renewed from year to year.

Similarly, if a farmer is working a piece of land without being sure that he will still have access to it the next year, he may not feel it necessary to spend time and money improving the fertility of the soil. What would be the point for him to build dikelets to check erosion or to manure the soil if there is the risk that the farm may belong to someone else in the coming year? Private ownership is considered by many as the best means of ensuring security of tenure and promoting sustainable land management. It should however be acknowledged that regulating access by private ownership may also lead to the marginalisation of the poor. The nature of the land problem in Latin America is a vivid demonstration of this. In Brazil, the 20 biggest land owners hold as much land (over 20 million hectares) as 3.3 million smallholders.

According to Athanase BIBBA, land has lost its traditional value and has become a market commodity. The collective ownership system is increasingly being replaced by the individual ownership system. In this transitional society, what is important is no longer working the land, but rather owning it to guarantee access to agricultural innovations (erosion control, planting of trees, etc...). "The land management approach went hand in hand with the structural adjustment programmes implemented at national level to bring about the conditions for better economic development" (C. BARRIER). This approach is, in some ways, an attempt to resolve a rather new problem in West Africa, namely the sharp increase in pressure on land and the degradation of the agro-sylvo-pastoral capital, and hence the deterioration of food security.

This problem is quite serious and complex and the principal donors are working on the development of a specific approach which is already guiding several rural development operations in Africa.

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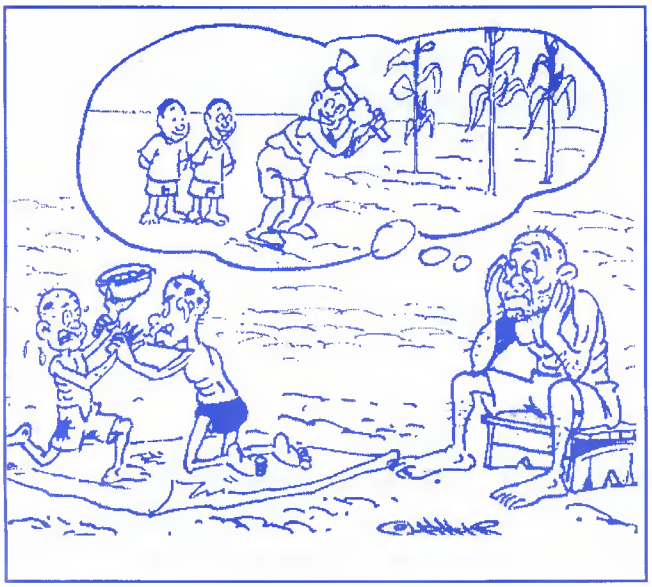
Water : a limited resource

Water is a limited resource and its distribution across the world is uneven. Of the available 1.4 billion cubic kilometres, only 140,000 cubic kilometres are easily accessible for human consumption. This amounts to barely one-tenth of the resource. The remainder is in the form of salt, frozen or underground water.

Owing to population growth, the volume of water available per capita has dropped significantly. Between 1950 and 2000, this volume shrank by over 73% in Africa. The use of underground water (by pumping) for various purposes also results in the dropping of the water table. It is now necessary to dig deeper and deeper wells in some countries to reach this water table.



Unlike land, the management and distribution of water has not yet been the cause of major conflicts in Africa. But with rising demand, and in order to ensure food security, it is necessary to take initiatives in this area as well. It is to this end that experts have proposed the following six solutions as a way of increasing the efficiency of water harnessing and use in agriculture, industry and households:

◆ using cost policies and institutional changes to increase the efficient utilisation of water in all sectors;

◆ improving irrigation plans and techniques both to increase productivity and to reduce operating and maintenance costs;

◆ increasing the use of water of marginal quality, including household waste water and brackish water;

◆ ensuring a balance between the utilisation of surface and underground waters and their conservation;

◆ using water recovery, plain development and low-cost and small-scale irrigation techniques to improve the management of user-driven water projects;

◆ improving the protection and management of soils and water in the catchment areas of highlands.

If these six techniques are applied, many of today's problems will no longer be as serious as they are. In irrigation where the efficient use of water may be less than 40%, a 10% improvement would be significant progress indeed. Using treated waste water for irrigation can set aside good quality water for other uses. Generally speaking, water should be used more efficiently to preserve food security and incomes.

Box 2

Local area development

Local area development can be defined as a process for the concerted implementation of a number of actions and measures aimed at harnessing the resources of a given area while also guaranteeing their security and sustainability. The development works are carried out not only for the benefit of the community but also of the individual within the general context of the area, taking into account the available financial and human resources. The local areadevelopment approach entails discussing with the rural population in order to help them better manage their milieu and cope with the socio-economic and natural resource management problems of their region. In this approach, the local community is the decision-making centre as concerns designing and implementing the local area development plan.

J-P. Sawadogo

New technologies can help bring this about rapidly. Sprinkler and micro-irrigation systems are twice as efficient as surface irrigation and prevent water loss due to evaporation and soil salinisation. Unfortunately, the solutions developed in the industrialised countries tend to be costly and the countries that use flood or trough irrigation will need to adapt the new technologies to their local needs.

Source: Nourrir le monde
World Food Summit
Rome, 13-17 November 1996

Box 3

Small-scale irrigation techniques

Large-scale irrigation projects are generally inaccessible to the poorer and needier farmers. There, however, are several small-scale and affordable techniques that can be used to improve food production. Similarly, rain water infiltration can be enhanced by better soil management. In areas with rainfall of 1,200 to 1,800mm, it is a much more efficient means of stabilising yields than the purchase of supplementary irrigation equipment.

Water recovery

Recovering run-off water for the irrigation of crops, pastureland and trees can significantly improve the yield and reliability of agricultural production in dry marginal regions. Experience has shown in Burkina Faso, Niger and Kenya that this method can lead to the doubling or even tripling of crop yields when compared to the usual farming methods in arid areas.

Low pressure pumps

Irrigation has been revolutionalised by affordable and reliable pumps and the wide-scale availability of fuel. Individual or collective programmes to install these small pumps are beginning to play an important role in increasing food production. These programmes are easy to implement, and have considerable indirect benefits because they associate the supply of water for household use and irrigation.

Pedal pumps

These simple and affordable pumps have enabled poor farmers in Bangladesh, India, Nepal, Vietnam and Cambodia to increase their incomes and thereby raise their standard of living above mere subsistence. They can now have a second harvest in the dry season and cultivate new varieties of vegetables and cereals in semi-arid regions where nothing grew before. These pumps do not require an engine and running them does not require any special skill. They are generally worked by women who also use them to draw drinking water.

Source: Nourrir le monde
World Food Summit
Rome, 13-17 November 1996

INCREASING THE EFFICIENCY OF FOOD AID

The generic term food aid is generally used to mean gifts of food or food that is sold on concessional terms to a country with a food deficit or to people suffering from a food shortage. The term, however, also covers various types of practices that apply to a wide range of situations. Emergency food aid is the most mediatised aspect of food aid, and therefore the most widely known. But emergency food relief only accounts for about one-third of the millions of tonnes of food distributed world-wide as food aid. The role of food aid is not only to provide relief in situations of hunger. It could also be a form of economic assistance or an instrument for market regulation.

The fact that so many reasons can justify food aid tends to create ambiguities. Is it a show of solidarity in time of need or is it a tactical weapon in the hand of businessmen? At times aid could serve both the interest of the donor and the beneficiaries. This casts suspicion on food aid programmes, which then come under heavy criticism.

It cannot be denied that food aid can have very destabilising effects and as such should be handled with a lot of caution.

Box1

Food aid lexicon

emergency aid : it is handled by UN agencies (WFP, UNHCR) and NGOS generally referred to as the "emergency people". This aid is distributed for free and often comes along with other forms of aid in kind (healthcare, blankets, etc...).

project aid : food aid is distributed as part of a development project targeting a given group. WFP and NGOs are the main operators, and use "Food for Work" projects (food aid is given as remuneration for a given piece of work such as constructing an irrigation network, a road, etc...), "Food for Training" (training programmes), etc...

programme aid : this food aid helps to reduce the deficit between demand (determined by the number of inhabitants and their income) and supply (production + commercial imports + stocks). The beneficiary State therefore saves on the foreign currency that would have been required to pay for additional imports. This aid is generally sold on the local market by a government agency. The proceeds make up what is known as "counterpart funds" earmarked for financing development projects or the government's recurrent expenditure.

local purchases and triangular operations: instead of cereals being sent from developed countries, food aid funds are used to purchase food from those regions of the beneficiary country that have a production surplus (local purchases) or in another country (triangular operation). This approach is being enhanced by the present reduction in the food surpluses of donor countries.

multilateral aid and bilateral aid : multilateral aid is aid managed by international bodies such as UNHCR or WFP. Bilateral aid is aid negotiated between two countries.

Source: J-P. Chanteau, M-C. Thirion: dossier "A quoi sert l'aide alimentaire?" Solagral, Courrier de la Planète N° 18, été 1993

Coping with food crises

The primary function of food aid is to facilitate to supply of food to people facing famine. The very first free international food shipments were back in 1812 when the American Congress authorised the maiden "emergency food aid" shipment to help the victims of an earthquake in Venezuela. Subsequently, England sent food aid to its colonies hit by famine: Ireland in 1848, India in 1890, then Somalia and Sudan at the beginning of the century. In most of these cases, food aid was sent because of natural disasters. Today, however, an ever-growing number of famines are provoked by armed conflicts (See Sheet 2C). The multiplicity of wars, especially in Africa, is mainly accountable for the increase in emergency food aid. In 1992, close to 5 million tonnes of food were distributed as emergency aid.

