



<i>Energising agriculture They never said it would be easy</i>	1
<i>Agricultural productivity Clod by clod, drop by drop</i>	3
<i>Agriculture and trade negotiations Tough talk, tougher targets</i>	4
IN BRIEF	6
LINKS	10
PUBLICATIONS	11
BETWEEN US	14
VIEWPOINT <i>Wastewater irrigation No water to waste, not even wastewater</i>	16

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Photo Pierre-Yves Le Gall - Cirad



In this issue

The number 101 is sometimes used in educational circles to describe the elementary aspects of the subject in hand, a sort of starter's lesson. Not so with this issue of *Spore* 101. Of course, we always have a link with the basics, so that whoever is reading about a subject for the first time can, as it were, climb on board and join others more familiar with it. We also try to explain the more complex without making it banal, and to make connections that are sometimes overlooked. Take this issue with its lead article on 'Energising agriculture'. We never have thematic numbers, but in fact this entire issue is – like every other – about focusing our energies in agriculture. New trends in research and in joining world markets are discussed: there are dozens of articles about practices, breakthroughs, initiatives and new publications. And your questions about CTA services are answered. Which leaves us all plenty of questions to ask and answer, about energising agriculture, in the issues to come. Read this one first.

Energising agriculture

They never said it would be easy

Is agriculture a way of life, or a way of living? Treated by outsiders as a quaint backwater, abandoned by insiders as a lost cause, it is running itself into the ground. Time for some plain talking about who runs where, and what, next.

Among the programmes now being carefully crafted for new economic partnerships in African, Caribbean, Pacific and other developing regions, one of the recurring questions is "How can we energise our agriculture?". It is as if agriculture is slipping away from its dictionary definition as "the science, the art and the business of cultivating the soil, producing crops and raising livestock". Instead, it seems to be slipping towards seeing itself, and being seen, as a rustic backwater far from any motor of progress.

Farming is one of the world's oldest professions. The time when people clearly made the switch to growing food rather than hunting and gathering it is generally thought to have been about 14,000 years

ago. The place? In the area of Mesopotamia, near the confluence of the Euphrates and Tigris rivers in Iraq. Other civilisations have followed to the present day in that region, but it is interesting to note the reason for the decline of the first agricultural civilisation: salination of the soils through uncontrolled irrigation.

That salination problem was just the first of many setbacks, between leaps forward, in the long history of agriculture. There have been significant others: the land seizures in Europe and the introduction of rinderpest in eastern Africa, both in the 19th century, and the man-made environmental disaster of America's dust bowls in the 1930s, to name but three. And now, in many ACP countries, there is a downward

spiral underway in agriculture, dire enough for even conservative observers to use the more cautious word 'stagnation'.

Decay, decline, whatever next?

How could it be that more than half of all ACP countries, including most countries in Africa, the world's most fertile continent, are now net importers of foodstuffs, not just in years of exceptional disaster but every year? Even the term 'subsistence agriculture' has lost its meaning, since few of these farmers, mainly women, can subsist on their farming alone.

There is no end to the list of 'external factors', the beloved pretexts of politicians. And, to be sure, they all play their part in the depression of much ACP agriculture. Take the collapse of support mechanisms such as marketing boards and extension services, accelerated by structural adjustment programmes. And for the past decade the wave of globalisation has been eroding the walls that have long protected local agriculture from distant economic realities. Equally predictable have been the development-provoked environmental changes which are exacerbating the natural process of climate change. Less predictable have been the changes in health factors, most notably with HIV/AIDS changing the demographics of agricultural labour. There are also more local and more soluble problems which require only human intervention – reforms in land ownership, redistribution of rights by gender; access to land, capital, credit and technology.

Dynamism, with a focus

Enough of this doom agriculture! The way forward is not built on the debris of broken promises or broken dreams. It is built on a determination to regroup, recharge and, above all, renew. The tried-and-tested



Photo: Guy Jituhui - Cifad

It always comes down to training. Sharp, focussed minds will find the way to the future.

route to 'renewal' – in an economy with symptoms of decline, in a cultural mindset that has frozen, or even in an organisation – is to give it a jolt, a kick-start. Inject energy into the situation of decay, and shake up local elements to such an extent that they will re-discover their dynamism, and create new forms of it.

This injection of energy can go wrong, or right. Many planners and politicians have a naïve reflationist tendency to throw money and projects at a depressed area. These strategies often do not stick.

Many aspects of a depressed economy or a stagnant mindset relate to attitudinal problems: people actually talk themselves into a no-win frame of mind, and create their own process of decline. The phenomenon of rural-urban drift in its simplest form, for example, is one of the clearest expressions of this. Yet attitudes can be changed in time, as various projects in, for example, Senegal, Jamaica and Tanzania to encourage young farmers to keep farming in troubled times have shown.

Other aspects are less easy to change. Perhaps the circumstances which once created agricultural dynamism no longer apply. Obvious examples are drastic changes in supply or demand caused by lower yields due to climate change; the exhaustion of natural resources; the devastation of crops or livestock through disease; and changes in consumer tastes, often created by suppliers of alternative products or the collapse of delivery systems for energy and agricultural inputs. With these, no amount of intervention can bring back the good old times. What counts is a calculation of where energy will have a good change of success.

Well-placed kicks

A well-placed injection can work, releasing as well as creating energy. For most energising strategies in ACP agriculture, two major thrusts are required – infrastructural and institutional – which can help the emergence of new attitudes.

The infrastructural thrust recognises that isolation from markets, and the loneliness it breeds, is a great barrier to even the most enterprising efforts. To remove, or at least reduce, isolation is often an issue of physical infrastructure, a question of repairing, installing and properly maintaining transport links: feeder roads, bridges ... Their sustainability is often a matter of quality control in the original phase, followed by organisation and ownership. Want – as a policy-maker or donor – to help farmers? Build that road.

