

SPORE



Information for agricultural development in ACP countries

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FAIR AND LONG-LASTING: 1
"green revolutions" for the poorest countries • Vegetable oils: a slippery slope to success? • Making more of potatoes

IN BRIEF 6

Improving cooking quality of grain legumes • R&D to go commercial • Turning yams into couscous • Fishery video • Useful CD-ROMs • Bio-pest control for pigeon pea • Sorghum video • Useful publications • Biotechnology self-study • Keeping cabbage caterpillars under control • Ergot threat to sorghum • Catalogue of NGO management resources • Award for work on water weed • Courses and conferences

MAILBOX 10

VIEWPOINT 11

South Africa's experience of agricultural transformation

NEWS FROM CTA 12

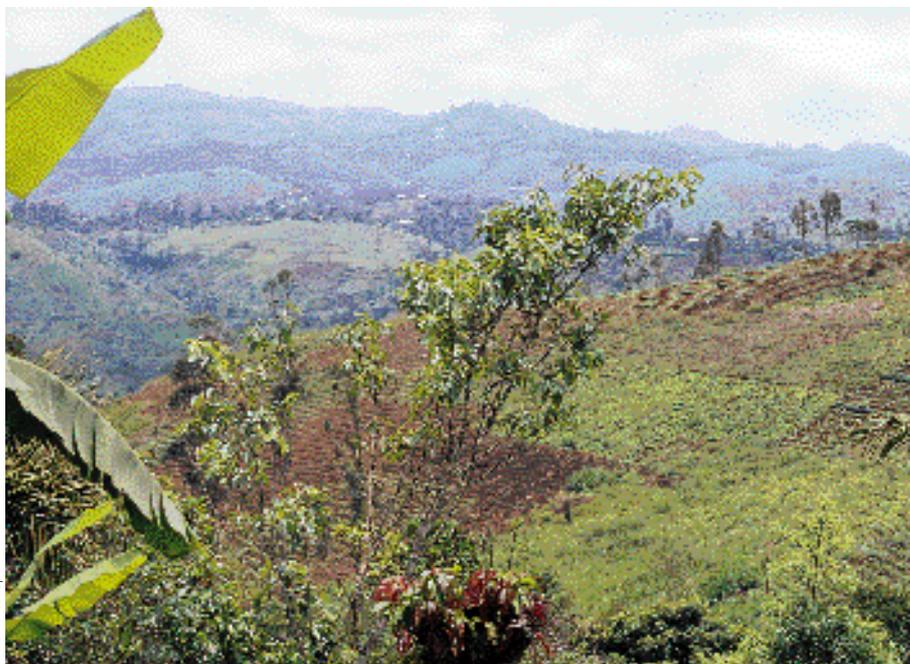
Geographic Information Systems as tools for rural development in sub-Saharan Africa • The contribution of mechanization to sustainable agricultural development • Improving marketing skills • CTA publications • How to obtain CTA publications?

BOOKS 14

Ephemeral rivers in the tropics • Achieving food security in southern Africa • How European aid works • Farmers' research in practice • Publishing educational materials in Africa • Scientists, plants and politics • Collaboration in international rural development • Also received • Proceedings

INFORMATION SOURCES 16

Natural Resources Group - ODI



Fair and long-lasting "green revolutions" for the poorest countries

Within some thirty years, the Green Revolution in Asia changed the global balance of food supply to the point at which some countries, which had previously been structurally deficient in food, became flourishing exporters of cereals. However, even within these same countries, the present yield ceiling, coupled with soil degradation, is currently raising concerns. Elsewhere, notably in Africa, many countries are experiencing rising demand for food from their rapidly expanding populations and yet are hardly able to maintain their current, mediocre production levels. Why should there be such great differences - and how can the poorest countries bring about their own "green revolutions"?

The Green Revolution began in Europe at the end of the 1950s and then spread to India and many other Asian countries at the beginning of the 1970s, improving the world supply of food even though the world population doubled. According to Gordon Conway, Vice Chancellor of the University of Sussex (UK), average yields of cereals more than doubled from 1.1t/ha to about 2.7t/ha and food production increased from 300kg to 360kg per capita. This global picture, while positive overall, nevertheless hides major differences between regions. Many countries, particularly ACP countries,

have found themselves unable to take advantage of this process and some have even recorded a decrease in food supply. Furthermore, even in those countries where food production was most progressive, the Green Revolution failed to eliminate malnutrition totally. India, for example, while being largely self-sufficient in cereals and with an annual surplus of 30 million tonnes, nevertheless still has 400 million people living below the poverty line in a state of chronic under-nutrition.

Forecasts to 2020, notably that of IFPRI (International Food Policy Research Institute),

suggest an increase in the world population of more than 2 billion individuals, principally in the less favoured countries of Africa and Asia. New concerns are now arising because cereal yields seem to have reached a ceiling in the major producing regions. One reason for yields not increasing as before is the fact that demand from those who can pay has largely been met. Efforts to increase productivity tend to create an excess of supply which is beyond the markets' capacity to absorb. This is very different from saying that the need, or 'social'

been soil degradation including waterlogging, salination, lack of organic matter and compaction, all of which are consequences of more intensive cultivation. Another risk to future food supply is associated with the fact that, in the context of climate change, more than 50% of the world food supply depends on the cultivation of three cereals: wheat, rice and maize. It is the sustainability of this traditional, and often inequitable, model of food production which is now being questioned.

What makes a "green" revolution?

The Green Revolution in Asia has too often been attributed solely to the adoption of high yielding varieties of wheat and rice developed by the International Wheat and Maize Improvement Centre (CIMMYT) and the International Rice Research Institution (IRRI) respectively. In reality it was the result of many complex and interacting technical and economic factors coupled with political determination in countries such as India.

Greater intensity of crop production implies the use of varieties with high yielding potential and, therefore, recourse to

inputs such as fertilizer, pesticides, water and mechanization. Water, in particular, must be properly managed because no farmer can afford to purchase inputs that are expensive in relation to his resources when unpredictable rainfall puts a return on that outlay at risk. This is why the Green Revolution has, for the most part, been restricted to those regions where water is plentiful and where it can be easily managed to provide irrigation and drainage. A simplified view might be that a "green revolution" can be achieved wherever environmental conditions can be adapted to suit high yielding varieties. In reality, it has to be said that many other conditions are also necessary.

From the farmers' point of view, there are two basic factors upon which intensification of production depend; improved farm profitability and a reduction in associated risks. Irrigation and pesticides reduce the agronomic risk but dramatically increase the economic risk. Any improvement in profitability will be totally dependent on the market. No "green revolution" can take place unless there are consumers, preferably close by, who are able to buy the produce at a price which is sufficient to remunerate the work of farmers and cover the costs of production and marketing.

In Asia, as in Europe, fiscal incentives have been used to improve national competitiveness and reduce the cost of production. Policies have included such measures as removing taxes on inputs, or subsidizing them, giving access to credit at favourable rates, and even rural electrification which is a more economical means of pumping irrigation water than diesel pumps. An effective, commercial, production chain together with efficient transport systems combine to reduce the costs of trading and improve access to markets. This is why Uma Lele of the World Bank underlined the fact that her country, India, had a road system that, even in the 1970s, was five times better than that of Nigeria during the 1980s, despite both countries having the same population density. Uma Lele also recalls that, with regard to direct state intervention in the market, even where a monopoly situation does not exist,

"Throughout Asia, the State has had an important role in bringing stability to agricultural prices, being both buyer and seller of last resort. It has also undertaken to pay compensation when necessary". This is no different from the Common Agricultural Policy of the European Union which, despite reforms, is still using mechanisms to limit imports and intervene in the market for cereals, meat and milk, in particular, by guaranteeing minimum prices to farmers which are sometimes much higher than world market prices.

The globalization of world markets and the rules of the World Trade Organization (WTO) are not making the task for the poorest countries, the majority of them African, any easier. Already subject to less favourable agro-climatic conditions, economic instability and poor access to markets, they will need much more in the way of organization and information than they presently enjoy if they are to achieve their own "green revolutions".

Green and white revolutions in Africa

The success of maize in Zimbabwe and cotton in West Africa show that Africa is capable of such "revolutions". The "white revolution" in cotton cultivation has taken place in rainfed savanna where the monetary economy was, at the outset, still weak. This demonstrates the complementary influences of the market and of political will. Opening up of transport routes, supply of inputs, credit, extension, cotton ginning etc., provided for under publicly funded development companies, have served to make West Africa the leading world exporting region for cotton.

The effect of liberalizing the cereals market in Mali and, more recently, devaluation of the CFA franc, has led to rapid intensification of rice production among the growers in the irrigated regions of the Office du Niger. Encouraged by the increase in price for paddy from 40 to 120 FCFA/kg between 1994 and 1996, there is now much greater use made of fertilizer, and transplanting is taking over from broadcast seeding. It would also be fair to include the rapid development of market gardening and peri-urban agricultural production as "green revolutions" of a kind. Both have been stimulated by private enterprise and close proximity of markets.

Improving farmers' techniques and diversification

All these "revolutions" are, however, still very limited and leave untouched the vast majority of rural areas. Each year, population growth further threatens the traditional, extensive farming systems. Shorter periods of fallow, and soils exposed to erosion as a result of primitive cultural

techniques, both diminish natural soil fertility. Farmers have neither the capacity to invest in development nor the ability to undertake large-scale land management schemes. Furthermore, potential markets are too distant. In effect there is no serious possibility of being able to overcome the problems of malnutrition and poverty by undertaking large-scale, intensive monoculture traditionally associated with the Green Revolution.