Economic interests and agricultural market regulation

The decline in food aid following the drop in the agricultural surpluses of the industrialised countries says a lot. Food aid, beyond all the good intentions, is also a means for the donor countries to regulate their agricultural markets. Surplus production tends to bring down agricultural prices. Storage of the surplus is costly as well. Food aid in itself does not amount to very huge volumes. But the donor countries with surplus production count on the induced effect of food aid. Food aid is often the "gift" that is used to hook the customer. In some cases, donors hope that the aid will lead to a change in food habits among the beneficiaries which should, in the long run result in new markets. In the early 1960s, American Senator McGovern who was in charge of the Food for Peace programme was quite explicit on this: *"It was as if the famished countries were doing us a favour by making it possible for us to give or sell to them at concessional prices our food surpluses we didn't know what to do with [...] The Japanese children who learnt to love American bread and milk through the programmes we subsidised in their schools have helped to make Japan our biggest customer for agricultural products bought in dollars".*

Food aid: short term relief to countries with a food production deficit

Apart from the commercial interests, food aid was for a long time used as a political weapon by the USA in particular in its power struggle with the Eastern bloc. The end of the "cold war" between the USA and USSR lessened the political motivations of food aid.

Apart from emergency situations, food aid is also an instrument of international economic co-operation. Programme aid (See box on lexicon) in particular helps countries with a considerable food deficit to secure enough food even when their financial resources are insufficient. By this aid donor countries supply food (generally cereals) free or at very concessional prices. Egypt is a country with a very high cereal deficit and is one of the biggest beneficiaries of the programme aid together with Morocco and Pakistan.

Programme aid also helps countries with balance of payment difficulties. The aid received in kind is then sold by the State on the domestic market. The proceeds from this operation, known as counterpart funds, may then be used to finance agricultural production capacity building programmes in order to reduce the food deficit in the long term. The proceeds could also be used to cover the running costs of some services to the public. As such, programme aid is often linked to structural adjustment programmes. It is one way of cushioning the impact of the reduction in government resources.

Since programme aid is given directly to governments, it does not contribute to poverty reduction and food security for all. Services are often in the form of generalised food subsidies in urban areas. Furthermore, apart from misappropriations that are charged to the profit and loss account, the money obtained from the sale of the aid is not always used to finance agricultural programmes. Project aid is also an instrument for supporting economic development. It is financing in kind for the carrying out of works of public interest such as the building of roads, canals, etc... Workers in these projects receive remuneration in the form of food for themselves and their families. This type of aid is often more useful in fighting food insecurity among the poor and victims of hunger. But the cost of distributing the food directly to the tar get population is often very high and may discourage donors.

In the long term Food aid does more harm than good

Food aid has come under a lot of criticisms even from the donors themselves. In 1995, during the evaluation of the European Union's food aid policy, those who had headed the development of the policy acknowledged that it tackled the consequences of food deficits while aggravating the causes. Like many external observers, especially NGOs, they deemed that "aid goes against long term food security policies. It sustains dependence on the outside world. It competes against and destabilises local production and marketing systems. It changes the food habits of the beneficiaries. It is expensive (transportation consumes 30% of the total budget). It is managed by donors in structures that exclude nationals, thus making them veritable states within the State which disempower local governments..." Luckily, food aid deliveries are on the decline and greater attention is being paid to the implementation of preventive long term policies.

Declining food aid deliveries

Globally, food aid deliveries are on the decline. The volume of food aid delivered in 1994 and 1995 was relatively lower than in previous years (See graph). This was in part because of the reduction in the cereal stocks of the major producing countries. In the past, world cereal production tended to be higher than the market demand. Today, the world cereal market is not as saturated. Supplying the countries that can pay for the products takes precedence over supplying food aid, hence the reduction in programme aid in particular.

In 1995, food aid deliveries amounted to 9.3 million tonnes, which was 25% less than in 1994 and 45% less than in 1993 when they reached a record high of 16.8 million tonnes.

The level of emergency food aid remains relatively high because of the multiplicity of conflicts and massive population displacement.

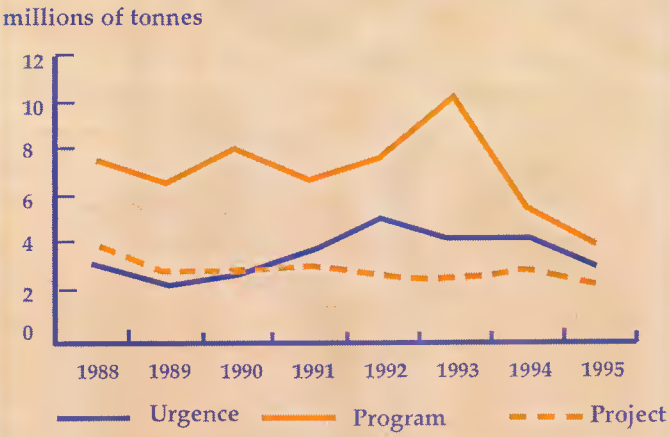
International food aid prospects

The criticisms levelled against food aid have not gone unheeded and have led to some aid policy adjustments. Food aid distribution today is more precise, following better targeting of disadvantaged groups, better adjustment of aid to the assessed needs and, in some cases, the use of local products instead of competing with them (See box on triangular aid).

In 1990, the food aid charter was established. In the charter the signatory States (donors and beneficiaries) undertook to better prevent the risks linked to the negative effects of aid. This "code of conduct" also calls on donors in particular, to promote local cereals in order to curb the risk of creating changes in food habits. Lastly, the charter underlines the need to design food aid operations bearing in mind the long term development of production capacity. Aid should be an instrument for promoting food security strategies and not for inducing dependence which can only sustain the need for aid.

The rules governing food aid in donor countries have been reviewed because of three principal factors: past criticism of aid, the signature of the charter and international cereal market trends.

Food aid deliveries in the world by category
(in millions of tonnes)



Source : Interfais, April and August 1996

Programme aid, which for a long time accounted for 60 to 70% of food aid witnessed a sharp drop in volume in 1993. The amount of emergency aid has risen gradually to represent close to one-third of total aid, while programme aid is the main category of food aid to Sub-Saharan Africa. North Africa and the Middle East, Latin America and the Caribbean, Eastern Europe and CIS mostly benefited from programme aid, while South and East Asia received mostly project aid.

For example: the European Commission, following the evaluation of its food aid policy, adopted new rules in 1996 providing for the better targeting of aid beneficiaries, the promotion of local purchases and triangular operations, and the mobilising of foreign currency to buy agricultural production equipment (implements, seeds, etc...). It also introduced new conditions for the supply of aid, such as: "Food aid may be subject to the implementation of development projects aimed at long term food security". It is up to the States to tackle the root causes of food deficits by accepting the reforms the European Union intends to carry out.

Box 2

Triangular aid and local purchases

To ensure that food aid is not competing with local production, donor countries can buy food locally for distribution to people in a situation of severe food insecurity. This can only occur in countries that do not have an overall food deficit, but which have problems relating to access by part of the population to food perhaps as a result of a natural disaster or the disruption of the distribution network by war, for instance. If the food is not available in the beneficiary country, the donor may look for suppliers in a neighbouring country. This enhances regional trade.

The new rules of the European Commission encourage triangular operations and local purchases. In 1995, such operations accounted for 41% of food aid from the European Commission.

Whenever the European Commission wants to carry out such an operation, it issues invitations to tender indicating the products to be supplied, the period and place of delivery. Local enterprises or farmer groups may submit bids if they are able to supply the products. If their bid is accepted, a contract is signed between them and the European Commission. Sheet 5C explains how to reply to invitations to tender and become a supplier to triangular food aid programmes.

These reforms hinge on liberalisation, and are close to those envisaged by the World Bank under its agricultural structural adjustment programmes. Governments will have to entrust the importation and distribution of food products to private enterprises. This used to be handled by State agencies or corporations, which will be dissolved. Subsidies on primary necessities will be stopped so that market mechanisms can fully play their role. The European Union will lend its assistance towards the attainment of these objectives.

Two African countries, Cape Verde and Mauritania, have accepted to try out this system. Niger should soon be part of this list. The results these counties obtain will determine whether this system is the way forward.

For its part, the American Congress has significantly slashed the food aid budget. Food aid is no longer considered to be an effective method of cornering new markets or supporting the policy reforms of beneficiary countries. Hence the reduction in food aid shipments and the focus on emergency situations or making food aid available to development projects, especially as part of "Food for Work" programmes.

STRONG PRODUCER ASSOCIATIONS FOR INCREASED FOOD SUPPLY

The food security of a country is achieved either through local production or imports. In Africa and developing countries in general, food security depends mostly on the local food supply. Local food production therefore should increase regularly to cope with the rising needs of the population. To this end, the government outlines agricultural and trade policies that aim at increasing the food supply. But the implementation and, in particular, the success of these programmes hinges on the active participation of food producers.

How can the participation of local farmers be enlisted, and what benefits can they derive from such participation ?

Food producers do not benefit much from food security!

Massive food imports impair local production, but States import food because in the short term it enables them to feed the population at less cost and to have a positive balance of payments (See Sheet 3E). Producers are doubly penalised by this situation: on the one hand, imported products are often too expensive for them to afford; on the other hand, these imports disrupt local production and prevent the State from carrying out the necessary investment to develop national food production.

Producers are also the very first victims of food price stabilisation policies brought about by structural adjustment plans (See box on The Human Costs of Structural Adjustment), food scarcity and famines. They are "geese laying golden eggs" or "milk cows", giving so much but receiving very little in return. According to Moussa Para Diallo, a Guinean farmer,

Box1

The human cost of adjustment

In **Hunger and Public Action** published in 1989, Drèze and Sen give a positive appraisal of food security based on support in developing countries. Some countries that had clearly been successful in guaranteeing food security were among the hardest hit by structural adjustment programmes (SAP) in the past decade. In Sri Lanka (Asia), the partner organisations of the British NGO Christian Aid consider structural adjustment to be the main cause of the recent deterioration in socio-economic conditions.

Sri Lanka which had caught the attention of the international community by successfully raising the standard of living of the poor witnessed a resurgence of poverty once it came under SAP. The elimination of subsidies on fertilisers and the curtailing of government advisory and harvest purchase services darkened the prospects of rice farmers. "My harvest cannot cover my production costs," laments Kamal Rana Singhe, a rice farmer. "Before, we had two rice harvests a year, but since the drop in income, we have stopped planting rice during the intercalary period. Before, we had agricultural extension services at our disposal. Today, we only have two advisory centres for over 200 villages". Lastly let us mention the conclusion of the Secretary General of the National Christian Council: "Since structural adjustment, malnutrition has become widespread, women are skipping meals and they lack the strength to work on the farms, and children are fainting at school gatherings".