Infrastructural investment also needs to focus on the 'Information Superhighway', to revive a long-forgotten term. One of its original promises was that it would change the nature of distance, making isolation a thing of the past. A decade or two of experience later, it is now painfully evident that the availability of sustainable information and communication technology (ICT) systems must be an integral part of rural development strategies. Want – as a policy-maker or investor – to help farmers some more? Build and maintain that telecommunications network.

Step in, farmers' organisations

Even if the greatest financial investment in energising agriculture has to be made in infrastructure, and has to come in part from the international community, it is through sound investment in institutions that the greatest and most enduring impact will be achieved. Against the backdrop of the decentralisation of power in many countries, and the decimation and withdrawal of State services and institutions, we are witnessing the fascinating emergence of farmers' organisations, and their federations. Their quintessential role is both simple and awesomely complex. It is to assume a large part of the responsibility for helping rural communities to govern their own lives, socially, culturally and economically. In the absence of other stakeholders who have withdrawn to the city, or who have yet to emerge in the countryside, it is farmers' organisations which will be the most significant rural body in many a developing country for the next decade or two. They will take on for the rural world of the 21st century a role as important as that of the trade union and cooperative movements for the industrial world in 19th century Europe – not only organising to gain basic rights, but also operating trading, finance, social, welfare and educational systems.

In this process, there has to be a place for institutions which can unleash the entrepreneurial energy and the attitudinal change of many farmers, rather than only reinforce their indigenous knowledge. The South African notion of the 'emerging farmer' is a replicable one: moving from subsistence to commercial operations. Credit systems, business development services, results-driven training and extension services, market-oriented programmes, enterprise boards, properly run chambers of agriculture – all these require a stable and representative environment. And here, then, lies the challenge for the federations of farmers' organisations which have to create these facilities, if not dominate them. They can choose to be so sensitive to the conservative aspects of rural life that they in fact act as a brake on the energetic leap forward which is now needed. Or they can, alongside their many other tasks, also recognise their role as a motor and an accelerator. Sparks will fly, no doubt, and so, in a certain way, they should.

To energise and revive agriculture and depressed rural areas requires well-focussed approaches:

- careful analysis of risks and prospects of sustainable conditions;
- realistic assessment of chances for reforming access to land, capital and technology;
- investment in infrastructure;
- sound, stable and yet renewing organisations.

Agricultural productivity

Clod by clod, drop by drop

All these increases in crop yields that we need to make, where will they come from? Mud, sweat and tears, and selected inputs, for starters. Plus lots more tweaking of what we can do with soil and water.

Remember that bone-shuddering statistic in *Spore** in 2000, that food productivity in some cassava-consuming areas had to increase by 717% to meet regional food needs by the year 2050? Taken from projections prepared for the World Food Summit of 1996, and allowing for changes in diet and consumption patterns, it illustrates the extreme of what is meant by 'feeding the world'.

It is so daunting a target that it stuns most people at first, their silence blurring into incredulity. "There must be some mistake, surely?". "You can't just conjure gains like that out of thin air."

Leaping frogs

Such figures are being thrown around more and more in policy circles, as if agricultural planning has become one of those musical games where people throw a package from one to another in a circle and, when the music stops, the loser is the last person to have caught it, and everyone else wins because they threw it on in time. Some planning!

The increases do look like massive steps forward, and they are often called 'leapfrogging'. In fact, the required increase of 717% is perhaps less drastic, like all problems, when examined in parts. It translates into an increase of 'only' 3.8% year in, year out. In other areas, such as the sorghum- and millet-consuming Sahel, where over the same period productivity has to increase by 480%, the annual increase is below 3%. It almost begins to look attainable.

But year in, year out means a challenge for the research community: ongoing advances in research, ongoing maintenance and improvement of soil fertility, steady increases in water savings, not to mention allowing for changes in climate and advances in crop protection. All this leaves aside the issues on the other side of the coin: the actual availability of food in terms of presence in the market, and the purchasing power of people to meet their needs.

* see *Spore* 84, special Millennium supplement, page 10

The attraction of drip irrigation is growing fast

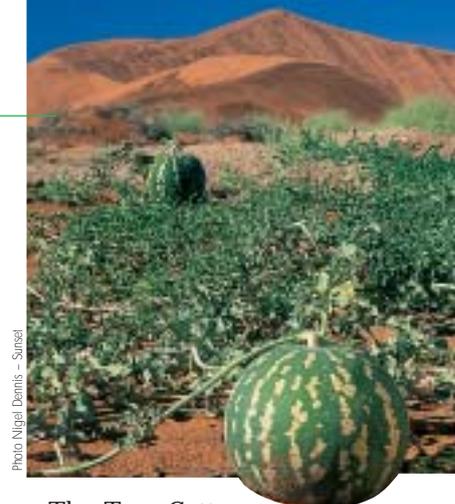


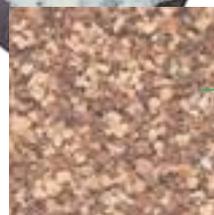
Photo: Nigel Dennis - Sunset

The Terra-Cottem product, the result of long research in Belgium with an eye to applications in the South, is similar in terms of characteristics, process and uses. "The product is specially suited for use in degraded or problematic soils and root zones with little capillarity (ability of the plant to capture water), eg. sandy soils, containers, pots, industrial or municipal areas where little or no maintenance (irrigation, fertilisation, soil treatment) is performed, and to improve the quality and performance of growing media.", says its creator.

There are many other similar products at the research and development stage elsewhere in the world, several in ACP centres. (If you are working on this, why not write to *Spore?* – see page 15). Similar directions are being taken by researchers in such sectors as drip irrigation – to be covered soon in *Spore* – where massive water savings can be gained. What is especially interesting about the Aqua-Soil and Terra-Cottem products is that they were both conceived in public sector university research and then successfully launched into private sector enterprises. This enables these enterprises to operate in those sectors where they cannot expect any immediate return, such as in South Africa's market of emerging farmers or, in the case of the not-for-profit body set up by Terra-Cottem in northern Burkina Faso. But they have understood what more research bodies should be doing: where there is a need, such as the need for a substantial increase in productivity, there is, some way down the dusty road, a market.