Many voices have been raised in recent years, among them scientists, NGOs, and even some politicians, all advocating a more evolutionary approach to local development. The concept of participatory research and development is central to this idea, which is built on the premise of sustainable land management and looks for more limited, although infinitely less costly,

improvement in yields by a progressive improvement in farmers' techniques. Huge land management schemes, many of which have proved ruinous in the past, should therefore give way to practices that are manageable by farmers themselves for controlling erosion, for example, or village irrigation. In the same way, the diversity of production systems contributes to the sustainability of ecosystems and takes advantage of locally variable conditions and biodiversity.

There is a wide range of cultural techniques that have been proved to be effective in managing soil fertility but that do not require a high level of inputs. Stands of *Acacia albida* have been used in some areas of the Sahel to improve soil fertility. More recent and more widespread are techniques such as composting, intercropping with leguminous crops for nitrogen fixation, use of mulch or permanent ground cover to prevent erosion, directly sown seed and agroforestry, all of which offer many possibilities. Farming systems which combine livestock and crops cost more in terms of investment and are more complicated to manage but they have the advantage of providing animal traction and organic manure for improving soil fertility. They can also add value to crop by-products used as feed.

Immediate needs and techniques for the future

Agricultural scientists are already undertaking work at a local level which is consistent with this type of diversified development. Much work has already been done on selecting varieties and developing farming methods which are appropriate to



and time; how to meet immediate needs while at the same time prepare for the future.

Political will, decentralization and local management

The task for policy makers is equally challenging. The need for finance, for example, is much less than that required for vast, irrigated schemes but putting that finance in place and assuring the viability of small-scale rural credit which is so essential for this type of development, are still far from being a reality. Even if it consists of no more than simple tracks, the cost of road infrastructure grows in proportion to the land area to be served. Reorganization of the tax and legal systems (tenancy law, company law,

banking statutes, etc.) should favour private enterprise, especially for small processing units, trading and those services such as management advice as well as supplies, of which agriculture has need.

It is obvious that a centralized administration will find it impossible to control access to, and sustainable management of, natural resources. The chaotic over-exploitation of forest resources, which is the norm rather than the exception far from the capital cities, is one obvious example. For small-scale "green revolutions" to be effective, the State must decentralize some of its responsibilities. Local collectives are much better able to exercise proper control and may pass on to the State a proportion of the revenue generated by tax on use of resources. A contractual arrangement of this sort has been established near Niamey for use of firewood.

Whether policies are successful or not should be judged more on whether they bring about a continuing drop in levels of malnutrition and an improvement in the quality of rural life, than in classical terms of return on investment or of volume of exports. The challenge should not be underestimated. How, and to what extent, should the concept of equality and fairness prevail over that of hard economics? ●

For further information:

A 2020 vision for food, agriculture and the environment 1996 IFPRI, 1200 Seventeenth Street NW, Washington DC 20036-3006, USA

The green revolution revisited: critique and alternatives by B Glaeser 1987 206pp Allen & Unwin, London, UK

After the green revolution: sustainable agriculture for development G R Conway, E B Barbier 1990 205pp Earthscan Publications Ltd, London N1 9JN, UK



Because of unpredictable rainfall, farmers ensure proper management of water

Vegetable oils: a slippery slope to success?

The world market for vegetable oils is one of the most speculative at the present time, reflecting the importance of these protein rich oils not only in human diet, but also as a major ingredient of livestock feed. Globalization has meant that financial markets and the markets for commodities such as vegetable oils are now more closely linked than ever before. The result has been a series of major price fluctuations which are often difficult to predict.

The global picture

Global production of vegetable oils has risen by 30% in the last ten years but is still failing to meet a demand boosted by the increasing number of people living in towns and cities. The major palm oil and soya oil exporting countries, Malaysia and Brazil respectively, are using a larger part of their own production for home consumption, thereby reducing the amount available for export. China, also a major producer, is nevertheless expected to import 5 million tonnes in the year 2000. When this is compared with the 1.5 million tonnes imported in 1993, the figures show how significantly demand is increasing. These forecasts, which relate particularly to palm oil, have influenced prices on the futures market. These have now stabilized at around the price of soya oil, its principal competitor. Soya oil represents 20% of the world market compared to 17% for palm oil. Palm oil not only exceeds by eight times the yield per hectare of soya but it also has many technical advantages which are of interest to the food processing and the "fast food" industry. These qualities include stability at high temperatures, a semi-solid texture and a high level of natural antioxidants.

Africa's share

In the 1960s Africa supplied 65% of global production of palm oil. Nigeria and Zaire were the principal producers. However, the current situation is not favourable for the long term investment that cultivation of this perennial crop requires. Approximately US\$2,500 per hectare is needed to establish a plantation, which will not reach full production until ten years later. The majority of African companies are not able to finance such investment from their own resources. Local commercial banks tend to be wary of lending money on a long term basis to

enterprises they judge to be risky. At a time when the State is withdrawing from financial involvement in the agriculture sector, and when agricultural credit is hard or impossible to obtain, room for manoeuvre is limited. Robert Hirsch of the Caisse Française de Développement says that new ways of providing credit are urgently needed if this major constraint is to be eliminated.

Despite the growing need for vegetable oils, Africa's share of world production is less than 4%. With the exception of Côte d'Ivoire and Cameroon this does not even meet the needs of local consumption. Groundnut oil is the second largest source of vegetable oil on the continent after palm oil. Lagging far behind these in quantity are cotton and sunflower oil which are produced mainly in South Africa, and olive oil which is produced mainly in North Africa. Although the world export market for groundnut oil is dominated by China and the United States, Africa retains a relatively high percentage share (on average 30%) despite major annual fluctuations. This is due, in part, to Senegal which continues to export groundnut oil to the European Union. Nevertheless, the countries of the Conseil Africain de l'Arachide have lost ground and, as Ousmane Badiane, a Senegalese economist with the International Food Policy Research Institute in Washington, has stated, it is not solely the effect of the international market which is responsible for the decline in African groundnut production, "National policies have had a negative effect on the sector which has been weakened not only by serious droughts but also by heavy direct taxation." (See Table 1).

Processing

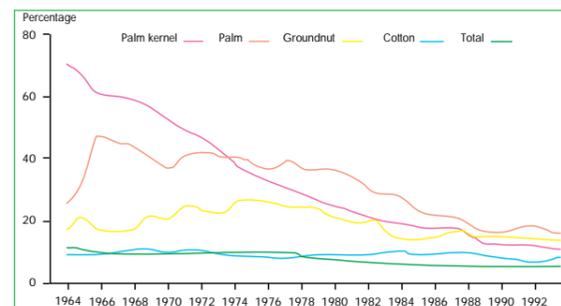
It is often more profitable to export a product that has been processed and processing has the added advantage of creating employment. This is also the case with

vegetable oil processing. In fact the price of oilseed cake, which is used in the feed industry and is the by-product of the oil extraction process, is currently higher than that of the oil itself. This is because the huge increase in world livestock production has been coupled with an increase in the price of cereals (See Table 2), and encouraged feed mills to buy more oilseed cake. It is therefore in the interests of producer countries to undertake such processing themselves, particularly as it can be done with small units requiring only low levels of investment which are therefore relatively easy to obtain. This is how Argentina, the world's third largest producer of soya, has been able to achieve a comfortable profit margin on its production. This has encouraged local and multinational processors, to reinvest in new processing plant.

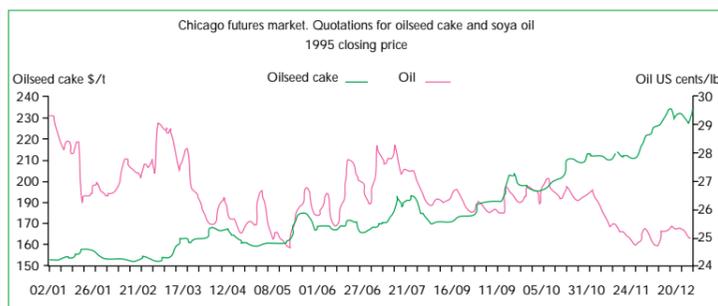
The demand for vegetable oils will undoubtedly continue to expand. Not only is there an enormous market in China but India, with its huge population, is currently unable to meet its own internal demand. The demographic explosion and the need to meet the food needs of an increasingly urbanized population will effectively guarantee the future of this sector. Urban and more affluent people eat more livestock products and this in turn has an impact on the demand for oilseeds. Furthermore, there is also an industrial demand for vegetable oils which are increasingly important to the production of plastics and as biofuels. There is no reason why some of the ACP countries should not work towards developing this line of production provided they can attract investors who are prepared to risk capital over a relatively long term in regions which are politically unstable.

Association africaine pour le développement du palmier à huile (ADPH)
15 BP341
Abidjan 15
CÔTE D'IVOIRE

Africa's share of world production



Growth in value of oilseed cake: how the "waste" product has come to exceed the value of manufactured product



Making more of potatoes

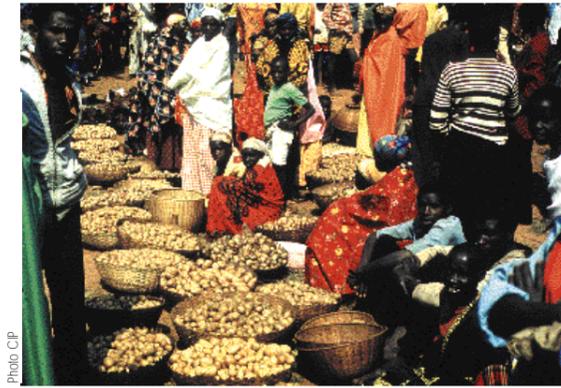
A staple crop which can yield four times as many calories per hectare as rice, or five times as many as wheat, is enjoying a consumer success that has encouraged many farmers to increase production. The Irish potato (*Solanum tuberosum*) is becoming ever more popular and, provided that the quality meets the expected high standards, the commercial rewards of a buoyant market are there for the taking.