Source: D.E.E.P. Developpment Education Echanges September 1995, page 27

"this situation prevails because farmers are unable to unite as a result of mutual suspicion" (La Lettre du Réseau GAO, N° 14, 1er trimestre 1993, p.4). To put an end to the situation, farmers must first learn to know one another, they need to be aware of their identity as a socio-professional group and organise themselves to defend their interests.

Strong organisation to produce more and sell better

Getting organised to be better heard

In early 1996, angry Indian farmers destroyed a foreign restaurant which sold fried chicken, therefore encouraging the spread of a food habit that could not be satisfied by local agriculture. This restaurant was therefore jeopardising the income of the local farmers, derived from the production and sale of vegetables. One of the disillusioned farmers pointed out: "Today, the multinationals can dictate what type of onion and tomatoes we should cultivate" (Source: **New Scientist** quoted in **Courrier International** of 14 November 1996). In Guinea, farmers "besieged" the government for over one year to impose their products over subsidised imports.

Box 2

The battle over the potato

In June 1992, potato producers in Guinea were able, for the very first time, to impose their product on the national market. It took them four years to get there. During those four years the farmers learnt how to produce at lower cost: they increased their yields and mastered the inputs supply channels. They also learnt how to produce quality products. With the certainty that they could supply quality potatoes at competitive prices, they took on the market.

To do this, they spent one year going from ministry to ministry, knocking on the doors of donors, discussing with importers and the central bank. They even threatened to dump their production in front of the ministries of agriculture and commerce if they kept ignoring them.

Their action was supported and covered by national radio and television whose journalists were able to mobilise the public opinion. As a result of all these concerted actions, potato farmers in the Fouta Djallon finally obtained what they wanted: priority for their products on the domestic market.

Source: La Lettre du Réseau Gao, N° 14, 1er trimestre 1993

These examples show that farmers can indeed fight back when their vital interests are threatened. In the rural world, farmers constitute a force which often operates underground. With the ongoing democratisation in Africa, farmers are readily coming together to defend their rights. This is what happened in Mali with the revolt by cotton and food producers which led to the creation of SYCOV (Union of Cotton and Food Producers) and the signing of performance contracts (See box on Mali's performance contracts).

Box 3

Mali's performance contracts

In 1991, farmers in the cotton producing region of Mali formed a trade union, SYCOV, to represent them before the State and the Compagnie malienne de développement des textiles (CMDT). There were agreements or performance contracts between the State and CMDT on the one hand, and between the State, CMDT and the farmers on the other hand. Each contract defined the duties of each of the partners, spelt out each partner's share of any profits that may be made and how each one should manage the risks inherent in the cotton sector.

Each performance contract was discussed at length by each partner before signature. Each partner was therefore fully aware of the commitment being made and its responsibilities to ensure the smooth functioning of the sector. For example: one of the main provisions of the contract between the State, CMDT and the farmers was on the remuneration of the partners in case of profits.

CMDT is responsible for collecting and ginning the seed cotton and then selling the cotton fibre. Income for the sector is obtained through the sale of the cotton. To know the results obtained at the end of the season, the cost price is deducted from the sale price to obtain the gross margin. The partners are then remunerated from this gross margin. Part of it is also used to replenish the stabilisation fund which guarantees producer prices when world cotton prices fall below the cost price. So, when the crop records a positive balance, it is used to replenish the stabilisation fund which is in turn used when there is a deficit.

The net margin, that is, what is left after the replenishment of the stabilisation fund, is shared as follows: 35% to the farmers and 65% to CMDT which pays part of it to the State in the form of taxes.
It is therefore in the interest of the three partners for the sector to always make a profit.

Source: Report of the Cotton Seminar, Vol. 1, January 1995

Getting organised in order to control the production and marketing of market gardening crops

Leaders of food producers' organisations are increasingly aware of the role these organisations have to play in the fight against food insecurity. Improving and diversifying production is imperative. Their concern is that producers should receive the necessary support in order to better meet national demand and put on the market products that can compete keenly with imports. This is very important especially now that the agreements of the Uruguay Round obliged African countries to increasing liberalise their trade.
These leaders are therefore replacing ad hoc battles like the one over the potato with strategies that support production and market development plans. They are thus fully aware of the mission incumbent on farmer organisations to replace the State in informating and training producers. These concerns are clearly identified in the action plan of the federation of onion and potato farmers of the Fouta Djallon (Guinea):

- supplying farmers with onion seeds at better prices than those on the open market;
- negotiating with the government tax exemptions on seeds so that farmer associations can acquire them at a price that will lead to a reduction in production costs;
- making technicians available to farmers and offering them training possibilities so that they can better carry out production on their farms;

Box 4

Some developing countries are beginning to export wheat

World cereal consumption in the past 30 years has been marked by two major trends.

On the one hand, cereal consumption in developing countries has been increasing faster than in industrialised countries. On the other hand, these countries tend to substitute traditional cereals used for human and animal consumption for imported cereals.

Between 1968-1980, world wheat consumption increased by an average of 3.1% (1.2% in industrialised countries and 5.1% in developing countries). In the 1980s, there was a slowdown in the increase of wheat consumption in developing countries (3.5% annually) and in the world (1.1%).

The increase in consumption came about because of rising population and income. Changes in food habits (replacing traditional staples with cereal-based products and animal products) also enhanced international trade in cereal products, especially wheat. Developing countries therefore increased their presence on international cereal markets, first as importers and, more recently, as exporters, because increased demand led in some cases to the development of domestic production.

The rice market is becoming increasingly international

The rice market is becoming increasingly international. New importation poles are emerging in Western Europe, the Middle East and Sub-Saharan Africa. Sub-Saharan Africa is in fact fast becoming the leading demand pole and the choice destination of exporters even though the demand is not always solvent.

According to an FAO report, GATT agreements should change the nature of the world rice market. Trade will increase by 4% annually to reach 18.9 million tonnes in the year 2000. Exports from developing countries may double, while those from developed countries, which have made the commitment to reduce subsidies, may drop. World prices may therefore be 7% higher than they would have been if the agreements had not been signed.On the other hand, agreement is expected to have very little impact on production and consumption.

Source: Courrier de la Planète N° 29, July-August 1995.

◆ getting farmers to specialise in a given crop (onion, potato or any other market gardening crop) for better mastery of production and marketing;

◆ setting up efficient channels through which to get feedback on farmers expectations and communicating to them, information they need to make progress.

The advent of farmers' unions and federations is opening new prospects for African food production. It is gradually moving away from subsistence agriculture and getting closer to market agriculture, which is an important condition for overcoming food insecurity. This requires that food producers become real professionals capable not only of satisfying national demand, but also of exporting to regions with a food deficit.

The action of these federations is still very limited and only covers products such as onion, potato and, to a lesser extent, market gardening crops. These products play a limited role in the preservation of food security. It is hoped that similar associations and groups will be created for millet, sorghum, maize and yams which are all staples in Africa.

IMPROVING THE EFFICIENCY OF FOOD CROP MARKETING CHANNELS

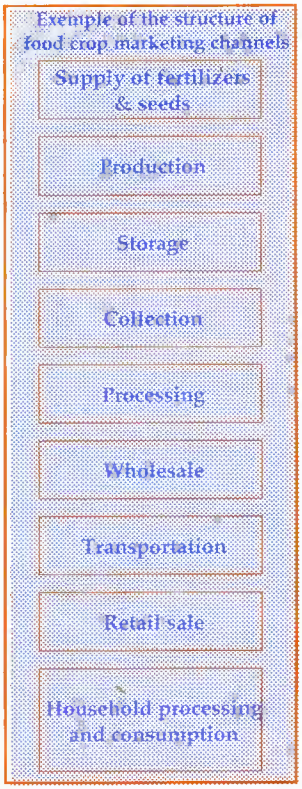
To satisfy the needs of its urban population, States may open their markets to imports so as to have low-cost food products on the market. However, this may be detrimental to the development of local production which, on the contrary, is boosted by high prices. Government authorities are therefore faced with a dilemma (described in Sheet 3A) and must arbitrate between the interests of consumers and farmers.

Stimulating supply through high producer prices and easing access to cheap products are two opposing choices in terms of trade policies. Both objectives can be attained by "improving the efficiency of the various food crop marketing channels".

The improvement of food crop marketing channels sometime requires the reduction of the number of intermediaries between producers and consumers

"Food crop marketing chanels", what is it ?

Food crop marketing channels refer to all the operations (and the people carrying them out) that are involved between the production and consumption of a food crop. It comprises the supply of raw materials (fertilisers, seeds, treatment products, technical supervision, etc...), production, collection, processing, marketing, consumption and all the people involved in each of these phases.
Each of these operations entails intermediate costs which add up to the price of the product. The lower these costs are, the more efficient the system is.



How can the efficiency of a food crop marketing channels be improved ?

Several actions can be taken to improve the efficiency of the marketing channels for a given crop
◆ reducing production costs;
◆ reducing the number of intermediaries (middlemen) between the producer and final consumers;
◆ reducing losses and increasing the market value of the products.
Each of these actions has its advantages and disadvantages.

Reducing production costs

For the producer, this consists in reducing intermediate costs that have to be incurred before the product reaches the consumer. This can be done by :
◆ coming together in groups in order to transport larger quantities of the product in a single consignment thereby reducing the transportation costs;
◆storing and transporting products under the best conditions in order to reduce losses that erode the profit margin;
◆delivering the product directly to wholesalers on the wholesale market so as to receive real market prices. This will eliminate middlemen who do not contribute directly to market efficiency (see box on Congo Kinshasa: Villagers get organised and sell their products directly in town).

Box 1

Congo Kinshasa : Villagers get organised and sell their products directly in town

At Mbankana, jobless youths who come in from Kinshasa have developed the cultivation of sweet cassava. This crop was not as important before as it is today.