☞ Aqua-Soil — PO Box 74794
Lynnwood Ridge 0040, South Africa
Fax: +27 12 346 6048
Email: info@aquasoil.co.za
Website: www.aquasoil.co.za

☞ TerraCottem International
4 Melbray Mews
Hurlingham Road
London SW6 3NS, UK
Fax: +44 20 7384 4031
Email: info@terracottem.com
Website:
www.terracottem.com



Amending poor soils with additives is like darning a worn-out sock. It has a strengthening effect.

First amend your soils

The smart talk in agricultural planning is also simple talk. Apart from some rather too obvious calls for the redistribution of food through changing the West's consumption patterns, the key advances are going to have to come mainly in two areas: soil fertility and drought resistance. Those, in a nutshell, were the recommendations put forward to the United Nations' International Panel on Climate Change, held in the Indian capital of New Delhi in October 2002.

The trick for any researcher is to achieve advances which combine two or more benefits. At present, many researchers are converging on a technology called 'soil amendment' which aims to improve both soil fertility and drought resistance. The latter results from better retention of water in the soil around the plant, rather than through any inherent improvement in the ability of the plant to retain water – that is another important focus for research.

Two research teams, one South African, the other Belgian, have recently and independently brought their separate work on soil amendment to a conclusion. Both approaches are based on the use of polymers, which are very loose structures of molecules – imagine a network of very thin fibres linked up, rather like a mini-fishing net or a hair net. In the soil amendment process, a blend of nutrients and polymers is introduced into the soil, where it forms a substance which can store water and nutrients, in some cases up to 300 times its own volume, and slowly releases them into the soil.

The South African version of the technology, marketed as Aqua-Soil, forms a reservoir of water and nutrients which a plant can use on demand, as and when its growing requirements dictate. Aqua-Soil claims to cut down on the need for watering, increases the retentive capacity of soil for a 5-year period, and reduces evaporation, runoff and leaching. After 5 years its efficacy fades; it breaks down into its component parts of carbon dioxide, water, potassium and nitrogen, and has no residual toxicity.

Tough talk, tougher targets

With the Cotonou Agreement having to be shoe-horned into the rules of the World Trade Organisation (WTO), it's hard for ACP countries to know which way to turn. They have to unravel complex topics, forge negotiating strategies and harmonise their positions. A lot is at stake, no less than their producers' share of internal and world markets. A guide to the rules of engagement.



Photo: Cliford



Photo: Jeremy Heasley - Panos Pictures



Photo: Cliford

For most ACP countries, agricultural trade is vital: it is still the main source of foreign currency, although its share of world trade has shrunk continuously over the past three decades. Whereas 30 years ago, the European Union – the major customer of ACP countries – sourced 8% of imports from them, now it is a mere 3%. This is despite the system of preferences which the EU has been giving to imports from ACP countries, in the form of lower import duties than those imposed on non-ACP countries.

What lies behind this shrinking market share? Simple enough: world prices have followed a downward trend for ages, as has world demand for primary products. Against this background, almost three-quarters of the agricultural exports of ACP countries are made up of just 10 primary products. Top of the list is the trio of 'tropical drinks' (cocoa, coffee and tea) which represent about 32% of Africa's agricultural exports; for the Caribbean and Pacific regions, with cotton and tobacco accounting for 19%; in the Pacific, sugar accounts for 13% of the exports of the Caribbean and Pacific regions. At the same time, ACP countries have not been able to take full

advantage of the commercial preferences granted to them; most have even become net importers of food products.

Free trade, free competition

This was the situation facing ACP countries when the liberalisation of world trade in agricultural products got underway in the 1990s. In 1994, the WTO's Agreement on Agriculture (AoA) was signed at the end of the Uruguay Round which had regulated world trade. It required, for the first time, that countries remove such trade barriers as

From the Uruguay Round to coloured boxes

A major achievement of the so-called Uruguay Round (the round of world trade negotiations from the mid-1980s to the mid-1990s which led to the formation of the World Trade Organisation) was the Agreement on Agriculture (AoA). The AoA aimed at three sets of reductions: the levels of customs duties, internal support mechanisms and export subsidies. Coming into effect in 1995, the AoA was to be implemented by developed countries within 6 years and by developing countries within 12 years.

In fact, the developed countries reduced the level of their customs levies by 36% on average. For internal support to domestic agriculture, three categories were created, and they have become known as 'boxes'. In the 'orange box' of direct subsidies to prices and production, reductions by developed countries have averaged 20%. The 'green box' contains public subsidies which are not linked to the price or production of a specific product, but to an overall sector (such as environment) or programme (such as research). In the 'blue box' we find public subsidies which support restrictions on production levels.

As far as export subsidies are concerned, developed countries had to reduce their support to agricultural exports by 36%, in terms of the amount of subsidies paid, and by 21% for the volume of subsidised exports. As a general rule, developing countries had targets about two-thirds of the levels applicable to developed countries. The least-developed countries were exempted from the three areas covered by the AoA.

The actual implementation of the AoA has not always been convincing, since the accepted formulas for calculating reductions gave countries too much leeway in choosing which customs duties to reduce and what level of support to maintain.

The challenges for the Cotonou Agreement

When the Cotonou Agreement was signed in Benin in 2000, it brought a profound change to the scheme of preferential trade rules which the EU had applied to ACP countries since 1975 under the four successive Lomé Conventions covering the period 1975–2000. Under Cotonou, new Economic Partnership Agreements (EPAs) must be signed between the EU and ACP countries in the year 2008. These EPAs will provide for free reciprocal trade exchanges, compatible with WTO rules. Non-reciprocity will continue to apply for least-developed countries.