If advertising copywriters were given the opportunity to promote the raw, unprocessed potato, they would be pleased to adopt the slogan that potatoes are packed full of goodness. Rich in vitamins and minerals, protein (concentrated in the skin) and calories, and almost fat-free, potatoes need no advertising, as the quadrupling of production in Africa over the past 35 years testifies. According to FAO, growth in potato production on the continent has been consistently higher than population growth. This is an exceptional record for a food crop, many of which have fallen behind or, at best, kept pace with population growth. It is the urban market which has led the demand because potatoes are convenient being quick to prepare and cook, and are adaptable to many different recipes. They can be grown to be sold fresh or for processing, but to-date most production in ACP countries is on a small scale more suited to the fresh market.

Approximately 425,000 hectares of potatoes are now being planted in sub-Saharan Africa, both as a cash crop and for household consumption. The increase has been largely due to an increase in area planted rather than in productivity but, where irrigation, fertilizer and good quality planting material are being used to grow potatoes on a commercial scale, yields of 25 tonnes per hectare (South Africa) and 16 tonnes per hectare (Zimbabwe) are being achieved. Elsewhere, for example in the highland areas of eastern and central Africa, where plots are small, cultivation is by hand and inputs, such as chemical fertilizers and fungicides, are rarely affordable; consequently, yields are about half those achieved in southern Africa. In West Africa, potatoes are usually grown on a small scale from imported seed (i.e. tubers, not true seed) and with high levels of inputs; there the market price reflects the high production costs. The most important potato producing countries in sub-Saharan Africa are South Africa, Zimbabwe, Uganda, Ethiopia, Madagascar, Rwanda, Tanzania, Kenya and Cameroon.

Although over 150 wild species of potato are found in the Americas, where the plant originated, only one species, *Solanum tuberosum*, is grown commercially elsewhere. Genes from wild species have been bred into many of the cultivated varieties of potato in order to give them resistance or tolerance to pests and diseases.

Potatoes are not immune to the problems that beset any agricultural enterprise. Even where conditions should be ideal, where production is intensive and where there is no shortage of chemical controls designed to cure problems, yields can plummet for



Potatoes are heading for the urban market

one reason or another. Clean propagating material, effective cultivation practices, adequate pest and disease management and proper post-harvest storage facilities are all essential if farmers are to make the most of market opportunities.

Threat of blight

Late blight (*Phytophthora infestans*) can turn a field of potatoes brown in just a few days. It is the single most important biotic constraint to potato production in sub-Saharan Africa and is most severe in the tropical highlands of central and eastern Africa. Many of the potato varieties grown have very low levels of resistance to blight but, provided farmers can spray at the first sign, it is theoretically possible to limit the damage. However, the majority of resource-poor farmers in this region have neither the funds, the know-how, nor reliable access to fungicides to enable them to control the disease.

There are serious concerns that this disease may become even more of a problem in future. Evidence of this is appearing in the Americas, where strains of the disease are becoming more resistant to the fungicides

available. There are reports that, in Central America, farmers are spraying as many as 25 times in a season in an effort to control the disease. There are, as yet, no signs of these highly resistant strains in sub-Saharan Africa, but it would be naive to assume they could not spread.

Seed distribution, especially of new, improved varieties, is problematic in many sub-Saharan African countries. Attempts in the past to establish centralized systems similar to those in place in Europe and North America have largely failed, for a variety of reasons. The International Potato Center (CIP) is currently working with three national potato programmes, in Kenya, Uganda and Ethiopia, to find ways to support farmer-based systems for multiplying and distributing high-quality seed (see box).

Future markets

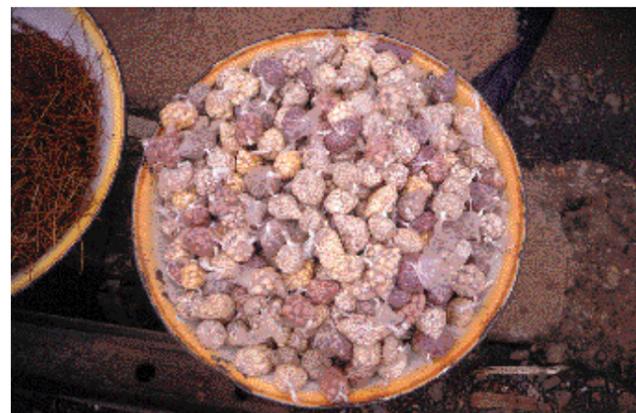
The market for processed potatoes is growing as rapidly as the cities in which most fast food consumers live. Manufacturers of potato chips, French fries and other potato-based snacks have their own requirements with regard to the variety, quality and quantity of the potatoes they are prepared to purchase. For processing plants to be economical, producers must be able to supply specific varieties to match the needs for dehydrated potato, crisps or oven-ready chips. Farmers in Africa need have no fear that this market will dry up, if experience elsewhere is a good indicator of trends. It may look unprepossessing as it comes out of the ground but, in one form or another, the Irish potato has style, youth appeal and a rapidly expanding market.

NEW SEED MULTIPLICATION SCHEME

CIP's Seed Unit in Kenya is providing large quantities of minitubers (commercial 'seed' is not true seed) to national potato programmes in Kenya, Uganda and Ethiopia. This material is being used for one cycle of rapid multiplication and the seed harvested is then being distributed to a small number of carefully selected farmer-multipliers. These farmers must have fields located at high enough elevation to be free of bacterial wilt and virus. Each is expected to multiply the seed at least once. All seed-sized tubers are then stored on-farm and at the next planting season some are replanted for a second generation of multiplication. The remainder is sold to other farmers, who use it to plant crops for the market. For the next season, the farmer-multiplier goes back to the national seed programme for new starter material.

For further information: CIP, PO Box 25171, Nairobi, KENYA

Improving cooking quality of grain legumes



Improved cooking technologies boost the nutritional value of dried beans

A project to improve the cooking quality of grain legumes and their products has been undertaken in Kenya and Cameroon and coordinated by the Institute of Food Research based in Norwich, UK.

Beans are inexpensive, rich sources of dietary proteins and can have beneficial effects on human health. However, they are often under-utilized as human food, due to undesirable characteristics such as the hard-to-cook (HTC) phenomenon and the presence of anti-nutritional factors that interfere with digestion.

The HTC defect develops in beans during storage under high humidity and high temperature conditions which also increases the anti-nutritional factors. HTC beans take up to 12 hours to soften due to changes in the plant cell walls and the increased cooking time uses more water and fuel. Freshly harvested beans require only twenty minutes cooking to achieve cell separation and tissue softening. In HTC beans however, this treatment

fails to induce cell separation, and the tissue fractures only through rupture of the cell walls which causes the beans to remain hard.

In addition to studying the underlying causes of the HTC defect, researchers developed ways to modify flour from HTC beans into forms that were more acceptable for human consumption. Extrusion cooking was identified as an efficient way to reduce the levels of anti-nutrients in these beans, particularly lectin: protein and starch digestibility was also increased. The resulting flour contained higher levels of digestible protein and was successfully incorporated into a range of African foods.

Surveys in Kenya and Cameroon showed that there is potential for the development of nutritionally-enhanced baby and snack foods.

External Relations Office
Institute of Food Research
Norwich Research Park
Colney
Norwich NR4 7UA, UK

R&D to go commercial

After more than a quarter of a century of intense research, the International Centre of Insect Physiology and Ecology (ICIPE), has developed a range of research and development (R&D) products for application in agriculture, livestock development and human health. These products will soon be undergoing large-scale production and marketing, entirely as a business venture within the ambience of an innovative TechnoPark situated in Nairobi, Kenya.

The ICIPE TechnoPark is set to be a prime environment for innovation and entrepreneurial development based on firm linkages between the private sector and R&D institutions. The park will provide fully equipped, modern and state-of-the-art incubation centres for production and upscaling and will support the enterprise by charging affordable rates. It will provide important services which will enable the enterprises to strengthen their

Turning yams into couscous

Yams have a high water content and therefore do not keep well. This poor keeping quality is thought to be the principal constraint to the crop's development. But from Burkina Faso comes an idea to overcome this problem - processing yams into couscous.

This new produce takes two forms: enriched couscous which can be kept for up to eight months and ordinary couscous which can be kept for a year or even longer. Yam couscous takes the form of pre-cooked granules and can only be distinguished from wheat couscous by its taste and its white colour.

The trickiest stage of the processing lies in the crushing. Peeled yams are first of all cooked for 45 to 50 minutes and then crushed. If this is done too quickly, crushing produces a paste; but if it is done too slowly, the result is a

flour. The couscous is then dried for 72 hours. If the drying is not done properly the couscous will turn mouldy and black and no-one will buy it. Drying produces grains of differing sizes which are prepared in the same way as normal couscous.