Mbankana soon found itself with tonnes and tonnes of cassava that far exceeded the requirements of the local market. It was necessary to come up with a solution fast in order not to discourage the young farmers. The farmers preferred taking their produce to Kinshasa instead of Kenge for the following reasons :

- Kinshasa is an urban centre with many customers;
- at the start of the PIFK project, the agreement had been that the food produced in Mbankana was to supply Kinshasa;
- there were better chances of selling all the cassava at once to obtain enough money to pay the farm workers.

Getting organised to sell sweet cassava

The set-up may differ slightly depending on whether you are farmers or a small group of agricultural workers.

In each village, there is a finance clerk who records the amount of cassava received from each farmer and gives the farmer a voucher. The farmer can then take the voucher to the COFEBA (Mbankana Farmers' Community) cashier for payment. He may also choose to wait for the vehicle that went to sell the cassava in Kinshasa to return to be paid. The products recorded by the clerk are carted by animal or in some cases hauled by trucks to collection centres.

Once the community has collected the tonnage the transporter requires, the CADIM (Mbandanka integrated rural development support centre) schedules a trip to Kinshasa on a specific day. Four people who enjoy the trust of the community board the vehicle. The trip is entirely financed by the communitry, and it may cost about 10kg of cassava sold per passenger.

For each trip, CADIM is paid 300DM (about $200) plus a guarantee of 40DM (about $27). The car is hired for a period of 24 hours.
Each village can also arrange to sell its cassava without going through COFEBA. If the required tonnage is put together, then the day of the trip is fixed.

Advantages of the system

Let us first of all consider the Mbandanka cassava sector. It comprises :

- rural farmers who produce the cassava;
- CADIM which offers them the following services: agricultural training, tilling of farms with tractors, supply of fertilisers, rental of vehicle for transporting the cassava to Kinshasa; and
- the consumers (traders and final consumers) in Kinshasa.
- This system is advantageous both to the farmers and consumers:
- CADIM supervises young farmers. Thanks to this supervision, these young farmers, who previously were jobless in Kinshasa have become "experts" in cassava production. Their example has contributed to the development of cassava production in Mban Kana which now supplies Kinshasa;
- the production is sold wholesale, which enables the farmers to have money for their other needs. This set-up also makes it possible to eliminate problems related to storage and rotting, which are likely to reduce the profit margin of the farmers as well as the quantity of food available.;
- it strengthens solidarity between the farmers and builds their capacity to organise themselves to overcome problems resulting from the disengagement of the State.

However, for this system set up by the farmers of Mban Kana and supported by CADIM to be fully efficient, a number of problems have to be solved. They include the lack of road infrastructure, the fleecing of the people accompanying the vehicle by members of the forces of law and order, the instability of the national currency. These are all problems that can only be solved by the State.

Camille BOTEMBE
Inades-Formation Congo

Reducing the number of intermediaries (middlemen) between producers and final consumers

Urban consumers and rural farmers may have common interests. The latter need an outlet for their production at a profitable price. Consumers are interested in having food products at the lowest possible price. When the gap between the price the farmer receives and the retail price on the urban market is very wide, it means that the marketing of the product can be improved. In some cases, the farmers can reach an agreement with the urban dwellers to set up alternative marketing channels.

Such initiatives have been on the rise in Latin America of late. They enable the smallholders to earn an income and the disadvantaged in towns to have access to good quality food at affordabl- prices. The urban dwellers have often come up with initiatives such as the one in Lima where people's canteens" have been created. By coming together to buy and prepare food, the inhabitants of some neighbourhoods succeeded in improving their nutritional status.

Box 2

Venezuela: the "Ferias de consumo familiar"

The Ferias de consumo familiar are known in Venezuela as places where food can be bought at low prices. There, one can buy fresh fruits and vegetables at a single price per kilogram and processed products at prices 40 and 15-20% lower than in conventional outlets respectively. It was in 1984 that a co-operative in Barquisimeto, a town with over a million inhabitants, and a co-operative of small market gardeners in the region organised the first family consumption fair or market. These farmers pulled out the seats of a truck and used it to transport vegetables which they sold at a single price. The results were encouraging and the initiative spread to other towns.

Today, there are ferias in 27 towns in 11 of the country's 23 states. They market 850 tonnes of fruits and vegetables each week, as well as processed products. Their turnover in 1992 was 220 million French francs or 22 billion CFA francs.

These markets are based on direct relations between the producers and consumers. They are an outlet for the production of small family farms. They reduce transportation costs and exclude intermediaries. They make it possible for the close to 6 million urban dwellers who have been impoverished as a result of structural adjustment programmes to have access to good quality food at affordable prices.

Some 850 farmers belonging to about 20 organisations supply food to 150,000 urban families. The ferias programme ensures an outlet and fair prices for these rural farmers, as well as access to technical assistance. The success of these markets is increasingly encouraging farmers to come together and some who have found the activity profitable enough no longer consider migrating to town.

The ferias are based on collective organisation. Decisions are taken at weekly meetings bringing together all stakeholders (producers, consumers, those employed by the ferias). Such decisions include the planning of planting activities and the fixing of producer prices in particular. Transparency in operations and in decision-making is the rule

Article published in Courrier de la Planète N° 29, July-August 1995.

They then contacted farmers (those initially contacted are generally relatives) to secure supplies at the best prices.

Similarly, in Venezuela, urban dwellers contacted farmers directly to establish marketing channels that satisfied their respective interests (See box on Venezuela: the "Ferias de consumo familiar")

Reducing losses and increasing the market and nutritional value of food products

Processing food products helps to reduce losses that occur during transportation or storage. Processing can therefore help to develop agriculture and improve the efficiency of various agricultural marketing channels. Processing is also a way of increasing the market and nutritional value of products.

Unfortunately, less than 20% of food produced in Africa is processed before marketing. Yet, in rural areas there is great potential for setting up semi-industrial agri-food processing units. For example: women's groups have improved the handling, storage and processing of cassava, maize and other staples, thereby contributing to food security in villages. In other regions, rice milling has been rationalised and paddy rice is being vapour-treated to obtain higher yields and improve its nutritional value.

Most operators in food crop marketing channels seek to reduce the costs of their activity and improve their services. Very often, however, they have to grapple with the lack of funding.

Lack of financial resources : the main obstacle to the improvement of food crop marketing channels

Another problem is the lack of road infrastructure which often results in high costs for the transportation of products from the place of production to the place of consumption. Here the State plays a very important role in addition to those roles described in Sheets 3A, 3B, 3C and 3D. It can, for instance, develop and maintain communication infrastructure or subsidise transportation to deficient or roadless areas. It could also promote a credit system similar to what is being done in Côte d'Ivoire (See box on development social funds in Côte d'Ivoire).

Box 3

The Social Development Fund

For some years now, Côte d'Ivoire has set up a credit system known as the social fund in each ministry. These funds are earmarked for the financing of small development projects initiated and managed by Ivorian entrepreneurs.

Each entrepreneur submits a project. If the project meets the financing requirements, he receives a loan that could amount to a maximum of 5 million CFA francs . The project may be on agricultural production, fish-farming, artisanal and semi-industrial processing of agricultural products, joinery, the clothing industry...

The entrepreneur is monitored during the implementation of his project to ensure its success and the reimbursement of the loan.

CARRYING OUT THE DIAGNOSIS OF THE FOOD SITUATION OF A SMALL REGION

This Sheet is intended to help NGOs, development projects workers or the officials of farmer organisations in carrying out a diagnosis of the food situation of a village or group of villages. It outlines the steps to follow and also describes the tools that may be used to help villages and grassroot farmer organisations choose efficient food security strategies. The sheet indicates the type of data required to make such a decision, the necessary tools and how to carry out an analysis of the data. It also gives a few pointers on how to choose appropriate strategies.

In order to have a clear picture of the food situation of a region so as to take the correct decisions, you need to have information on:

◆ *the region's potentials to access food* : you need to have exact information on the existing sources, level and distribution of the monetary income of the inhabitants of the region. A person who has money can buy food and the means of production…

◆ *the available energy providing food crops* : what is the volume of cereals, roots and tubers cultivated in the region? These three food types constitute the main staples, depending on the food habits of the region. They cover the principal energy needs of the body. The absence of the three is a sign of famine.

◆ *the food products "entry and exit" system* : what does the region export, and in what quantities? What does it receive or buy externally? How many people are there to feed? Buying too much externally could be indicative of an imbalance in the production-storage system.

◆ *the nutritional status from the health perspective* : is there underfeeding and/or malnutrition? What is the rate of malnutrition? Which are the most widespread deficiency diseases? Are they frequent or rare? Which segments of the population are most affected? It is important to take a close look at the most vulnerable groups - women and children.

You can obtain this information from the population (preferably) or from specialised services: the health centre for nutritional status, the economic services for food trade statistics; the agricultural service for production statistics; etc… There are several ways of gathering information. You have to choose the approach which best fits the material and social conditions in which you are working. Here is one example.

How to gather information

To gather information efficiently, you need a group of people. This could be a village or inter-village committee. The committee could also use the services of external resource persons such as NGO workers or workers in various government bodies.

Set up a representative village committee

To ensure that the food security strategy is designed and handled by the villagers, it is necessary to ensure that all socio-professional groups are represented in the committee that has to carry out the diagnosis of the food situation. It is therefore necessary to contact and include traditional rulers, *chefs de terre*, and elders. Economic operators (farmer groups, traders, craftsmen, etc…), development workers (health, agriculture, water and forestry, livestock, etc…), senior citizens, the youth and women should not be left out.

Each person should be contacted through the organisation he/she belongs to. This means that you will have to make arrangements with the organisation to attend its meeting to explain the importance and role of the committee, as well as its membership requirements. After that you let the organisation to freely designate its representative.

Recognised village chiefs are automatically members of the committee. However, on the basis of your explanations, they may delegate their authority to someone else to sit on the committee. If this is the case, you should take the necessary measures to ensure that they are given adequate and timely feedback. Resource persons have to be identified with the village committee. Their inclusion in the committee also has to be negotiated with the committee.