At the dawn of these negotiations, it is important to have a clear understanding of the various elements of the negotiating mandate of the EU:

- accompanying measures defining how development problems (such as restrictions in supply, and adjustments in fiscal policy) should be taken into account;
- alternatives to the EPA for non-signatories of the EPA;
- agreeing on a timetable; the European Commission is aiming at regional-level negotiations as from January 2004, whereas the ACP countries appear to be aiming first at overall negotiations before moving to the regional level, thus pushing back the date of regional consultations;
- the future of the protocols, or 'house-rules', guiding the conduct of EU-ACP exchanges;
- the possible impact of the EU's Common Agricultural Policy and the revised rules of origin which define whether or not a product is indeed of ACP origin;
- the issue of compatibility with WTO rules with regard to the revision of Article XXIV defining the position of customs unions and other special trading arrangements;
- the "Everything But Arms" initiative, which allows the least-developed countries free access for all products except armaments, but brings into question the need for them to sign the EPAs.

From the perspective of ACP countries, it is crucial that negotiations be expanded to include aid issues, in order to allow for the accompanying measures and any adjustments which may be needed in the transition from a non-reciprocal to a reciprocal agreement.

quotas and import restrictions, as well as reduce customs duties, internal support mechanisms and subsidies on agricultural exports (see box on Uruguay round).

From the perspective of ACP countries, what were the consequences? Before the AoA was implemented, it had been predicted that ACP countries would meet stiff competition in the world market and see net losses in export earnings of 1.3% in 2001 and 1.7% in 2005. In the European market, they were to see, from 1996 to 2000, a reduction of 16% of the preferential margin they had enjoyed, this being the difference between the level of customs duties on their products (often set at 0%) and on products from non-ACP countries. This erosion of the margin covered tropical drinks and beef mainly.

No assessment has been made of the actual effects since the AoA came into force. Some case studies have, however, pointed to a deterioration of developing countries' agricultural trade. Furthermore, buffeted by sudden shifts in world prices and by growth in imports, they have been hard put to keep their domestic markets stable.

In September 2002, the EU and the Group of ACP countries started to negotiate new Economic Partnership Agreements (EPA) which will radically change their trading relations. The nub is that, to be compatible with the WTO, the EPAs are introducing the principle of reciprocity. This means that products from the EU will enjoy the same low or zero-level duties in ACP markets as ACP products will in the European market. For ACP countries to open up their markets in this way could well lead to a loss of customs revenue and increased competition between domestic and European producers in their national markets.

Parallel to these ACP-EU discussions, negotiations have resumed in the WTO. There, each time the EU lowers or removes its trade barriers to conform to the multilateral framework, the relative value of EU preferences for ACP countries is eroded.

The same rules for everyone?

When the first 6-year period of the AoA ended in 2000, new negotiations began in the WTO to continue the reduction of customs duties, internal support and export subsidies. The goals of the negotiations were agreed at the Ministerial Conference held in Doha, Qatar, in November 2001.

During the first phase of the WTO negotiations, from February 2000 to November 2001, two tendencies emerged. One group of countries, led by the United States of America, wanted to apply the same trading rules to agriculture as to other sectors. Another group (EU, Japan, Norway) felt that agriculture should enjoy certain exceptions in view of the value of its non-trading aspects, particularly with regard to rural development and the environment. As for the developing countries, their prime wish was to have a more effective arrangement for Special and Differentiated Treatment (SDT) which is an integral part of the AoA. In the area of food security, for example, they could be exempt from reductions on certain products; this is the so-called proposed 'development box'. They also want better access to developed country markets so as to benefit more from the opportunities of liberalised trade. This would require eliminating the highest trade tariffs ('peak tariffs') and using progressive duties whereby higher rates are applied to processed goods than to primary or raw materials.

The 54 ACP country members of the WTO were spread around in various working groups in these negotiations. The African group pushed for the SDT to be extended to non-trade issues such as lower customs duties for the least-developed countries, and more technical and financial assistance. Mauritius and the Caribbean countries, forming the group of small island developing states, emphasised their geographical vulnerability and pushed for exemption from their obligations in the event of a natural disaster.

The discussions on SDT and non-trade issues grew more intensive when the second phase of the negotiations started in February 2002. The developed countries and some developing countries want to avoid any semblance of a two-track agreement, and to apply the same basic rules to all members, with some more flexible transitional measures for developing countries. The area of non-trade issues is more fraught with difficulty: should they hold solely for developing countries or should they, as proposed by the EU, Japan and Norway, also apply to developing countries? And how should they be handled? The general line

seems to be that they should be discussed within a redefined 'green box'. Care would have to be taken to ensure that the non-trade concerns of some do not become the trade concerns of others.

The third and final phase of the negotiations, surely the most difficult, is to put figures to these discussions and draw up specific rules. These will be needed for setting out the initial lists of commitments by WTO member states in March 2003.



Photo: Claudi



Photo: Inyane Boshad - Panos Pictures



Photo: Claudi

Far from the geopolitics of world trade, unseen and unheard on the trading floors of commodity exchanges, producers and small traders feel the pinch when all they want to feel are a few more pennies in their pocket.

Choosing a strategy

The special space wanted by ACP countries is to be able to have clearly defined objectives and more help in becoming integrated. They have to negotiate with the WTO whilst keeping their aim firmly on the EU. They need better access to agricultural – and thus European – markets for those products which currently attract high duties and have good export potential (such as temperate zone products). The crux of the matter is that, at the multilateral level, more openings to the European market mean more competition from non-ACP countries. In addition, given the vulnerability of their agriculture to external forces, the ACP countries need more flexibility within the SDT. That flexibility should include longer periods of transition to the new agreements and, in the case of so-called sensitive areas such as staple food crops, case-by-case protection.

Step-by-step: the WTO agriculture negotiations

February 2000: draw up proposals for negotiations.

March 2001: more technical discussions start on specific topics.

November 2001: in Doha, Qatar, the Third Ministerial Conference, drawing on the work of the Agriculture Committee, determines the goals of the agreement and the schedule.