If this product, which is already enjoying considerable success, can be made on a larger scale, it could make a significant contribution to development in rural areas and lead, in time, to the creation of employment as well as greater production of yams. All that has to be found is the money to buy equipment that is appropriate to small-scale processing units.

Bernardin Pooda
SIATA 01
BP 1485
Ouagadougou 01
BURKINA FASO

Fishery video

The sustainable management of natural resources is a much debated topic covering many disciplines. The video, *Mweru ebutama bwesu (The lake is our bank)*, provides a realistic impression of the management of a heavily fished lake in an African context. The issues raised in the discussions between the various stakeholders of the fishery are universal and they represent the same dilemmas seen in other situations concerning resource management.

The video was originally produced for Zambian television

which has shown it several times, but has since been used in various educational and training settings both within Zambia and elsewhere. The documentary is in English and Bemba with English subtitles. The video is available on VHS-PAL, price US\$135.00 for institutions and US\$66.00 for individuals. The price includes postage and packing.

Rien Valk
Stug Videoprodukties
PO Box 3011
6802 DA Arnhem
THE NETHERLANDS

profitability base. These services will include quality standardization and improvements in the production processes such as the reduction in waste generation and the use of energy. The park will enable participants to benefit from centralized services that will assist them to compete effectively in niche markets.

The services will include market and feasibility studies, consumer surveys, promotional activities and access to the global market through the latest communication channels such as satellite and the Internet.

The ICIPE TechnoPark will further enable industrial participants to benefit from interaction with similar high-tech undertakings and benefit from the Science and Technology (S&T) support of world class scientists based at the ICIPE Research Centre. ICIPE will be collaborating with national and regional R&D institutions and universities in implementing the park.

Dr J Ochieng-Odero
Research-Industry Relations
ICIPE
PO Box 30772
Nairobi, KENYA

Useful CD-ROMs

In May 1997 CAB International published a new CD-ROM product entitled *Root-knot nematode taxonomic database*. This disc brings together data that is otherwise scattered in the often obscure literature and presents it in an accessible and user-friendly form. It will enable researchers around the world to have access to all of the information that is necessary to identify a population, to recognize an undescribed species, and to describe it adequately.

This valuable resource is essentially a CD-ROM library for the entire *Meloidogyne* genus, including more than 80 of the original descriptions. All of the historical papers since the first observation of the genus in 1855 are included. Descriptions in foreign languages have been translated into English and the text of both the original and the translation are on the disc.

Features include over 450 articles, monographs, book chapters, photographs & drawings, video clips, over 100 picture and distribution maps.

The Root-knot nematode CD is available for both PC and MAC use and is designed to provide an up-to-date reference as well as a teaching resource for nematologists and others interested in this group of nematodes.

CAB International, Wallingford,
Oxon OX10 8DE, UK
marketing@cabi.org
http://www.cabi.org

A new CARIS/SIS CD-ROM has been produced that contains all research project records updated through to mid-1996. This new CD comes with an improved version of the HEURISKO software containing new search features, such as a thesaurus search interface and new pre-defined sort/print parameters.

A brief guide is enclosed with the CD containing instruction and general use of the HEURISKO system. There are also detailed help messages available by pressing the F1 function key. Users may select to have the menus, commands and help messages displayed in English, French or Spanish.

There are two CARIS databases and the SIS (SPAAR Information System) database on the CD. The first contains all the current CARIS research projects. The second consists of an historical database with completed CARIS research projects from earlier years; and the third comprises the SIS database of agricultural research projects.

Copies of the CARIS/SIS CD are available free of charge from:
FAO, WAICENT/FAOINFO
Dissemination Management Branch
(GILV), Viale delle Terme di
Caracalla, 00100 Rome, ITALY

The National Agricultural Text Digitizing Program (NATDP), in cooperation with the American Society of Agronomy, has published the *Agronomy journal volumes 23-28 (1931-1936)* on CD-ROM. The approximately 6900 page-images are linked to searchable bibliographic records created by NAL's Indexing Branch and downloaded from AGRICOLA.

This disc, like earlier NATDP CD-ROMs, was created using Windows Personal Librarian retrieval software which is included on the CD-ROM. System requirements include an 80386 or faster computer, 4 MB of RAM, 4 MB of hard disk space, DOS 3.3 or later, MS-Windows 3.1, a CD-ROM player with Extension 2.0 or later, and a mouse.

The CD-ROMs cost US\$25.00 each and are available from:
American Society of Agronomy, 677
South Segoe Road, Madison,
Wisconsin 53711, USA

Bio-pest control for pigeon pea



Pigeon pea

perennial cultivars. It is intercropped with cereals, with cotton, with other legumes and it has even been grown on rice bunds. Another interesting aspect is that the status of pigeonpea has changed in many places from being a subsistence crop to a commercial export crop. Malawi for instance, exports a significant quantity of pigeonpea.

Pigeonpea has also been used as a trap crop, particularly in cotton as they share a common pest *Helicoverpa armigera* (formerly known as *Heliothis armigera*). The pest is highly damaging to both crops and due to heavy spraying of commercial high-value cotton, *H. armigera* has developed a considerable degree of chemical resistance.

The International Crops Research Institute for the Semi-Arid

Tropics (ICRISAT), in collaboration with national programmes and other research institutes, has been researching a naturally-occurring virus disease which is specific to *H. armigera*. Diseased larvae of the pest are collected and ground up to make an extract which can then be sprayed on pigeonpea and cotton as a low-cost option, also tomato, sunflower and the many other crops that are susceptible to *H. armigera*. In India there are a number of commercial producers who use simple centrifuges to obtain a more concentrated, purer product. Initial results are promising. However, one problem is that the live pathogen is highly susceptible to sunlight and has a short activation period, which gives rise to variable success rates. For optimum results the product must be used fresh.

The International Crops Research Institute for the Semi-Arid Tropics
Patancheru PO
Andhra Pradesh 502 324
INDIA

Pigeon pea is an interesting crop as it can be grown and thrive in many different cropping situations. There are short duration and

Sorghum video

A new sorghum variety (ICSV 111) is proving a big hit with farmers in Nigeria and Ghana. After its release in 1996, seed was distributed by the Katsina State Agricultural and Rural Development Authority (KTARDA), Nigeria, to as many farmers as possible in Katsina State. Since

then, the variety has become very popular with farmers who like its short duration.

KTARDA has produced a video film about in Hausa which is available from:

ICRISAT
Patancheru PO
Andhra Pradesh 502 324
INDIA

USEFUL PUBLICATIONS

The new, extensively revised and updated edition of the world compendium of pesticides, *The pesticide manual*, has just been published.

Since the publication of the previous edition three years ago, 56 active ingredients have been added, bringing the total number of detailed entries to 759. This is in addition to abbreviated entries covering 583 superseded products.

Everyone with a profession or technical interest in pesticides from research scientists, toxicologists, analysts, manufacturers and formulators to regulators, field researchers, agronomists, market researchers, and environmentalists will benefit from this comprehensive reference book. It is priced at UK£135 within the EU and UK£145 elsewhere.

BCPC Publication Sales
Bear Farm, Binfield
Bracknell, Berks RG42 5QE, UK

Biotechnology self-study

Biotechnology self-study is a learning package which deals with the basic principles of biotechnology and its applications in agriculture, the food industry and the environment. In addition, it analyses financial, legal, social and ethical aspects related to the use of biotechnology in the above areas. The components of the learning package are:

- text-based modules (9 manuals)
- video tapes (comprising 5 films)
- interactive computer-based training modules.

The text-based modules, bound in three volumes, supplemented with a training film and video tapes, are in effect, workbooks which facilitate learning through the use of various techniques. The workbooks are designed to make working through the materials interesting, and to provide easy access to the topics relevant to the learner. The

activities and assignments help participants to learn by 'doing' rather than just by absorbing information.

The interactive software modules of the computer-based training package use a powerful and attractive methodology. It provides ready access to the materials in whatever order suits the needs and interests of the participants. The two modules (biotechnology and the environment, and enzymes) contain a large body of information which is presented in an interesting way through graphics, animation and colour. The modules are supplemented with learning activities to help learners check their understanding of the material, apply their knowledge to their work, or do further research.

Dr S Vizantiopoulos
Directorate of International Relations
Documentation & Informatics
9 Egiallas Str
151 25 Maroussi
GREECE

Ergot threat to sorghum

Sorghum is an important crop in semi-arid parts of Africa, as well as in other parts of the world. It is a particularly useful crop in that it is more drought-tolerant than many other grain crops. However, the disease ergot or honeydew is becoming a growing threat to sorghum worldwide.

Ergot is a serious disease of sorghum that affects the production of F₁ hybrid seeds, particularly if 'nicking' is poor or seed-set is delayed in male-sterile lines. A disease of the ovaries, ergot reduces grain yield because infected flowers do not produce grain. In addition, it reduces germination and seedling emergence and predisposes seedlings to other diseases. The resultant grain is of lower quality and because of the sticky secretion produced by one type of the disease, threshing is difficult. Ergot is not only damaging to the crop itself, but poses a serious human health risk due to the dangerous toxins that the disease can produce.

The ergot disease now has serious implications for export of sorghum from one country or one region to another. Quarantine regulations will have to be rigorously applied as it has been found that the ergot pathogen has an extraordinary capacity to spread rapidly. In Brazil, in South America an epidemic of the disease covered 800,000 km² in a week in 1995, and in 1996 in Queens-



Sorghum head showing typical signs of ergot infection

land, Australia it spread over 60,000 km² in three weeks.