The village committee plays a key role in data collection, the discussion of findings with the villagers and the selection of the food security strategy. The participation of all segments of the society guarantees the success of the strategy retained. However, depending on the size of the village or region, the committee may become too big and thus unable to function properly. What should be done in such a situation?

From the village committee, **set up a steering committee**. This steering committee should be smaller, more functional and easier to manage. You will work more frequently with this steering committee and it will lead the reflection of the village committee (gathering and analysing information). The steering committee may be expanded progressively or occasionally, as the need so arise.

Once the village committee has been set up, it should organise and carry out the data collection exercise.

The committee should prepare the "survey" assumptions and interview guide

Each member of the committee should state what he/she knows about the 4 criteria indicated in point 1. All this information is put togeather. This information is considered to be assumptions. On the basis of these assumptions, the committee has to determine those points that require further clarification, further information or observations. These points will be grouped into themes and will thus constitute the interview guide.

The committee should prepare a sample of people to be contacted

This could be by random sampling or on the basis of pre-determined criteria. The people to be interviewed are then shared out among the members of the committee working in small multi-disciplinary teams (e.g. agriculture, health, economics, rural farmer expert, etc...)

The different teams gather information

The information is collected from different areas of the village or the region following a common schedule.

Once the teams are on the field with the interviewees, they should **use the interview guide**, but should also keep their eyes open. They should not talk most of the time. They should let the interviewee do the talking. One interesting way of going about this is to ask for the **historical background** (evolution) of the food situation in the village or region and the role played by the various actors involved.

* *The teams should listen attentively and watch very closely.* They should not contradict the interviewee, even if they do not agree with what is being said. They should not also burden the interviewee with very many questions. They should go straight to the point. The teams should not feel too limited in what they can ask either. They should "cast their net as wide as possible and gather as much information as possible"

How to analyse the data

Analysing or exploiting the data consists in sifting information from all the data obtained from the interviews with a view to making decisions. This is done by the village committee initially, and then by the entire village or region. It comprises three main phases, namely: data classification, data summary and going over the data collected with the villagers, followed by discussions.

Classify the data

Each team communicates the data collected in relation to each theme in the interview guide. You then have to put this information together following its similarity. You also note divergences. You also have to take note of new themes that may have cropped up during the interviews and the related data.

After that, you should **systematise the analysis by identifying the causes of the situations observed and the linkages between these causes,** and identify possible areas of action (possible solutions).

The poor food situation of a village or region may fall in one of the following 4 scenarios: some regions have sufficient proteins but the inhabitants do not have enough money to buy it. Elsewhere, the inhabitants have money, but the available protein is insufficient. Some regions lack both proteins and money. Lastly, there are areas where money and proteins are available, but the food habits impede the consumption of the latter.

The analysis should make it possible to determine the man-made and physical causes. It should also identify the cyclical and structural causes of the situation over time trends.

Summarise the information in graphic form

This should facilitate discussing it with the villagers. Various tools can be used to have good summaries and fine-tune the analysis. Here are 3 examples:

* *Diagrammatic representations of the actors* show both the categories of actors involved in the food situation, their roles (production, distribution, policy or strategic decision-making, counselling, etc...) and the relations between them (alliances, complementarity, competition, conflict, etc...).

A diagram of the actors shows on a single page and for a given moment all the elements of "suppliers-customers" relationships, that is, "who gives what to whom?". It clearly shows the object (product) of "transactions" that flow from the relations between the actors, and even the hierarchy between them. It could also show the flow of information between them.

You draw a diagram trying to answer questions such as: On whom does the village food situation depend? What does the person give? To whom? What does the person receive in return? Who are the advantaged in the village as far as food security is concerned? What is the reason for saying they are advantaged?

* *The village or regional land map* makes it possible to see a "snapshot" of the village or region. It shows the geographical boundaries of the area in question, the current, past and even future (projection) location of resources. The map can also clearly indicate the areas with surpluses and those with deficits as far as the various resources are concerned. The map also highlights the internal and external linkages between the sub-systems of the area.

The committee can involve the villagers in the drawing of this map where possible. Such involvement of the villagers is also a way of preparing them and getting their commitment for future actions. The committee could also use a map drawn by the official technical services. In this case, it will be necessary to teach the villagers how to read the map. Various colours can be used on the map to highlight the observations obtained from the survey.

The first box on sheet $5A_4$ shows the various steps to follow in drawing up a village land map using the participatory approach.

* *A simple table* with two-columns can present the main statistical data. Such a table is easy to understand by villagers with little education. Summarising the information in graphs and diagrams makes it possible to give feedback to the community in an efficient manner. Such representations contain the essential findings of the survey.

Helping villagers draw a land map of their village

The explanation given below is culled from a note by Christophe Tachezn, a member of Véterinaires Sans Frontières (VSF) working with agro-pastoralists in Guinea to improve stockbreeding and natural resource management. It indicates how to go about working with villagers to draw a map of their village:

* The initial map should be drawn by a small group of about 10 people who are mainly villagers (the objective is to depict the villager's views). With this number of people it is easy to reach a consensus. If the group is made up of less than 10 people, there is the risk of not getting all the required information.

* Draw a house in the middle of the sheet. It represents the village in which you are. Draw the various paths that leave the village as indicated by the villagers present, no matter where these paths lead to. Each time make sure that even the illiterate villagers understand the drawing. At the end of each path indicate the destination (the village or any other point it leads to).

- Fill in the area between the village and the destinations using landmarks along the paths.

Once all the paths have been drawn, the moderator of the group should ask the villagers what one may come across when travelling from their village (the house on the centre of the sheet) to a given point. They could mention a landscape unit (plain, forest, lateritic crust, etc...) or a slope, a dead tree, and so on. Upon the mention of a landmark, ask the villagers what symbol can be used to represent it. The same exercise should be carried out for all the paths.

* Go over the diagram with all the villagers. It should be done separately for the men and women. A villager who was part of the group that drew the map should explain it to the other villagers. After this presentation, you can now complete the drawing by asking the villagers the following questions: "Can you tell me the natural resources that you use? Can you show me their location in the village? Tell me how to represent them on the diagram. Etc..."

* Let the villagers reflect on the information obtained. For example, you can ask them questions on the resources. Are they enough? What is the trend as far as these resources are concerned? Why, etc...?

Going over the results obtained with the villagers

Invite the interviewees, the other villagers and even representatives of neighbouring villages. Make sure that the chief and elders are present. Also associate resource persons, depending on the nature of the information obtained. Make sure the sitting arrangement is such that each person present can see and hear what is being said or done. Ensure that the day and time are convenient to everyone. During the meeting at which you go over the results with the villagers, recall the problem and the procedure followed to gather the information, as well as the procedure to be followed at the meeting.

A key to reading the data collected

A key to analysis can help to further explain or interpret data collected. The key is a series of questions on the internal and external causes of the food situation. Here are some examples:

* In the village, which are the groups not having food problems? Why?

* Which are the groups suffering from food deficiencies (producers, people located in a given part of the village, etc...)? Why? How did the situation come about?

* Which is the period of the year in which food problems are most severe? Do they concern everyone or just some people? Why?

* Which are the most frequent deficits? Do they concern local or imported products?

* What is the cause?

* Are village potentials and relations put to proper advantage to ensure food security?

* On who does food security in the village depend?

After that, present the summary of the results. Give the participants time to ask questions and get clarifications. Validate the results with the interviewees. Then try to get the reactions of the participants. These reactions should be helpful in correcting or enriching the data.

Make use of various available opportunities

An effort should be made to use all the opportunities available in the village. For example, to ensure that going over the results of the diagnosis is as useful as possible, the meeting at which it is done should be organised on the day of the harvest feast or during any other village celebration or festival (e.g. yam feast in Côte d'Ivoire, beans feast in Togo, etc...). In this case you have to clearly negotiate the inclusion of your programme in the agenda with the relevant people. You should publicise the meeting well ahead of time to avoid poor attendance or protests. On the day of the meeting, present the results in a clear and succinct manner. Take note of interesting questions and reactions for in-depth discussions at subsequent meetings which you should schedule on the spot. The expanded steering committee should subsequently contact people for the meetings where the in-depth discussions will take place and decisions made.

If there is no traditional opportunity in the horizon, then you have to create an event. You could organise games involving the various socio-professional groups, you could organise a bingo, etc... Kick off the event by announcing the rules to be followed in the games or contests. Present the results of the diagnosis, and then let the games begin or draw the prizes for the bingo.

Whatever the opportunity you use, the preparation and presentation should be handled by the expanded steering committee. The role of development workers should be limited to helping the committee master the use of the various tools and to giving additional information as the need arises.

If this exercise is well organised and conducted, the stakeholders are sufficiently sensitised and may propose a number of possible actions because they are analysing their very own situation.

Choosing food security strategies

The analysis is useless if it does not identify possible solutions to the problem. That is why following the analysis it is proper to help the villagers choose and develop some food security strategies for their village or region. These strategies should state objectives and how to attain them.

Choosing and elaborating the assumptions for the strategies should first be done by the steering committee. It should then present its conclusions to the expanded village committee. After that, the assumptions should be submitted to the entire village for approval at a meeting in which they are discussed.

Food security strategies may stem from the various food situations we considered earlier. The moderators of meetings should have confidence in the ability of the villagers to come up with these strategies. They should respect the villagers' right to test, fine-tune and review the strategies progressively.

As mentioned earlier, the role of resource persons at meetings where the strategies are chosen and follow-up and review actions are planned is to give information as and when necessary in order to broaden the perspective of the villagers so that they can choose sustainable solutions.

Well, that's it! Go out and try to put what you have learnt here in practice. Good luck. Let us know about your successes, your difficulties, your doubts. Also inform us of any improvements you have made to the method we have outlined in this sheet.