March 2002: the working programme is drawn up.

March 2003: working methods will be established to help countries formulate their commitments. Meetings will be held in three blocks: 17–19 June for export subsidies, competition and restrictions; 2–3 September for access to markets; and 23–25 September for internal support.

End 2003: Mexico, Fifth Ministerial Conference: countries' provisional commitments.

1 January 2005: Sixth Ministerial Conference: end of all negotiations in all areas; final commitments made on agriculture.

Not a completely happy ending

■ The Montpellier Forum on Rural Development Cooperation, held in France in early September 2002, brought together 200 European rural development and livelihood specialists, and a good number of Southern partners from Africa, Asia and the Americas. The latter spared no punches in their analysis of the North-South cooperation to which their Northern partners aspire.

One channel to ensure ACP input into the debate was the electronic forum run by the French NGO Inter-Réseaux for CTA. More a collection of fascinating articles than an actual discussion, it had a healthy level of participation, at least amongst those finally invited to join in. Not so for frustrated *Spore* readers, who were twice told, in *Spore* 98 and 99, incorrect information about the forum's open nature, and how to join it. The editorial team apologises most sincerely, having now learned that no information source is by definition impeccable. Sorry.

A dazzling disk

■ What finally won women over to line up to visit the famous community telecentre in Nakaseke in Uganda? A CD-ROM disk with market and price information about the products they sell. One woman is paid to train the others in computer skills. Now plans are under way for a CD-ROM on HIV/AIDS. The original disk, *Rural Women in Africa: Ideas for Earning Money*, published in 2001 by the International Women's Tribune Centre, provides practical farming information and includes spoken segments.

In Luganda:
www.iwtc.org/luganda.html

In English:
www.iwtc.org/files/!start.html

IWTC
777 United Nations Plaza
New York, NY 10017, USA
Fax: +1 212 661 27 04
Email: wink@womenink.org

What's that smell?

■ A 3-year organic integrated pest management (IPM) project, started in early 2002 in Ethiopia's Amhara region by Save the Children (UK) with EU funds, is already reaping rewards. Here's just a whiff of what the 15 pests and diseases under attack have to face: fermented cow's urine and sisal juice chase away endemic bush crickets, wild onion juice keeps rodents out of crops, and the crocodile climber plant kills the weevils that attack stored grains.

Shea should shape up!



Shea won the hearts of grassroots programmes, but it didn't win the market

■ When the European Union decided in 2000 to allow chocolate to contain up to 5% vegetal fats other than cocoa butter, shea butter was proclaimed as a promising substitute. Two years later, this has not happened. Palm oil, though of lesser quality, is taking over shea's promised place as a cocoa

butter equivalent (CBE). What went wrong with shea – rightly called 'women's white gold'?

Shea butter is extracted from the fruits of the shea tree (*Vitellaria paradoxa*, also known as *Butyrospermum paradoxum*) which grows in the southern Sahelian zone, from Senegal in the west to Uganda and Sudan

in eastern Africa. On average, one tree produces 15 to 20 kg of fruits, yielding 1.5 kg of butter. Processed nuts fetch in general one and a half times more (€ 200/t) than the raw ones. Harvesting from the wild and processing the butter is done mainly by women. The butter is processed into cooking oil and consumed locally or exported as the basis for cosmetics or fat in foodstuffs.

The downside is that the shea tree is hard to domesticate, starts bearing fruit only after 15 to 20 years and has a fluctuating yield. The combination of unreliable and small supply with low purchasing prices on intermediate trade markets has meant that shea has not become a strong CBE. Of the estimated total production of 1.7 million t, only 65,000 t is exported as a CBE and 3,000 t for cosmetics.

There is room for improvement if producers can organise themselves to guarantee a stable supply and establish direct links with such markets as the cocoa and cosmetics industries. In Burkina Faso, the UN fund for women (UNIFEM) has mediated a deal between producers and L'Occitane, a French firm, which now buys directly from the Union des Groupements Kiswendside (UGK). In 2001, L'Occitane bought 60 t of butter directly from UGK, an umbrella organisation for 100 shea-producing women's groups.

E-nutrition today

■ The conference on 'Information Technology Advances in Nutrition in Africa – ITANA 2002' held in Nairobi, Kenya from 21–25 July 2002 was not at all the tame, technical gathering that some had expected. Instead, it was an enriching meeting of more than 500 nutrition experts and IT innovators from some 25 African countries. Together, they developed some exciting new recipes for using IT to improve nutrition programmes. Several dozen papers were presented in a flurry of workshops, mainly from eastern and southern Africa, and from as far afield as Australia, India, North America and Poland.

The major focus was on the management and analysis of data, ranging from overviews of food composition (where the potential for exchange between countries was viewed as a key issue) to dietary analysis. A second application which had

many people talking was in distance learning, where nutrition workers conduct their own training through CD-ROMs and courses distributed through the Internet.

The most popular part of the meeting was, by all accounts, the series of 'poster sessions' where participants exhibited and explained their work to each other. It was a zappy event, with the organisers' endless energy sometimes going unacknowledged – the pre-conference electronic forum, a new fad in meetings which has yet to find its place, failed to generate any discussion of substance.

Opened by President Moi of Kenya, and organised by the nutrition departments of the University of Nairobi, Kenyatta University and Egerton University, the conference was supported primarily by CTA, the Micronutrient Initiative, the Nestlé Foundation and the development agencies of Canada, Germany and Sweden.

The hope of winter

■ It has long been common in the dry winter season in rural Malawi to see a person in somewhat shabby gear going down to the riverside with a watering can in hand. Not that this picture of smallholders working in their fruit, vegetable and legume plots along riversides and in wetlands on cold winter mornings has been in the line of vision of many policy-makers – at least not until recently.