Scientists have found that the measures that best reduce the incidence of ergot are to sow only seed that has been produced from ergot-free areas; to alter sowing dates to allow flowering when environmental conditions do not favour the disease development (during wet or high humidity conditions); to rogue infected plants; and to spray seed production plots with a triazole fungicide 3-4 times at 5-7 days intervals, starting before stigma emergence.

The International Crops
Research Institute for the Semi-Arid
Tropics
Patancheru PO
Andhra Pradesh 502 324
INDIA

Catalogue of NGO management resources

Book Aid International has produced a catalogue which aims to provide access to a wide range of books relevant to the management of African NGOs. The range includes reference material, books on development issues, organizational development, strategic planning, and practical 'how to' books on a variety of topics. New titles cover areas as diverse as good governance for the board members of voluntary orga-

nizations and how to analyse and plan for training needs.

Although the materials are selected with African organizations in mind, it should be a useful resource for those with an interest in the management of NGOs elsewhere.

Book Aid International
39/41 Coldharbour Lane
Camberwell
London SE5 9NR
UK

Award for work on water weed

The spread of water hyacinth (*Eichornia crassipes*) has had a devastating effect on many African lakes and waterways, disrupting transportation, depriving fish of essential oxygen and devastating communities by the resultant fall-off in economic opportunities. A group of African journalists who have helped spread the word on the problem and

its control have been recognized by an international award.

The Association of Food and Agriculture Journalists (AFAJ) which was started in 1995, is an organization comprised of thirty-five members drawn from both the print and electronic media in Kenya. The Association was extremely concerned at the devastating effect water hyacinth was having on Lake Victoria and decided to mount a concerted campaign

to raise international awareness of the problem. They were instrumental in organizing a workshop in November 1996 which brought together researchers, politicians, scientists, journalists and NGOs to discuss the problems of water hyacinth and its control.

In recognition of this work, the Food and Agriculture Organization of the United Nations (FAO) has presented its Boerma Award to the Association. The award is present-

ed biennially to a journalist or journalists whose coverage of development issues has helped to focus public attention on important aspects of food problems, and increase public support for measures leading to their support. *Spare* editors have been the recipients on two previous occasions.

Alfred Omondi, Chairman
Association of Food & Agriculture
Journalists, AFAJ
PO Box 28189, Nairobi, KENYA

COURSES AND CONFERENCES

MANAGING SUSTAINABLE PROJECTS AND PROGRAMMES

20 April-10 July 1998

The course will emphasise study and personal development skills, including group working, setting learning objectives, computing skills, personal action plans, returning to work, and other key aspects of professional development. Time is set aside for an independent study programme. The course has Postgraduate Certificate and Diploma options.

IMPACT ASSESSMENT FOR DEVELOPMENT POLICY AND PROJECT APPRAISAL

1 June-10 July 1998

This course concentrates on the assessment of four major types of impact commonly associated with development policies and projects: environmental, health, social and gender. The course has two key objectives: to provide participants with a practical understanding of the latest concepts and procedures for the assessment of environmental, health, social and gender impacts of development policies and projects; and to provide an understanding of how the results of impact assessment studies can be integrated into policy design, project appraisal and decision-making procedures.

Details of the two above courses from:
Lesley Knight, Administrator, Development and Project Planning Centre,
University of Bradford, West Yorkshire BD7 1DP, UK
Fax: +44 (0) 1274 385280

PARTICIPATORY NEEDS ASSESSMENT, PROJECT DESIGN AND PROPOSAL WRITING

June 1998

FOOD SECURITY THROUGH WATERSHED MANAGEMENT

August 1998

PARTICIPATORY MONITORING AND EVALUATION

September-October 1998

DEVELOPMENT MANAGERS COURSE

October-November 1998

These courses offered by the International Institute for Rural Reconstruction (IIRR) are designed for development managers, leaders and extension workers from government and non-government organizations and focus on field experience and participatory approaches.

Training Officer, IIRR Africa Regional Officer,
PO Box 66873, Nairobi, KENYA
Fax: +254 2 448148 Email: IIRR-Kenya@elci.gn.apc.org

Please write to the addresses given above, and not to CTA, if you are interested in participating in these events.

INTERNATIONAL COURSE ON EXTENSION MANAGEMENT

14 June-25 July 1998

The course programme focuses on functions, role and management of extension in rural development. Major areas of concern are participatory needs assessment methodology, strengthening analytical capacity, adequate information management and sustainable support mechanisms for target populations involved.

INTERNATIONAL COURSE ON FOOD PROCESSING

16 August-21 November 1998

The course programme aims to broaden participant's views on problems of small and medium-scale food processing, to upgrade participants' knowledge concerning the analysis of problems and the selection of appropriate technologies, and to impart techniques for the implementation of selected technologies, focusing on quality assurance and marketing.

Details of the above two courses from:
J J Hooft, Director, International Agricultural Centre, PO Box 88, 6700 A B Wageningen, THE NETHERLANDS
Fax: +31 (0) 317 41 85 52 Email: iac@agro.nl

CROP RESEARCH TECHNIQUES AND MANAGEMENT

August-September 1998

The aim of this course is to provide up-to-date information on the basic principles of experimental design and analysis and on the current experimental approaches in important specialists fields. It is designed for 'hands-on' crop scientists involved in the implementation or management of on-station and on-farm research.

The Training Coordinator, Overseas Development Group,
University of East Anglia, Norwich NR4 7TJ, UK
Fax: +44 (0) 1603 505262 Email: odg.train@uea.ac.uk

THE 9TH AITVM INTERNATIONAL CONFERENCE OF TROPICAL VETERINARY MEDICINE

to be held from 14-18 September 1998 in Harare, Zimbabwe.

Prof. M J Obwolo, Faculty of Veterinary Science, University of Zimbabwe, PO Box MP167, Harare, ZIMBABWE

Fax: +263 4 333683 Email: vetscience@esanel.zw

15TH INTERNATIONAL SYMPOSIUM OF THE ASSOCIATION FOR FARMING SYSTEMS RESEARCH-EXTENSION RURAL LIVELIHOODS, EMPOWERMENT AND THE ENVIRONMENT: GOING IN BEYOND THE FARM BOUNDARY

to be held from 29 November-4 December 1998 in Pretoria, South Africa.

AFSRE Symposium '98, PO Box 411177,
Craighall 2024, SOUTH AFRICA
Fax: +27 (0) 11 442 6111 Email: cpjh@jhb.lia.net

Keeping cabbage caterpillars under control

The green caterpillar of the Large Cabbage Worm *Pieris rapae*, with its narrow orange or yellow dorsal stripe, emerges from the soil for two to four weeks in order to feed on the leaves of many different species of cabbages. It then returns underground to reappear 15 days later as a white butterfly. An understanding of this life-cycle shows how the pest can be controlled without the use of chemicals.

The first step is to practice crop rotation by alternating carrots or maize, for example, with cabbages. The caterpillars are then starved of their food source. By turning over the soil around the cabbage plants several times, both at the beginning and at the end of the season, the caterpillars are desiccated through exposure to air. If some escape they can be retrieved manually and destroyed. The butterflies can be controlled by using a sticky, yellow trap placed in the middle of the crop, or they can be discouraged by cultivating plants that have a strong and, to the butterflies, unpleasant, odour (onion,

garlic, sage, mint, cinnamon). Other non-chemical means of control include the use of a garlic concoction made with crushed garlic cloves (five cloves to four litres of water) or by macerating neem seeds (two handfuls of crushed seed to ten litres of water over 12 hours) or even by scattering a mixture of one part salt to two parts flour on the plants after rain. The caterpillars gorge themselves on this mixture and become so bloated that they die.

Another strong ally is a small wasp which lays its eggs among those of the Large Cabbage Worm and on which the young wasps feed. Wasps can be attracted by planting, for example, mint or parsley, but insecticides must be avoided because the wasps are particularly sensitive to them. However, with this array of weapons ranged against the pest, chemicals should be unnecessary.

Daniel Eldridge
DCFRN
P O Box 12
Toronto
CANADA M5G 2C2

On our 'Mailbox' page we publish extracts from letters sent to the editorial team at CTA. These letters have been selected for their potential interest to other readers of *Spore*. We also publish correspondence arising from CTA's Question and Answer Service. Readers are therefore invited to send us further information on subjects covered in *Spore*.

Spore would also be pleased to receive short articles and news items on agriculture and rural development in ACP countries; these will be considered for publication in our 'In Brief' pages. Finally, under the heading 'Viewpoint', we will continue to publish personal opinions on the subject of agricultural development in general.

Please send your correspondence to *Spore* at CTA in the Netherlands (see back page for our address) and please note that we are unable to return manuscripts.

PROBLEMS OF CURRENCY EXCHANGE

Assion G.F. Lawson from the Centre d'application agropastoral de Kovié, Lomé, Togo has written to express his frustration relating to the different currencies in which the books featured on pages 14 and 15 of *Spore* are sold.

"We find it very difficult to obtain books which have to be paid for in foreign exchange. The cost can double by the time the bank charges have been paid, even if the transaction is allowed in the first place. I know from experience that I will not be able to order books, even if the price is reasonable. Would it not be possible to look into this and suggest a way of paying that avoids this problem? Obviously CTA cannot send out books willy nilly but it is very frustrating to read about books that we know would be useful to us and yet be unable to obtain them."

Spore: Lack of foreign exchange and the non-convertibility of money are major obstacles to the dissemination of publications and, therefore, access to information. CTA distributes publications of many different kinds to ACP readers but our limited budget means, of course, that we cannot help everyone to the extent they would wish.