HOW TO CARRY OUT VILLAGE TRIALS OF NEW PRODUCTION TECHNIQUES

Several technical improvements can be proposed or conceived to increase agricultural production. Their efficiency, however, needs to be tested. Techniques that yield good results in certain conditions may be disappointing in others. That is why it is necessary to have village farmers carry out trials of some of the techniques under real production conditions. Carrying out such trial does not necessarily require expensive equipment or high scientific qualifications. Research centres have considerable means to develop new technologies and improved seed varieties. But it requires very little resources to carry out trials of new ideas or to verify if a technical improvement will yield good results in a particular village. However, for the results of the trial to be reliable, it is necessary to take a number of precautions and to be well organised. Here is some advise that will help you obtain valid results from your trials.

Define the purpose of the trial

There is an infinite number of ways of cultivating a given plant or raising an animal. Very many technical modifications could also be tested. Such techniques could be modern or ancient. Trials could concern, for example:

- the variety cultivated;
- the way the soil is worked;
- the impact of compost manure;
- the use of chemical fertilisers;
- the time the fertiliser is used;
- the association of various crops;
- the irrigation technique (sprinkler or gravity irrigation or by irrigation canals);
- the frequency of irrigation (everyday, every 2 days, once a week); etc.

In order to clearly spell out the various steps to be followed during the trial and thereby avoid mistakes, it is necessary to start by clearly defining what you want to test or experiment. It could be, for example, the way the soil is worked. For the trial to give valid results, it is necessary to select one or two criteria that will vary from trial to trial. Apart from these criteria, all the other elements must be absolutely identical.

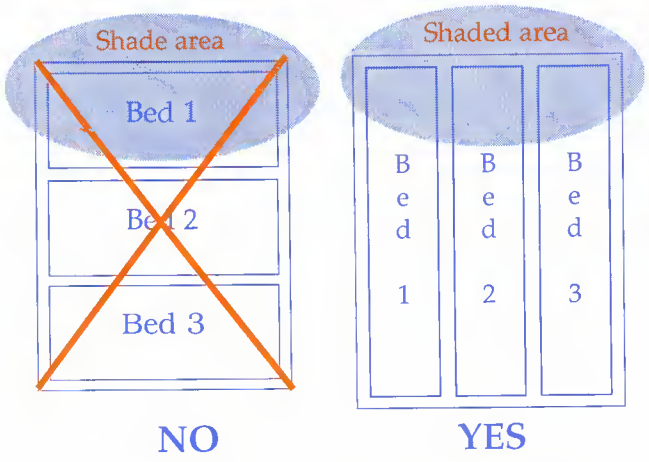
Let us consider this example. We want to find out if using nitrogen fertiliser improves the yield of sorghum. We therefore need to know what the yield will be in relation to the quantity of fertiliser used. We are going to have three trials or experiments. The first one will be a 100m² bed of sorghum without fertiliser. In the second, 3 kg of fertiliser will be used on a 100m² bed of sorghum. In the third, 6 kg of the same fertiliser on a 100m² bed of sorghum as well. Apart from the difference in the quantity of fertiliser used, the soil should be worked in the same way for the three experiments and the land should have the same characteristics.

How to carry out the trials

To carry out the trials, you first have to choose a piece of land that is as homogeneous as possible. Divide it into three equal "beds". On each bed sorghum will be planted with varying amounts of fertiliser. One of the beds will be cultivated in the traditional way, that is, without fertiliser. This is the "control" bed and will be the reference in determining the efficiency of the new technique.

An experiment generally has a control, as follows :
Bed 1: no fertiliser (control bed)
Bed 2: 3 kg of fertiliser on 100m²
Bed 3: 6 kg of fertiliser on 100m².

For the results of the trials to really represent the impact of the fertiliser, the three beds should have the same characteristics. If part of the piece of land is shaded, then the beds should be laid out in such a way that it is not only one bed that lies in the shaded area while the others are in the sunny area. The shaded and sunny areas should be evenly shared among the three beds (see the diagram below).



NO YES

The sorghum should be sown on all the beds on the same day. The same quantity of seeds should be used on each bed. The only difference should be in the quantity of fertiliser used.

Observation of results

The quantity of sorghum harvested from the various beds should be compared in order to determine the effect of the fertiliser on the yield. Other observations could also be made in connection with the plant itself. For instance, the use of fertiliser may result in much longer stems, in which case the plant is more fragile and more likely to be affected by the wind. It is necessary to take all these observations into account in order to determine the merit of the technical improvement.

What lessons can be drawn from the observations?

TABLE 1

	Quantity of fertiliser	Yield / 100 m²	Yield gap against Bed1
Bed 1	no fertiliser	20 kg	
Bed 2	3 kg / 100 m²	30 kg	+ 10 kg
Bed 3	6 kg / 100 m²	32 kg	+ 12 kg

Let us suppose that the trials yield the results indicated in table 1 below:

The fertiliser has led to an improvement in the yield, but the increase is not proportionate to the quantity used.

If 1 kg of sorghum costs 100 frs and 1 kg of fertiliser 150 frs, the following economic analysis of the results can be made (see table 2):
The highest yield was obtained from bed 3. But it is bed 2 that has the highest difference between the value of the harvest and the cost of cultivation.
It is more profitable therefore to use 3 kg of fertiliser on 100 m².

In analysing the results, you should also consider the increase or reduction in the workload (in terms of time spent and labouriousness) engendered by the new technique.

TABLE 2

	Value of harvest	Cost of fertiliser	Difference
Bed 1	20 x 100 = 2 000 F	0	2 000 F
Bed 2	30 x 100 = 3 000 F	3 x 150 = 450 F	2 550 F
Bed 3	32 x 100 = 3 200 F	6 x 150 = 900 F	2 300 F

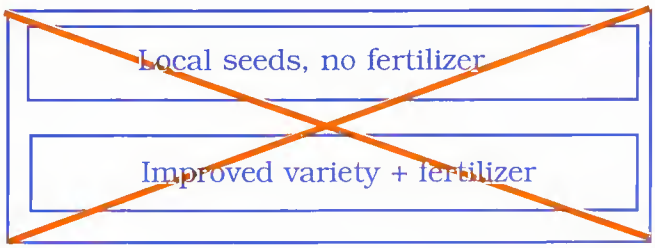
Note could also be taken of the dependence on other actors that the new technique may create.

Precautions in analysing results

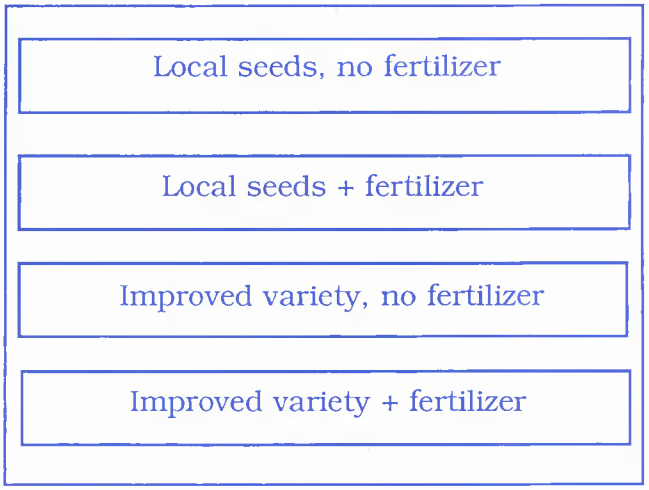
The results were obtained for a given variety, on a certain piece of land and under the climatic conditions that prevailed at the time of the trials. It may happen that on another piece of land (which may be more humid, for example) using 3 kg/100 m² may not be the best solution. Similarly, if the trial had been carried out during an exceptionally dry or wet year, the results have to be analysed with a lot of caution. It may even be better to carry out the trials again the following year.

Testing several technical improvements

You should not try to test all the possible technical improvements at the same time. If you want to test several improvements, it is preferable to limit their number and to test the various possible technical combinations. For example, if you want to test an improved seed variety and the use of fertiliser, you will need 4 beds as demonstrated below.



NO



YES

If you test several improvements all at the same time without trying all the possible combinations, you may obtain good yields but it would be difficult to determine which factor (the fertiliser, the new variety or any other modification) was responsible for the results.

HOW TO STORE FOOD PRODUCTS

Storage consists in keeping the food products that are not required for immediate consumption for subsequent use when the need arises. Food storage is therefore a means of managing production. It helps maintain food security in a country or region.

Storage could be by the family, the community or the State. Storage requires preservation and handling techniques of varying levels of sophistication. Preservation refers to all the processes that are used to ensure that the food in storage maintains its quality (colour, taste, texture, nutritive value). Handling refers to all the operations that make it possible to keep the food products in a place where they are safe from destruction.

This sheet will examine the preservation of plant and animal food products as well as methods used to store these products in Africa and elsewhere.

What is the preservation of food products?

Food products continue "to live" after they are harvested. They breathe, they transpire, they absorb moisture from the air and also send out moisture into the atmosphere. All this goes on at a reduced pace, but it modifies the atmosphere in the storage area and gradually transforms the stored products, which may then be attacked by moulds or other parasites. It is estimated that between 25 and 40% of stored products are lost in farms and villages.

The main method of food preservation in tropical countries is drying. It is sometimes associated with smoking and salting, for products such as fish and meat (See Box 1: Preserving fish or meat). Drying consists in reducing the quantity of water that is found in varying quantities in all agricultural products. In fact, biological and therefore microbial activity can only occur if there is moisture. The drier a product is the better it can be preserved. The table below shows the right moisture content of various dried products.

Products	Right moisture content
Cereals	12 - 14 %
Beans, legumes	13 - 15 %
Oil seeds	6 - 8 %
Tubers	Not fix

Source : Le stockage des produits agricoles tropicaux, Agrodok 31, 1989

For seeds, the adequate moisture content is lower than indicated in the table above. When the moisture content is less than 8% of the product, it prevents insect attacks.

Box 1

Preserving meat or fish

The three methods generally used to preserve meat and fish are drying, smoking and salting. To obtain the best results, it is necessary to use fresh and well-cleaned products sliced in pieces that are not too big.

Smoking fish or meat

Smoke contains many volatile chemical compounds. Some of these compounds can prevent the contamination of food by microbes. They also give flavour and colour to the smoked product.