Without any backing from policy-makers, these winter farmers have forged ahead over the years, knowing that their crop provides an extra source of food and income. Now, at last, it seems that the current critical hunger situation in Malawi has attracted attention to these farmers. Both the government and donor agencies have embarked

on numerous projects to support smallholder farmers in their winter cropping initiatives. The reasoning behind the move is that over-dependence on rainfed agriculture has not helped in ensuring food security. In the new projects, the smallholders are leaving aside their watering cans to use treadle pumps which are being provided by the government and donor agencies. This strategy is being implemented as one way of averting the food crisis which is projected to reach alarming levels again before another harvesting season for rainfed agriculture.

In one such project, which targets 50,000 farmers in the central district of Salima, FAO is also distributing various farm inputs such as seeds and fertilisers to the farmers.



Photo: E. Dalgemar – Christian Aid – SHI Pictures

And you tell me they did not see it coming?

Tilapia thrives on coffee

■ Small-scale tilapia producers now have a new item to add to their feed: coffee waste, consisting of fruit pulp and skin. In coffee growing and processing areas, it is cheap and abundant. The researcher J U Rojas of the Universidad Nacional in Costa Rica found that up to 10% of tilapia feed can consist of coffee waste. It is rich in protein, but because of its high levels of caffeine, tannin and polyphenol, it cannot be fed to mammals: it would hinder their intake of nutrients and even halt their growth. Tilapia do not have these problems. Rojas argues that small fish ponds are the most suitable environment in which to feed the waste to

tilapia, since other organisms in the pond will pre-digest the waste and make the protein readily available for the tilapia.

Whilst tilapia are native to Africa, other regions are racing ahead in the growing world market for this product. The primary suppliers of fresh fillets are in the Caribbean, and in Central and northern South American countries, such as Costa Rica and Colombia. Most world exports of frozen fillets are from Thailand, Indonesia and Taiwan. According to FAO, annual world production is about 1.7 million t, of which 1 million t is produced in Asia, 0.5 million t in Africa and the rest in the Americas.

It's our agenda now



Agriculture made it back to the top of the global policy agenda at the World Summit on Sustainable Development (WSSD), in Johannesburg in August/September 2002, where it was part of the list of core topics: water, energy, health, agriculture and biodiversity (WEHAB). No wonder, then, that almost half the several hundred Plans of Action agreed upon by civil society, the private sector and selected governments cover sustainable agriculture.

The Eco-agriculture programme, championed by the Future Harvest group of agricultural research centres, and involving practitioner groups from the Americas, Africa and Asia and the World Conservation Union (IUCN), launched a campaign of persuasion and demonstration about the productive potential of this benign form of agriculture which includes low use of external inputs. On a broader front, the Sustainable Agriculture and Rural Development (SARD) initiative will establish stakeholder-designed programmes of best practice to improve access to land and water. Led by civil society, supported by governments and facilitated by FAO, SARD was launched by FAO's Director-General and representatives of government, business and civil society, including more than a few small farmers' groups.

Both initiatives will make much use of the media, and have already started work with the World Summit Task Force of Agricultural Media Professionals, one of the first outcomes of the summit. Composed of communicators worldwide, including several *Spore* correspondents and led by *Médiateurs* (address page 15), its early tasks include setting up partnerships with existing media bodies.

For more information on agriculture at the World Summit, visit the New Agriculturist: www.new-agri.co.uk/02-5/develop/dev01.html

Gone fishing, other side of the world

■ In July 2002, the first fisheries agreement was signed between the EU and the Pacific island nation of Kiribati. For the next 3 years, European vessels, mainly from France, Portugal and Spain, can fish for tuna beyond the 12-mile coastal band. Each EU boat will have to employ two local seamen, tranship three times annually in a Kiribati port and take an observer on board 20% of their fishing trips. A satellite monitoring system and reporting on catches will keep an eye on them all.

Let's date in Namibia

■ Since 1997, a government farm in Namibia has been laying the foundation for southern Africa's first commercial date production enterprise. Now 10,000 date palms, managed by 50 farmers, and free of major pests and diseases, drip-irrigated and thriving well in the sandy soil of southern Namibia, prove that the country is well-suited for growing the fruit. With State and FAO support, the Namibia Development Corporation now provides 500 date palm offshoots annually to subsistence farmers, and training for extension workers.

Beer, couscous or porridge?

■ Biochemist Mamadou Dicko from the University of Ouagadougou, Burkina Faso, can tell from the polyphenol (antioxidant) and enzyme content in sorghum what it can best be used for. Studying 50 varieties, he found that high polyphenol levels and low enzyme levels are best suited for beer (*dolo*). Varieties with a low enzyme content are best for couscous, while a low polyphenol and an average enzyme content are best for sorghum porridge.

Sight-saving antibiotic

■ There is new hope in the fight against river blindness, caused by parasites burrowing below the skin and releasing millions of offspring throughout the body. Scientists have found that it is, in fact, the worms' cargo of *Wolbachia* bacteria that provokes the body's inflammatory response, which leads to blindness and skin disorders. New cures could be on the way: recent studies of infected people show that the bacteria can be killed by the common antibiotic doxycycline.

The corn of plenty

■ Pioneer Hi-bred International in Zimbabwe has developed two new maize varieties able to fight off the feared grey leaf spot disease. Tests by both smallholder and large-scale farmers show these varieties as high yielding (9–11 t/ha), suitable for local processing and needing no more fertiliser than other varieties. Chemicals and Marketing Malawi Limited is distributing them in Malawi, with demonstration sessions.

Cheers to erosion

■ Not all spin-offs are harmless. Take the case of blue agave (*Agave tequilana*) – a plant from which Mexicans make the liquor Tequila – which was introduced to control erosion in southern Africa 10 years ago. A company in the Graaff-Reinet area in South Africa is distilling a Tequila-like spirit from it and selling it to passers-by on the N1 highway linking Cape Town and Johannesburg – driving home the road’s reputation as the most dangerous in the nation.

Learn naturally

■ The World Agroforestry Centre will hold an international conference on building natural resources education in Africa in Nairobi, Kenya from 16 to 19 April 2003.