UNESCO has established a system of coupons which are designed to overcome foreign exchange problems. The coupons have a US dollar value and can be used for publications (including periodicals), audio-visual and scientific materials. In practice, you buy coupons in your local currency and these have a dollar value (at the UN rate). You can then pay for books or other educational or scientific materials with the coupons. The publisher, bookshop or other recipient exchanges the coupons, through UNESCO, for their monetary value. We do not have space here to give you all the details but we suggest that you write to UNESCO Coupons Office, 7 Place de Fontenoy, 75700 Paris, France and they will be able to supply you with further information and an address from where you can purchase coupons in your own country or region.

AFRICAN SERICULTURE

Paul K Ntaanu, Ghana wrote to us with "a proposal to set up an African Centre for the development and promotion of Sericulture (silk-farming). The objectives of this centre would be:

to provide a forum for active networking in the area of sericulture and the silk industry
to document and disseminate experiences of countries advanced in sericulture
to set up a demonstration pilot project to serve as a training centre for sericulture farmers in Africa
to provide training in sericulture, and
to maintain a register of sericulture practitioners in Africa."
Those who are interested and who would like to assist in the establishment of this centre should write to:
Sericulture Promotion and Development Association, PO Box 6769, Accra-North, GHANA

MORE REASONS FOR FOOD INSECURITY

Bwambale Philip Kirighe, an extension officer from Uganda wrote to CTA in response to an article, *A global view of food security* published in *Agriculture & rural development vol. 4 no 2* (CTA copublishes this twice-yearly journal with GTZ and DSE). He offers two main reasons why food security is difficult to achieve. The first reason given is "withdrawal of young people from participating in food production activities". He cites the years spent at school and university and taking up of white collar jobs by graduates, thereby denying agricultural production essential labour, as some of the reasons for the lack of young people participating in food production. He recommends that policy-makers should get involved in planning school curricula with a view to shortening the years spent at school. He further suggests that appropriate technologies be developed to help increase the quantity of food produced by the decreasing number of people left in agricultural production.

The second reason given for food insecurity is "inequitable land distribution". Mr Kirighe cites the cases of Uganda and Zimbabwe. He notes that in Uganda farm sizes in areas with good rainfall are so small that it is not profitable to mechanize food production. In Zimbabwe, he observes, most of the fertile soils have belonged to a few individuals. To alleviate these problems he suggests changes that would allow more people to participate in farming activities. Coupled with training and other farming techniques such as organic farming, water harvesting and irrigation development, the chances of attaining food security could be increased.

ENVIRONMENTAL CONSERVATION AT WORK

Florent J. Feulefack from Forest-Tree and Environment Club (FOTEC) in Cameroon has written to share FOTEC's experiences on the environmental conservation work which the club is carrying out in Kumba, South West province.

"FOTEC is an environmental education conservation club that seeks to preserve nature. The Club has branches in various secondary schools in the South West province of Cameroon. Activities carried out by the club include technical and cultural activities; creation of school forests (arboretums), afforestation campaigns and nursery making.

So far many timber and wild fruit trees have been planted. Tree species planted to date include: Antrocaryon klaineianum, Lophira alata, Entandrophragma angolense, Baillonella toxisperma, Afzelia africana, Cola lepidota, Trichosypha acuminata and Tetrapleura tetraptera."

South Africa's experience of agricultural transformation

When I was requested to make an editorial contribution to your publication, I leapt at the chance. I view this as the platform through which our country and the rest of the world could share the exciting times which we are living through around agriculture and rural development. After having tried for almost three and a half years now, the international community might be interested to know about the outcome of our efforts in trying to transform the agricultural sector.

I begin this article by looking at the situation in retrospect. From this I move on to policy processes that we had to undertake in our effort to improve on the undesirable situation of the past. I will then give you a few examples of our real achievements during the three and a half years we have been trying. I conclude by discussing our vision for further development and expansion of the sector and potential impediments, both human made and natural.

The present National Department of Agriculture inherited not less than ten departments that were fragmented across the country. They originated from past policies of the discredited, now defunct homeland administrative system. In real terms the so-called departments consisted of a well developed commercial sector that heavily relied on state subsidies for survival and sustainability. (As of December 1996 total debt of this sector to the State and other lenders was R17 billion). On the other extreme we had non-developed, forgotten and neglected largely peasant sub-farming sector. Sadly, the latter sustained and supported more than 80% of the population. Despite its potential to thrive, there was clear unwillingness by authorities of the day to invest in it. The result was that food security in those areas was drastically undermined. The people there remained poor, and became a net importer of food which, given the opportunity, they could quite easily produce for both consumption and commercial purposes.

Taking all the relevant factors into account-positive as well as negative, we had to emerge with a new vision of agriculture that promoted and addressed the interests of all those willing to farm, and who could do so productively and profitably. Our White Paper on Agriculture, a document which is a product of a long, consultative process presents that vision thus:

"A highly efficient and economically viable market-directed farming sector, characterized by a wide range of farm-sizes, which will be

regarded as the economic and social pivot of rural South Africa and which will influence the rest of the economy and society."

As I have pointed out earlier on, we had two distinct groups of farmers - one largely white, well developed and heavily reliant on State subsidies, either directly or through other statutory instruments. The other group was exactly the reverse. So naturally, this vision posed challenges to the sector concerning the managing of potentially conflicting requirements by these different kinds of farmers. To accomplish this vision, six critical agricultural policy goals had to be pursued. For the purpose of this article I will list only two that in my opinion have a direct bearing on the activities of the small-scale emerging farmers:

The broadening of access to agriculture via land reform should be enhanced by adequate agricultural policy instruments, and supported by means of the provisions of appropriate services; and

finance systems will have to focus on the resource-poor and beginner farmers, thus enabling them to purchase land and other agricultural inputs.

The process to review the Agricultural Policy started shortly after the birth of the democratic government, and was in four phases. However, it only gathered momentum during the past two years. The first stage in the policy process towards this direction had a special focus on the broadening of access to agriculture - known as 'BATAT'. BATAT was a thrust, a movement aimed at a dramatic shift in thinking, a philosophy that aimed to transform the countryside in an equitable way.

What we needed to do first was to put some of these policy changes into immediate practice. In the area around the provision of finance the National Department established a pilot finance assistance scheme that targets small and emerging farmers. All government had to do was to make the funds available for small to medium-term lending. Based on

Clayton Manjome is the PRO for the Deputy Minister of Agriculture of South Africa. (Views expressed in this article do not necessarily reflect those of the Deputy Minister of the National Department)



the principle that government is not a banker, the administration of the scheme has been largely left in the hands of private agencies. More than 20,000 farmers across the country have already benefited from this pilot scheme.

There are also initiatives in place designed to address the long-term financial needs of the emerging and small-scale farmers. These too, were a result of consultation that looked into alternative ways of financing agriculture with the potential to address the disparities of the past. The first step we took was to abolish the Agricultural Credit Board. The Board, as its name suggested, was mainly sustained through direct state support and involvement in almost all the key aspects of its operation and management. The second was to establish what we see as a creditable, small producer-friendly financial institution called the Land and Agricultural Bank.

This coming year the bank is set to launch a number of new products to offer emerging farmers. These will include new savings schemes, a risk insurance fund, a discount bonus and, most importantly, a more flexible criteria in the assessment of loans.

Although we have seen successes in many instances as a direct result of our policy shift, the dry spell that had been forecast to prevail for the 1997/98 season is likely to curtail even some of the handsome progress so far achieved.

South African farmers, have been taking precautionary measures to effectively deal with a possible drought. Some advice being given to small emerging farmers is to spread the risk by diversifying their crop base or shifting into other agri-business ventures on which they could fall back in times of droughts or other forms of disaster.

The views expressed are those of the author and do not necessarily reflect those of CTA

Geographic Information Systems as tools for rural development in sub-Saharan Africa

a CTA/ITC international seminar, 23 - 26 September 1997, Enschede, The Netherlands



Photo: Elisabeth Toe

Since the early 1990s there has been a remarkable increase in the number of potential Remote Sensing (RS) and Geographic Information Systems (GIS) applications in sub-Saharan Africa, from desertification and bushfire monitoring to food supply early warning systems and water resource management. However, organizations work-

ing at the local level in rural development can be hesitant to use the new tools and often consider RS/GIS to be merely a tool for top-down planning, and one which is incompatible with the need for participatory forms in rural development.

Together with the Netherlands-based ITC (the International Institute for Aerospace Sur-

vey and Earth Sciences), CTA organized an international seminar on GIS with three objectives:

to explore the general potential of GIS as information tools for decision making processes in agricultural and rural development;

to identify the information needs of decision makers and to assess the relevance of GIS for meeting them; and

to explore the potential of GIS as a tool for local level development planning.

Participants came from ten sub-Saharan countries and represented the public and the private sectors, such as governmental institutions at national and subnational level, non-governmental organizations and grass-root organizations such as farmers' associations. During the four days of the meeting GIS potentials were explored, information needs were identified and the relevance of GIS for local level planning was ascertained. Participants were motivated to share many of their country experiences and a broad range of country experiences emerged. The difficult balance between GIS content, its application and management was evident throughout the seminar.