However, good quality wood should be used for the fire that produces the heat and smoke in order to avoid intoxication. Newspaper and wood that is covered with tar, for example, should not be used. It is recommended to use mangrove wood, sorghum, millet and maize stalks, coconut waste or sawdust from non toxic wood.

The purpose of smoking is to cook and dry the product while coating it with smoke. To ensure the easy circulation of heat, the pieces of meat or fish to be smoked should be placed on a grate. If larger quantities are involved (especially fish) they should be placed in rows and should not be touching one another. To economise space, 3 to 5 grates with fish can be stacked one over the other.

Smoking proper comprises three phases:

◆ The first phase consists in drying the external layer of the product with a slow fire in order to prevent charring. During this phase, more smoke is produced than heat by letting in only a little air into the fireplace.

◆ The second phase consists in cooking the product. This takes about 2 to 4 hours and requires high temperatures (70-80°). More heat than smoke is produced during this phase by letting in a lot of air into the fireplace.

◆ The last phase is the drying phase. The temperature is lower than during the cooking phase (50-60°) and it takes 2 to 3 days.

Throughout the three phases, the fish and pieces of meat are turned regularly so that the smoking is homogeneous. The temperature also has to be monitored to prevent losses as a result of charring. There is no exact means of controlling the temperature. It is done by reducing or increasing the amount of fire, which requires the continuous presence of someone.

When the product is deemed to have been sufficiently smoked, the fire is left to die out on its own. The fish or meat is left on the grates to cool. It is covered with clean sheets of paper of plastic.

Salting fish or meat

Salting is a method of preservation using salt. It can be done with salt or with very salty water called brine. The salt helps to extract a good amount of the water in the meat or fish.
We will only examine dry salting which is quite simple. It does not require any special equipment. All you need is good quality salt, baskets, plastic sheets and utensils.

To facilitate the penetration of the salt, spread a thick layer of salt on the bottom of the basket. Place a layer of pieces of meat or fish on the salt. Cover the fish or meat with salt and then place another layer of fish or meat. The open parts of the fish should be in contact with the salt.

The pieces of fish or meat should not touch one another. Alternate layers of salt and meat or fish until the basket is full. Cover the last layer of meat or fish with a thick layer of salt. Cover the basket with a solid sheet of plastic. Place the basket on blocks of stone so that the water from the salted product can drip easily. Keep the basket in that position till the next day. The salting is completed.

When the salting is finished, the product may still contain as much as 50% of water. With such a moisture content, the product cannot be preserved for very long. Salting should be followed by drying in the sun or by smoking using firewood.

To dry the product in the sun, simply spread it on grates or on drying flakes. This allows for proper air circulation.

The products should be kept in a shade for one or two days before being exposed to the sun in order to prevent the formation of crusts of salt. Crusts on the surface of the product impede proper drying. The product should only be exposed to the sun after the external layer is dry. The drying is over when the product becomes very hard. This takes 2 to 4 days.

The process is quite long if the time the product stays in the shade is taken into consideration. It could sometimes result in significant losses if the pieces are too big. That is why this method is only recommended in very hot regions where the air is very dry. Elsewhere, it is better to smoke the product using fire wood.

Source : Agripromo n°6 :
La Conservation des produits agricoles, avril 1988

Importance of storage conditions

The length and quality of storage depends essentially on three factors:

◆ how well the product has been preserved;

◆ the temperature at the storage premises. The premises should be cool and have a constant temperature. Temperature variations result in variations in the moisture content of the stored products. This may cause them to deteriorate and rot. Accordingly, the higher the temperature in the storage premises, the lower the moisture content of the products stored there. If the temperature is quite low (cold rooms, refrigerators) only products containing a lot of water can be stored there;

◆ the way in which the storage premises are protected from insects, rodents, birds and other predators.

Other factors also have a direct impact on the length and quality of storage:

◆ estimating the amount of food to be stored at the time of production. This amount can be determined on the basis of the food needs of the family or community (immediate farm home consumption and during the hunger gap, selling, seeds, gifts, etc...). This could have a bearing on the variety to be planted as well as on the farming technique to be used. In Maroua in Cameroon, for example, onion farmers have realised that when they use a lot of fertiliser on their crop, it rots rapidly after harvest;

◆ the distribution of planting and harvesting during the year as well as the degree of maturation of the harvested products are also important elements in the preservation and storage of agricultural products.

Cereal storage systems

Traditionally, farmers used two systems to store their harvest:

. well-ventilated systems which enable the stored product to continue drying as a result of the circulating air. The food so stored does not suffer from heat, but is not protected from insects. In these systems, granaries built with straw, bamboo or palm branches are mostly used to store cereals;

. tightly-sealed (air-tight) systems are generally used in countries with a dry climate or if the product has to maintain some amount of moisture during the entire storage period. Such storage facilities are generally built with durable or semi-durable material. Access to the products is through an entrance with a tight cover.

Through the centuries, villagers have developed quite efficient preservation and storage methods

Box 2

Neem, pepper and ash prevent insects from attacking stored maize

Tchouédé Kono Michel is a Togolese maize farmer with vast experience in the preservation of his harvest.

For how long have you been storing this maize?

Tchouédé Kono Michel: For about 2 years now.

Is maize that has been kept for that long still good for consumption?

Tchouédé Kono Michel: Maize can be stored for 4 years without any problem. In fact, when we store maize using our technique, the cobs that get rotten are those that had already been attacked before they were taken to the granary. No other cob can be spoiled in the granary, even after 5 or 6 years.

What technique do you use to preserve your maize so well?

Tchouédé Kono Michel: We sprinkle the basement of the granary with pounded neem leaves. We then spray each layer of maize in the granary with ground pepper mixed with water and ash. The ash from tobacco stalks is best for the treatment. After all the stacking is done, we spray the area around the granary and then we cover it with a straw roof.

Is a single treatment enough for all the time you store the product?

Tchouédé Kono Michel: We carry out the same treatment every 5 to 6 months on the parts of the granary that are not covered by the roof. This is important in ensuring the proper preservation of the maize for several years.

Source: Protéger les produits agricoles, Agripromo N° 89-90, mars 1996.

Box 3

Traditional storage of millet in Chad

Millet is one of the most widely consumed local cereals in Chad. Traditionally, the people store their harvest in granaries made of straw or earth. These granaries are often managed by the head of the household: each day he takes out the quantity required by the family for food and/or for sale and hands it to the women.

The grain stored in such granaries is not sheltered from insects or fire. Owing to these risks, some farmers use jars, drums or bags, which close more tightly and can be easily transported in case of a disaster. Cereals so stored can be kept for 2 to 3 years, depending on whether they were treated before storage.

A more original storage system is used in the Chari-Baguirmi villages in south-western Chad. After the harvest, the farmers dig a 1 to 1.5m wide hole in the ground. They light a fire in it to kill all insects and parasites that may be found there. The ash from the plant material that is used to make the fire then serves as an insecticide to protect the cereals that are stored in the hole. When the inside of the "underground granary" has cooled, the farmers spread straw on its floor. They pile the very dry and insect-free millet heads on the straw. The hole is then carefully closed. The millet is sheltered from insects, rodents, prying eyes and fire. It can be preserved for 4 to 5 years.

Source: Inades-Formation Chad
Elisabeth Neloumngaye
Djiraïbé Noubady

HOW TO MOBILISE FOOD AID LOCALLY

Food aid is useful when it helps to ensure a balance between supply and demand from time to time. These short-term positive effects may have negative long-term consequences if they discourage local producers.

The monetisation of aid (See Box 1: the experience of American NGOs in monetisation), local or triangular purchases are some solutions that can mitigate the negative effects of food aid on local food production.

Box 1

The experience of American NGOs in monetisation

American private charity organisations (or NGOs) are increasingly resorting to "monetisation", which is the sale of food aid, as a way of implementing their programmes. Over the past years, American NGOs have sold hundreds of millions of dollars' worth of food aid as part of their development and relief operations abroad. The fact is that the law imposes a minimum level of monetisation on them.

Organisations such as Care, Catholic Relief Services, Save the Children, World Vision Relief and Development, Food for the Hungry and other NGOs have achieved positive results by selling food and using the income generated locally to support the distribution of foodstuff and a wide range of activities such as public works, medical care, training, child survival and local capacity building. Since the income from the sales is in local currency, it can be reinvested in the country and does not pose a threat to national authorities not so keen to waste foreign currency abroad.

Monetisation helps NGOs to bring in additional food aid to deficit regions. It also makes it possible to channel resources to support projects while at the same time enlisting the participation of local markets and traders. This method strengthens commercial networks and enhances the increased participation of small traders and the dissemination of correct information on local food markets, thus guaranteeing competition and stimulating markets in the transitional phase. An NGO is currently involved in the monetisation of food aid in some regions of Mozambique that are recovering from a protracted crisis. This operation is expected to revive commercial demand for foodstuffs with the long term prospect of establishing a basis for the resumption of agricultural activity.

American NGOs have learnt to make good use of monetisation. Considering that NGOs are generally not in a position to compete with foodstuff dealers, some of them have come to jointly prospect together the local markets in Bolivia, the Philippines, Haiti and Peru and to sell their food aid through these coalitions.

Contribution by Steven Hansch
Food Aid Management, USA
In D.E.E.P., September 1995

Triangular food aid programmes

The so-called "triangular" food aid programmes consist in locally buying the food or seeds for victims of food crises . These programmes encourage local production and reduce market distortion risks. The European Union is increasingly attaching importance to triangular actions in its emergency food aid programmes. So far, it is the only major donor that encourages such an approach. Triangular actions and local purchases account for 41% of emergency food aid supplied by the European Union. Generally, the products supplied as part of food aid operations (whether under emergency or rehabilitation programmes) are:

- **cereals** (in the form of flour or grains);
- **edible oil**;
- **sugar**;
- **legumes** (peas, beans, etc...);
- **seeds** (under agricultural rehabilitation programmes).

Who can supply these products ?