A Temu
 World Agroforestry Centre (ICRAF)
 PO Box 30677
 Nairobi, 00100 GPO, Kenya
 Fax: +254 2 524001
 Email: a.temu@cgiar.org
 Website:
 www.worldagroforestrycentre.org

Open Sesame!

■ Two new sesame hybrids, sesim 1 and 2, that are drought resistant, richer in oil content than local varieties, fast maturing and unlikely to bend in wind or shatter as local varieties do are being released by Uganda’s Serere Agricultural Research Centre. The country currently produces 93,000 t of sesame seed annually. Its substantial untapped production potential could provide all the cooking oil required in southern Africa.

A way with worms

■ Pesticide use on the Caribbean’s favourite veggie, the spinach-like callaloo (*Amaranthus* sp.), can be reduced by between 45 and 85% using two integrated approaches launched by the Caribbean Agricultural Research and Development Institute (CARDI). The approaches focus on protection from worms, one by growing callaloo under a nylon mesh and the other with new biochemicals.
 Source: CARDI Jamaica Unit, 2002

Liana: the stalking strangler?



Mother Nature’s network to some, but a damn nuisance to nature

■ Best known as Tarzan’s preferred means of transport, the twine-like liana may have a negative impact on its rainforest habitat. The role of lianas in forest ecologies has long been underestimated, and these climbing jungle weeds were for long regarded literally as loose ends. Wrongly so, since they constitute about 25% of the wood density and plant diversity in tropical forests. In the past decade, researchers worldwide have swung to liana as a research topic: universities in Basel, Leeds and Wageningen in Europe, and in the states of Massachusetts and Minnesota in the USA are among those to have launched research programmes. Their findings are not entirely in lianas’ favour.

Liana are useful as a source of wood, as medicinal plants and for providing canopy-to-canopy access for forest animals by physically linking trees. They also affect tree regeneration, however competing with trees and affecting how trees compete among themselves – for light, water and nutrients. In that respect, they behave like weeds in agriculture and can be considered pioneer plants. In forests where loggers are active, the density of lianas can be twice as much as in unlogged pristine forests.

In recent years, in the western Amazon region, the density

of lianas has nearly doubled, damaging and killing established trees and blocking out the sunlight. In the gaps left behind, thinner foliage has shot up, leaving the forest with far less biomass than before the lianas’ explosive growth. The researchers have evidence that lianas are growing faster in today’s carbon dioxide (CO₂) levels than the lower levels a

century ago. The fact that rainforests are regarded as carbon sinks, absorbing CO₂ from the air and transforming it into wood, might give rise to a fierce debate if it means that forests are being ‘killed’ by the same lianas they host. Like so many others faced with the environmental impact of their mode of transport, even poor old Tarzan may have to get on his bike.

“We shall show the way”



Small farmers should be seen, and heard, in any discussion of sustainable agriculture. That was the message emanating from the Shaft 17 training centre in Johannesburg in August/September 2002, where more than 300 members of farmers’ organisations had gathered at a ‘Farmers’ Convergence’ as part of the World Summit on Sustainable Development (WSSD).

With an estimated total of 30,000 people attending the WSSD and its many events from outside the region, the 300 people in Shaft 17 could just start to get noticed. Add on at least another 300 delegates of farmers’ organisations at other related events, and the front line of agriculture had a tangible

presence at the summit – not to mention the equally numerous agricultural scientists, input companies, traders and service providers. The high visibility of small farmers was thanks largely to the southern Africa PELUM association which had prepared their participation for years.

Their advocates, particularly some journalists, behaved as if controversy and opposition are the way forward. The farmers themselves charmed their way into many new partnerships, and secured their place as equals in top-level debates across town at the United Nations events. Their basic statement makes the point: “We are here to celebrate farming and fishing as a culture – our way of life ... as small-scale farmers, we have some answers – we shall show the way.”

And if the women did the wiring?

■ How many women are 'wired' – able to use online communication, hooked into the Internet and part of the 'Information Society'? Not enough, of course, but how many? The bodies that should know, such as the UN's International Telecommunications Union, do not, being unaware of one of the keys to progress in development: the gender disaggregation of data (GDD). Without GDD, in any field, you cannot see how many women or men are using a service, and so you cannot properly plan any measures towards achieving gender equity. And these data are essential for empowering rural women through giving them access to information and communication technologies (ICTs). It requires well-targeted, proactive interventions, because ICTs are otherwise doomed to join the list of assets denied to

most women: credit, land, technology.

The issue of 'Gender and Agriculture in the Information Society' exercised a group of 20-odd experts at the fifth meeting of the CTA Observatory on ICTs, held in Wageningen, The Netherlands, from 11 to 13 September 2002. Some observatory! This was an action-oriented group, the majority women, all set to go. Wired in all senses of the word, and keen to do more than just reflect on how to improve women's access to ICTs, it gave some no-nonsense advice to CTA staff on how to walk that long path from noble intention (genderise!) to actual projects. The resource persons shared their viewpoints and the meeting drew up a policy brief for the Third World Congress of Rural Women to be held a few weeks later in Madrid, plus topics which, some felt, could be

considered the World Summit for the Information Society (WSIS), which starts in Geneva in December 2003. The main thrust: infrastructure, training and attitude.

As such, the meeting added substance to an earlier call by a WSIS preparatory meeting in Bamako, Mali in June 2002 for "investment and funding in content creation and democratisation of access with particular emphasis to women and youth". And, feet on the ground, fingers on the keyboard, eyes on the sky, it set down some guidelines for a new, modest fund for CTA to stimulate more use of ICTs by the women (the majority) in its constituency.

The well-documented report, including a resource-rich set of preparatory papers, is due out early in 2003. If you cannot wait, much is already available on www.agricta.org.