The seminar succeeded in reaffirming to the current GIS users that their future contribution to sustainable sub-Saharan agricultural development will be of growing importance. While evaluating the cost : benefit ratio of GIS, the participants stressed the point that not using GIS also has a cost if decisions are not sufficiently knowledge-based. Through the publication of the summary report and the proceedings, and other appropriate means, CTA will continue to support participants and their local networks of partners in these efforts.

The contribution of mechanization to sustainable agricultural development

From 24- 29 November 1997, CTA organized an international seminar in Ouagadougou, Burkina Faso, on the integration of mechanization in sustainable agricultural development policy in sub-Saharan Africa. The seminar was attended by 60 participants from 19 African countries and several European institutions and follows a study on the effects of mechanization in Africa, which has recently been published by CTA.

Before the official opening by Burkina Faso's Minister of Agriculture, there was an opportunity for different groups of participants (scientists, extensionists, agricultural equipment manufacturers and suppliers and representatives of farmer associations) to meet for a day and express their own views on what the outcome of the seminar should be. After several presentations, including an historical resumé of agricultural mechanization projects in Burkina Faso, the work of the seminar was

grouped into three themes that had been identified by the study:

mechanization programmes within the context of liberalization

the place of mechanization in agricultural development

the role of professional organizations in the mechanization and evolution of rural society.

Participants then visited blacksmiths and other artisans making agricultural equipment and also farmers who used this equipment. Visits were made to 18 businesses within the environs of Ouagadougou and the information gathered (usually following discussions in local languages with translation into French and English) served to identify further themes for the the working groups which formed the second part of the seminar proceedings:

the respective roles of the State and private sector in sustainable mechanization

action and specific programmes as a function of agro-ecological and socio economic conditions



Photo: CTA

the perspective from the point of view of private enterprise.

Participants drew up recommendations for the attention of governments, international institutions and donors, private sector and professional organizations of artisans and makers of equipment, support organizations and national and international networks. CTA will bring this information to the attention of the public by publishing a full account of the seminar as well as a summary report.

Improving marketing skills

Within the present context of economic liberalization and open competition, previously State-protected producer organizations are having to review their commercial policies and adopt a more market-oriented outlook. NGOs and other organizations are being set up in order to help them become more effective economically.

CTA and the International Labour Organization co-organized a workshop in Bamako, Mali, from 3-7 November 1997 for 26 representatives of producer and supporting organi-

zations from nine francophone countries in West Africa.*This was an opportunity to exchange experiences in marketing agricultural produce and discuss how commercial operations can be improved.

Five themes were addressed by the workshop: the macro-economic environment; the production chain; pricing policy; information; and marketing. Financial, technical and structural successes and failures were examined in four case studies of producer organizations whose representatives also participated in the workshop. These included small and medium-

sized cooperatives operating at local and national level and a multinational exporting organization operating at sub-regional level.

Workshop participants recommended that the structural, technical and financial capacity of producer organizations should be strengthened and they underlined the importance of professionalism and transparency. They also highlighted as priorities the need for information to be available and circulated, and for inter-regional exchanges to be encouraged.

(* Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Mauritania, Niger and Senegal.

CTA publications

A field guide for on-farm experimentation

On-farm research has become an integral part of the work of most national and international research institutes. However, many researchers remain unfamiliar with the techniques available to enable them to draw reliable conclusions from on-farm trials. In the circumstances it was thought necessary to bring out a new edition, completely revised and updated, of the manual previously titled *A field guide for on-farm research*. The book emphasises the experimental aspects of on-farm research, which should help on-farm researchers to arrive at solid conclusions, taking into account, rather than eliminating, variation among farmers.

The book is intended for researchers, university lectures, policy makers and extension service managers.

A field guide for on-farm experimentation by H J W Mutsaers, G K Weber, P Walker and N M Fisher 1997 235pp ISBN 978 131 125 8: credit points 20



Who milks the cow?

This manual presents a wealth of information, suggestions, and individual examples for the gender-and-development approach in projects that involve many different aspects of animal husbandry. Even though the main focus of the manual is women's involvement in the raising of livestock (from bees, guinea pigs and grasscutters, through to pigs, poultry and dairy animals), the methods and procedures compiled can be transferred to many other areas of rural development.

The manual is intended for policy-makers and planners, public organizations and NGO managers.

Who milks the cow? Gender-and-development in livestock farming by Marline Richter 1997 202pp ISBN 3 88085 518 8: credit points 20



Hydrobiological aspects of fisheries in small reservoirs in the Sahel region

This book records the results of eight years of research on small and medium-sized reservoirs in Burkina Faso. The main aim of the work was to study reservoirs which, though originally created for various purposes other than commercial fishing, have progressively come to support this activity as the main source of income for many people.

Research carried out mainly by the International Centre for Living Aquatic Resources Management (ICLARM) led to the development of methods for fish population analysis that are particularly relevant to tropical waters. Surveys of economic and cultural aspects of the various fish exploitation schemes helped to point out the necessity for

understanding the dynamics of fish communities. These surveys also demonstrated that seasonal, small-scale fisheries had a significant impact on the micro-economy of the households involved, especially in periods of severe shortages of income from other sources.

This book provides much information of general interest on small-scale reservoir fisheries. Although it gives particular emphasis to Burkina Faso it also includes a vast collection of literature relevant to any sub-Saharan body of water. The book will be of interest to researchers, university lecturers, policy makers and planners, and public organization and NGO managers.

Hydrobiological aspects of fisheries in small reservoirs in the Sahel region by Etienne Baijot, Jacques Moreau and Sana Bouda 1997 238pp ISBN 92 9081 1382: credit points 80



Advances in cowpea research edited by B B Singh, D R Mohan Raj, K E Dashiell, and L E N Jackai 375 pp ISBN 978 131 110X.

This publication would be of interest to researchers and university lecturers: credit points 80

How to obtain CTA publications?

CTA publications are only available free-of-charge to subscribers to the Publication Distribution Service. Those who submitted application forms will, in due course, receive a response to their application and, if admitted, two publications order forms together with an indication of the number of credit point available.

Credit values have been assigned to all publications on CTA's list. Subscribers can order these publications within the credit points available to them. Order forms must be used; publications can no longer be requested from CTA by other means of communication.

Non-subscribers who apply by letter, fax or email will be sent an application form. Applications will be considered from agricultural and rural development organizations in ACP (Africa, Caribbean and Pacific) Group of States; individuals resident in ACP countries may also apply.

Those who are involved with agricultural and rural development in the ACP States, but who are non-residents, should write to name of booksellers when known.

Ephemeral rivers in the tropics

This report on ephemeral rivers is a conclusion of a research project conducted by the Environmental Policy and Society (EPOS), Linköping University, Sweden. It attempts to link land and water characteristics in dry tropical river basins with appropriate water management approaches.

Various hydrological processes are reviewed and discussed, some methods to measure water flows are outlined, examples are given of runoff collection tech-

niques, and alternative allocation models and their institutional requirements are discussed. Many examples of water management are provided, both from today's practices and from past civilizations.

Ephemeral rivers in the tropics: Hydrological processes and water resources assessment and management by Klas Sandström 1977 90pp ISBN 91 7871 987 9

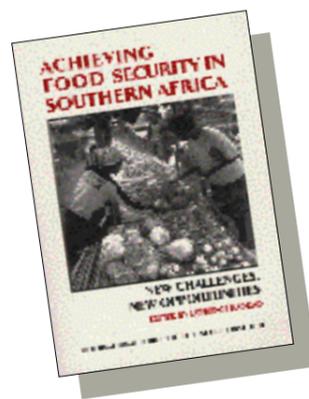
Institute of Tema Research, Linköping University, S-581 83 Linköping, SWEDEN

Achieving food security in southern Africa

The countries of southern Africa are entering a new era. Democratization, peace, and economic liberalization are important precursors to the kind of economic growth that can reduce poverty and raise incomes. Whether such economic growth does occur will depend, in large measure, on policy choices made in the countries of the region, at both the national and the regional levels.

More than at any time in the last 30 years, it will be lack of information and analysis rather than ideology and conflict that will constrain the ability of policy-makers to make choices that bring about poverty reduction and food security, both now and in the future.

This book is a collection of chapters and comments drawn from presentations made at a two-day symposium entitled *Overcoming the challenge of food insecurity in southern Africa*



which was held in Johannesburg in June 1996. They have been revised since the symposium in response to editorial comments and external review.

Achieving food security in southern Africa: new challenges, new opportunities edited by Lawrence Haddad 1997 ISBN 0 89629 338 1

International Food Policy Research Institute, 1200 Seventeenth Street, N W Washington, D C 20036-3006, USA

How European aid works

In this first comparative study of European aid, six donor agencies are critically assessed: Denmark, France, Germany, the Netherlands, the UK and the European Commission (DGVIII). With the focus on aid effectiveness, the agency comparisons cover their political structures, objectives, management and procedures. Questions explored include mechanisms to translate objectives into practice, country

strategic programming, adequacy of personnel and how agencies learn the lessons of experience.

How European aid works: A comparison of management systems and effectiveness by Aidan Cox, John Healey and Antonique Konig 1997 246pp price UKL15.95 ISBN 0 85003 243 1

Overseas Development Institute, Portland House, Stag Place, London SW1E 5DP, UK

Farmers' research in practice

In many parts of the world, farmers are seeking ways to improve their farming systems and to adapt their practices to changing agro-ecological and socio-economic conditions. The contributions to this book show how farmers formulate, adapt and adopt new ideas and innovations. They try them out in different settings, evaluate and assess the results, and make decisions about their potential value for improving the way they farm.