Any enterprise, co-operative or farmer association can submit bids to the European Commission to supply foodstuff and seeds. The condition is that the bidder should be able to supply, within generally very short deadlines, sufficient quantities to meet the stated needs. Generally speaking, the minimum volumes that a supplier should be able to make available are about:

- 2,000 to 3,000 tonnes of cereals (very often the volume reaches 5,000 tonnes);
- 500 tonnes of edible oil;
- 500 to 1,000 tonnes for parcels of cereal seeds.

Exceptionally, the quantities required may be lower than those indicated above. They may also be much higher.

How can one participate in these programmes ?

Getting registered with the representatives of the European Commission

Even before there is a need for food aid, the Delegations of the European Commission, which are found in virtually all African capitals, identify potential foodstuff suppliers so as be in a position to take prompt action in the event of an emergency. To facilitate this exercise and in order to be informed whenever invitations to tender are issued, each enterprise, co-operative or farmer association that can supply cereals, edible oil and seeds in the quantities indicated above should get registered with the Delegation of the European Commission. It will be on their mailing list and may be contacted when the need arises.

Replying to invitations to tender

When a food crisis breaks out (or when the threat of a crisis looms), the European Commission assesses the food aid needs of the population in food distress. On the basis of the assessment it prepares an emergency food aid programme. It has to get suppliers who can supply the needed food. Enterprises, co-operatives or farmer associations in the country with the crisis or in neighbouring countries are given the priority (on the condition that quality and quantity requirements are fulfilled).

The Commission then issues invitations to tender describing the needs and timeframe to be complied with. Increasingly, it is no longer enough to be able to supply the needed products. The supplier should be able to transport them right to the area indicated in the invitation to tender. Transportation may be subcontracted, but it remains the responsibility of the supplier.

Upon the publication of the invitation to tender, potential suppliers may then submit their bids indicating:

- the products they can supply (quality and quantity);
- the period within which this can be done;
- the price of the products.

The proposal should respect the terms of the invitation to tender. They should reach the European Commission within the stated deadline. Bids received after the closing date are not considered.

Invitations to tender may be public, that is, widely publicised (through newspaper announcements, for example). They may also be restricted, in which case the invitation to tender is sent directly to enterprises, co-operatives or associations that are known to the European Commission. This explains why it is important to be registered with the Delegation even before the outbreak of a food crisis.

Selection by the European Commission

The European Commission Delegation classifies the bids received following a number of criteria (price, quality of the products proposed, timeframe, transportation capacity, etc...). It then forwards the bids (together with its recommendations) to the headquarters of the European Commission which selects the supplier or suppliers.

The selected enterprises, co-operatives or farmer associations are notified. A model contract that meets the criteria of the Commission is drawn up. It spells out the nature, quantity and quality of the products to be supplied, the place where the products have to be delivered, the delivery timeframe (i.e. it puts the terms of the invitation to tender in contract form). These terms thus become conditions the supplier makes the commitment to respect. The contract also describes the conditions for the payment of the supplier as well as penalties that may be applied in case of late delivery or failure to comply with the terms.

The supplier is paid by a direct transfer of the money into a bank account, except in a few (exceptional) cases where cash payments may be made from imprest. Payment is effected at least 2 months following the delivery of the product, if the quality tallies with the specifications. This means that the supplier should be able to put up the necessary cash advances. This is a constraint to bear in mind when submitting a bid. It is possible, however, to obtain the advance payment of up to 80% of the contract amount on the condition that the supplier deposits in a bank a guarantee equal to the total contract amount.

Nota bene :

It may happen that the invitations to tender of the Commission include conditions that are incompatible with the local context (for example, the quality of seeds required does not correspond to the variety adapted to the region concerned). In such a case, the potential suppliers can propose to supply an equivalent product which is as close to the initial one as possible. They should explain why the product they are proposing is better than the one described in the invitation to tender. The Commission reserves the right to retain or reject their proposal.

Constraints and limits of triangular food aid programmes

Officials of the European Commission Delegation in charge of these programmes in Abidjan acknowledge that local farmer associations hardly bid for food aid operations. This is because these farmers generally are not aware of the existence of these programmes. Those who are aware of them are often discouraged by the complex procedures and the payment delays and conditions. They really cannot afford to wait for over two months for payment.

The NGO **Afrique Verte** has outlined simpler methods that make it possible for farmers in Sahel zones with surplus production to feed farmers and urban dwellers in zones with a production deficit. The purpose of this action is to avoid food scarcities that make it necessary to resort to international food aid. This action may not be easily applicable in situations where the scarcity of food is the result of armed conflicts because such conflicts disrupt the production system and the economy of the country. The cereal pre-exchanges and exchanges are the main link in the system for the local purchase of cereals. They allow for the constant circulation of cereals between the zones that have produced too much and those that have not produced enough. (See the box on the cereal exchange in Burkina Faso in Sheet 3C).

Afrique Verte also teaches farmers how to submit bids for food aid programmes co-ordinated by Euron Aid, the Association of European NGOs. The contracts involve hundreds of tonnes of local cereals.

Afrique Verte : promoting trade

In Niger, the Garié co-operative which is in a deficit zone received a "crop season loan" of 10,000 FF in February 1995. Since its members had a production deficit, it contacted the Zinder co-operative network which had a production surplus. It received 200 bags of millet at 0.77FF/kg, which was quite a competitive price despite the 1,000 km over which the product had to be transported. Garié resold the product on the Tillabéry market at an average price of 0.88FF/kg as the dry season progressed.

Within three months it repaid the loan to **Afrique Verte** at an interest rate of 3%. Results: Garié was able to turnover the initial loan thrice, it supplied millet to the neighbouring villages at reasonable prices despite the local shortages; it repaid the loan it had taken and also made a profit of 5,000FF which was used to buy fertiliser to boost its rice production.

Source: Aider les paysans sahéliens à nourrir le Sahel Afrique Verte, 49, rue de la Glacière - 75013, Paris.

Guaranteeing commercial outlets encourages food crop farmers

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food aid food given or sold on concessional terms

food supply food supply is calculated in kcal (kilocalorie) per inhabitant per day. It is the total national food production plus imports minus exports and losses, divided by the number of inhabitants of the region or country.

hunger it refers to a serious food shortage. There is hunger when the daily food intake per person is less than 1500 calories and 5 grams of animal protein.

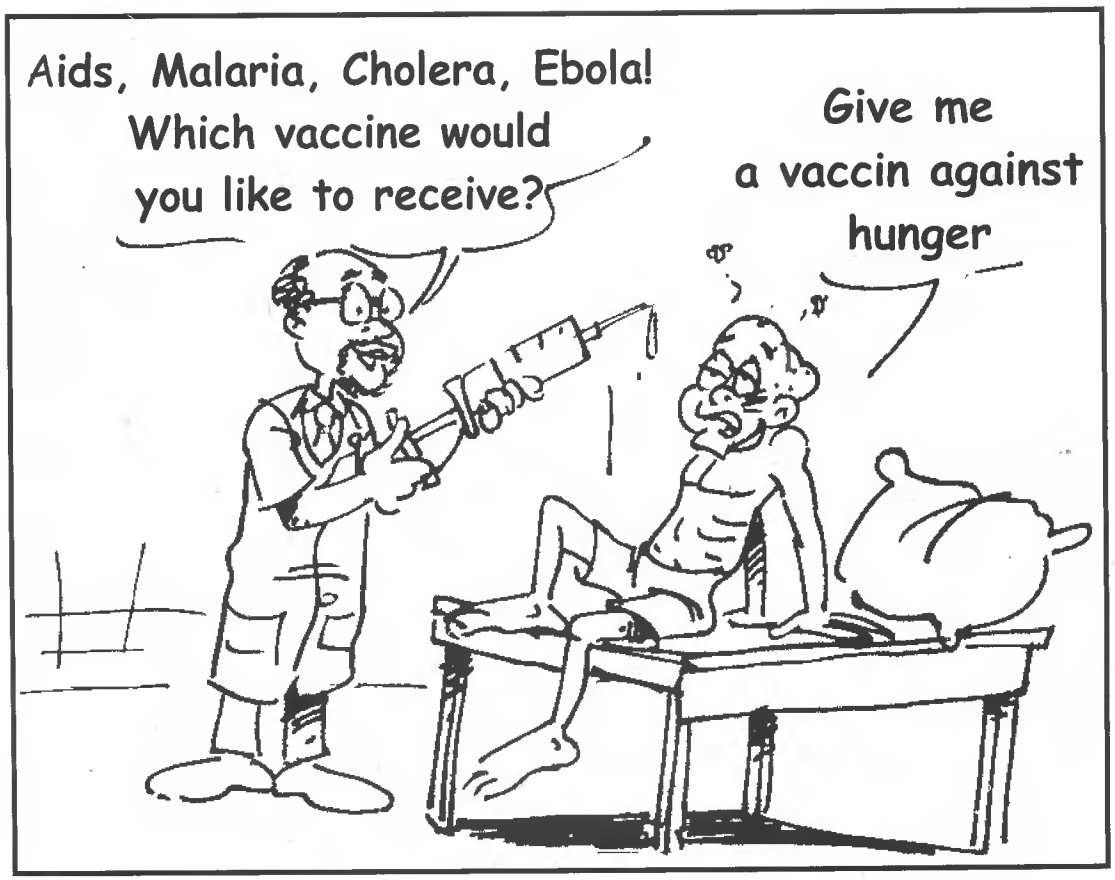
malnutrition it refers to a poor state of health resulting from inadequate or unbalanced intake of nutrients.

nutrients compounds and elements contained in foods and which are utilised in the normal metabolism of the body. Proteins, meat and mineral salts are nutrients.

green revolution agricultural modernisation process launched in 1960 by international agricultural research centres. Its objective was to increase yields through the development of irrigation, the introduction of improved seed varieties and the use of fertilisers and pesticides.

food security : food security is defined as access by all persons at all times to food in sufficient quantity and quality so as to lead a healthy active life.

underfeeding and undernourished : it refers to the intake of an insufficient or inadequate amount of food for the body (less than 2000 calories and 10 grams of protein per day). People suffering from malnutrition have reduced body-weight and are generally weak.



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