The book examines farmers' innovation through seventeen wide-ranging case studies from around the world. The first part tries to understand how farmers do research; the second part looks at how technical options are added to farmers' experiments; the third part deals with ways to improve the experimental design; and the last part shows how to sustain the process. In the concluding chapter, the editors bring together the lessons learnt, and set out the



future issues and challenges for governmental and non-governmental organizations involved in agricultural development.

Farmers' research in practice: Lessons from the field edited by Laurens van Veldhuizen, Ann Waters-Bayer, Ricardo Ramirez, Debra Johnson and John Thompson 1997 285pp ISBN 1 85339 392 4

IT Publications, 103/105 Southampton Row, London WC1B 4HH, UK

Publishing educational materials in Africa

The economics of publishing educational materials in Africa draws on research data from a wide range of African countries. It examines the vital relationship between educational policy makers and educational publishers. By providing an understanding of the publishing process and the roles of the institutions and people within the publishing market, the authors seek to improve this relationship to the benefit of all.

This book is essential reading for all who care about education and the future economic viability of publishing within Africa. The diverse picture of the publishing scene in Africa which this study portrays, provides an invaluable update of current problems and approaches.

The economics of publishing educational materials in Africa by Walter Bgoya and others, 1997 ISBN 1 901830 02 0 A French edition of this book is available ISBN 1 901830 03 9

Cost effectiveness of publishing education materials in African languages is based on research conducted in five countries in Africa. It breaks new ground on an under-researched aspect of educational policy, by providing case-studies that could be replicated elsewhere in Africa. In order to expand provision of publishing education material in local and national languages, funding, as well as close cooperation between the publishing industries and government agencies, will be needed.

Cost effectiveness of publishing education material in African languages edited by Maureen Woodhall 1997 ISBN 1 901830 00 4. A French edition is also available ISBN 1 901830 01 2

Both books distributed by: African Books Collective Ltd., The Jam Factory, 27 Park End Street, Oxford OX1 1HY, UK

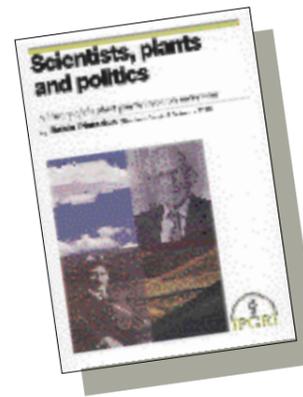
Unless otherwise stated, the books on these two pages are not available from CTA. Readers are advised to write to the publishers for further information.

Scientists, plants and politics

The aim of this book is to describe and analyse the historical background to today's efforts to conserve and use plant genetic resources. It is a tribute to the early pioneers in this field and a record of the actions and debates that have done so much to shape the way the scientific community addresses conservation today. Also reflected are the perspectives of many other individuals around the world who are equally concerned with the maintenance of this priceless genetic heritage.

Scientists, plants and politics: A history of the plant genetic resources movement by Robin Pistorius 1997 134pp ISBN 92 9043 308 6

IPGRI, Viale delle Sette Chiese 142, 00145 Rome, ITALY



Collaboration in international rural development

The theory and practice of rural and international development, particularly in the arena of development collaboration, has changed considerably. Correspondingly, the numbers and diversity of professionals engaged in this field have expanded on a global scale. Against this background, the book provides a wealth of practical information and insights concerning international development. The aim of the book is to enhance the understanding of various critical and emerging issues. What distinguishes it from other books on the subject is that it combines the authors' personal observations with the scholarship and experience of others as reflected in the literature.

The book is organized in four parts, following the introduction. The first two chapters focus on the field of international rural

development and identify current issues and concerns. Part 2 deals with strategic and policy alternatives and focuses on the design of programmes and projects. The next part addresses implementation and administration, while the final chapter offers a challenging but optimistic view of the future of collaboration in international rural development.

Collaboration in international rural development: A practitioner's handbook by George Axinn and Nancy Axinn 1997 336pp ISBN 0 7619 9200 6 hbk price UKL35.00 ISBN 0 7619 9201 4 pbk price UKL12.99 SAGE Publications Ltd., 6 Bonhill Street, London EC2 4PU, UK

ALSO RECEIVED

The Dominican Republic: a country between rain forest and desert, contributions to the ecology of a Caribbean island by Eberhard Bolay 1997 456pp price DM89.70 ISBN 3 8263 1276 X

Margraf Verlag, Postfach 105, 97985 Weikersheim, GERMANY

Agricultural research plans in sub-Saharan Africa by Helen Hambly and Louise Sethwaelo 1997 73pp ISBN 92 9118 033 5

ISNAR, PO Box 93375, 2509 AJ The Hague, THE NETHERLANDS

Planning and priority setting for regional research by Willem Janssen and Ali Kissi 1997 79pp ISBN 92 9118 034 3

ISNAR address as above

Conservation-based forage development for Ethiopia by Alemayehu Mengistu 1997 170pp

Institute for Sustainable Development, PO Box 30231, Addis Ababa, ETHIOPIA

An introduction to agricultural biochemistry by J M Chesworth, T Stuchbury and J R Scaife 1998 490pp ISBN 0 412 64390 1

Chapman & Hall, 2-6 Boundary Road, London SE1 8HN, UK

Molecular tools in plant genetic resources conservation: a guide to the technologies

by A Karp, S Kesovich, K V Bhat, W G Ayad and T Hodgkin 1997 46pp ISBN 92 9043 323 X

IPGRI, Viale delle Sette Chiese 142, 00145 Rome, ITALY

The distribution, uses and potential for development of Moringa oleifera in Malawi

by Claire Coote, Martin Stewart and Charles Bonongwe 1997 40pp

Forestry Research Institute of Malawi, PO Box 270, Zomba, MALAWI

Quarantine pests for Europe (second edition) prepared by CABI and EPPO 1997

1425pp ISBN 0 85199 154 8

CAB International Publishing Division, Wallingford, Oxon OX10 8DE, UK

Seed health testing: progress towards the 21st Century edited by J D Hutchins and J C Reeves 1997 288pp price UKL49.95 ISBN 0 85199 1793

CABI address as above

Postharvest physiology and storage of tropical and subtropical fruits by Sisir Mitra 1997

448pp price UKL65.00 ISBN 0 851992102

CABI address as above

PROCEEDINGS

Governance and development in West Africa: perspectives for the 21st century is the proceedings of a workshop held from 17-20 June, 1996 in Accra, Ghana edited by Anthony E Ipiki and Joseph K Olayemi 1997 280pp ISBN 1 57360 008 3

Winrock International Institute for Agricultural Development, 1611 N Kent Street, Arlington, VA 22209, USA

Lethal yellowing-like diseases of coconut is the proceedings of a workshop held in November 1995 in Elmina, Ghana edited by S J Eden-Green and F Ofori 1997 308pp price UKL35.00 ISBN 0 85954 488 5

Natural Resources Institute, The University of Greenwich, Central Avenue, Chatham Maritime, Kent ME4 4TB, UK

Natural Resources Group - ODI

The UK-based Overseas Development Institute (ODI) is an independent non-governmental centre for the study of development and humanitarian issues facing developing countries. The Institute is engaged in a wide range of policy-based research centred around the following groups: Natural Resources, Human Security and Development, and International Economic Development. There are also networks linking research to practitioners in Agricultural Research and Extension, Rural Development Forestry, and Relief and Rehabilitation.

ODI's Natural Resources Group (NRG) includes both social and natural scientists. It conducts interdisciplinary research, in collaboration with southern partners, oriented towards the development of a more sustainable relationship between natural resources and rural livelihoods. Two broad kinds of research are undertaken: research to generate new knowledge or methodologies at the local level, and policy and institutions research at national and international level.

The NRG comprises four programmes:

- Agricultural Institutions and Technology Change
- Environmental Economics and Policy
- Seeds and Biodiversity
- Forestry

The Agricultural Institutions and Technology Change programme generates and disseminates policy advice on ways of increasing the effectiveness, efficiency and accountability of resource management and agricultural service delivery. Also included under the programme are the publications of the *Natural Resource Perspectives* and the *Agricultural Research and Extension Network (AgREN)* series.

The core focus of the Environmental Economics and Policy programme is the use of economics in the analysis of environmental problems and in the formulation of environmental policy.

The Seeds and Biodiversity programme is concerned with the security, diversity and equity of seed systems. It focuses on the maintenance and enhancement of crop genetic resources; the participation of farmers in crop varietal improvement; the policy and planning requirements for national seed security; and the institutional conditions for seed system development.

The Forestry programme addresses the importance of tropical forests and trees for local livelihoods, often in the context of competing national and international interest in the same resource. It takes it as self-evident that sustainability and equity are profoundly inter-related. The programme's multidisciplinary team conducts research on forestry issues in the tropics; provides policy and institutional

advice to international and national donors and NGOs; and is committed to a wide range of information-exchange and dissemination activities. The programme focuses above all on comparative research as its contribution to the international forestry debate.

Two networks, the Agricultural Research and Extension Network and the Rural Development Forestry Network are important components of the NRG's dissemination programme. They aim to increase the information flow between practitioners, researchers and policy-makers. The NRG also contributes towards ODI *Working Papers* and *Briefing Papers*. Other NRG publications include *Forestry Study Guides* and an *EU Tropical Forestry Sourcebook*. The

Natural Resource Perspectives Papers and *Briefing Papers* can be seen on the ODI Website (see below).

The individual programmes within the NRG can be contacted by email:

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Forestry: forestry@odi.org.uk

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