Aflatoxins stunt growth

■ Research by the International Institute of Tropical Agriculture (IITA) and the University of Leeds, UK, has revealed that aflatoxins in food are hampering children's growth in Benin and Togo. Elevated levels of aflatoxins in the blood of 475 out of 480 children (98.9%) had a strong correlation with how much the children were below normal weight and height. Aflatoxins are a by-product of moulds present on crops such as groundnuts and maize stored in humid conditions.

(*British Medical Journal*, July 2002)

Your eggs: 2 months, or 3?

■ People on Simbo island in the Solomon Islands have developed their own management scheme for the lape bird (*Megapodius eremita*). They rely on lape eggs for a cash income. After both birds and eggs declined rapidly in the 1970s and '80s, the authorities introduced an egg-harvesting ban for 2 months every year. It worked well and by 1998 the harvest had returned to 180,000 eggs. In the following year, conservation groups IUCN and WWF joined the programme; it turned out that the average incubation period was longer than the ban season, which has now been extended to 3 months.

Steamed rice, or surfed?

■ In mid-September 2002, the International Rice Research Institute (IRRI) launched its Rice Knowledge Bank, modestly describing it as the world's repository of rice learning and knowledge. It is on the Internet and on CD-ROM. Its e-learning section includes IRRI's courses on rice production and grain quality. This masterly example of knowledge management also features a huge rice information library and RiceTrop, a practical decision support tool for rice farmers. Worth checking it out!

Website:

www.knowledgebank.irri.org/
Email: a.atkinson@cgiar.org

Shea detoxifies

■ Biologists from the research French institutes IRD and INRA have found a new strain of the bacterium *Escherichia coli* in shea cake (see page 6). Normally found only in the stomach of warm-blooded animals, it can be used to transform toxins such as tannins into non-acidic ones. Genetically modified strains of the bacterium are being used to manufacture growth hormones, proteins such as insulin, and food preservatives. This discovery means that products derived from this new strain could be labelled 'natural'.

Yellow rice has its price

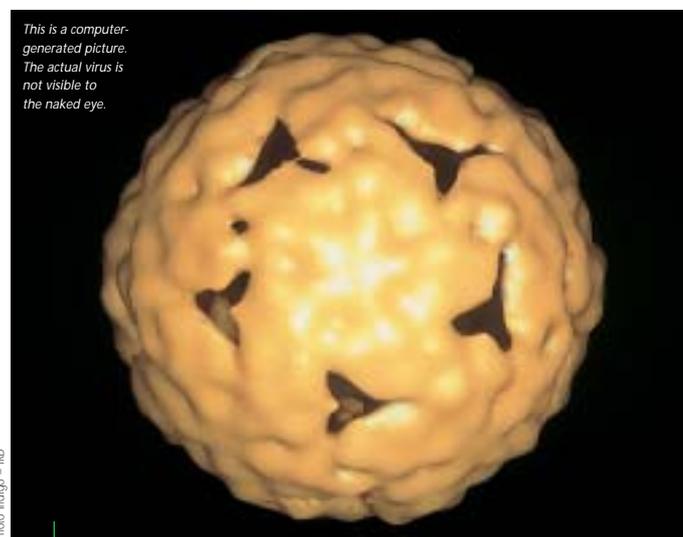
■ Practically all irrigated rice in sub-Saharan Africa is prone to the rice yellow mottle virus (RYMV). Until the 1990s, the effects of RYMV were relatively modest but since then yield losses of up to 95% have occurred throughout the continent's rice fields. The disease is carried by beetles and spreads easily. It causes yellowing (or orange discoloration) of the leaves – hence its name – and leads to sterility of the flowers, stunted growth and poor panicle exertion, or stalk development.

From 1995 to 2001, a group of researchers in the Irrigated Rice Programme of the Institute for Rural Economy (IER) in Mali studied how RYMV spreads. They came up with a set of measures to control and prevent infections. This, and other results, won the programme's coordinator, M Baré Coulibaly, the National Scientist Award for his "outstanding contribution to the development of rice cultivation in Central and West Africa", given for the first time in April 2002 by ROCARIZ, WARDA and WECARD. His finding was that susceptibility differs at var-

ious stages in the rice plant's development. Burning infected plant material, ploughing infected fields just after harvest and before the next cropping season and flooding the field are but a few of the proposed control measures. The virus is spread through manual contact with infected plant material but also by footwear and by tractors, farm implements and animals such as rats and livestock. Farmers should therefore,

besides washing hands and shoes, avoid double cropping and weeding in contaminated fields and should not leave cattle in these fields overnight. Keep rats out of the fields and keep canals, roadsides and levees as clean as possible, the research group advises.

✉ *CRRR de Niono*
Institut d'Economie Rurale
Programme Riz Irrigué
BP 12
Niono, Mali
Email: crra.niono@ier.ml



This is a computer-generated picture. The actual virus is not visible to the naked eye.

Photo: Indigo - IIR

Golden Orb spiders, Golden Orb flowers, and now golden orb virus

See me, read me, surf me

That amazing newspaper *The Farmer's Voice* has taken another confident leap forward and is now available online on the World Wide Web – at the moment in French only, but soon in English. It is the best-known, but by no means only, service provided by the Cameroon-based NGO Service d'appui aux initiatives locales de développement (SAILD; Support service for local development initiatives). SAILD also has a high reputation for its useful technical handbooks, its reliable question-and-answer service and its wide range of field support activities with farmers' groups across the country, from disseminating market price information to establishing tree nurseries.

The monthly newspaper is now in its 15th year of publication. With its rich content of informative articles on all aspects of agriculture and rural life, not only has it become a household name amongst farmers and farmers' organisations in Cameroon and neighbouring countries, but it has also won the respect of devel-



opment organisations and agricultural media professionals worldwide. Its straightforward tone, resolute and no-nonsense, often takes bureaucracies of whatever level or sector to task if their activities are getting in the way of farmers getting on with their lives. Over the years, not a few extension services, price boards and input suppliers have been encouraged

by *The Farmer's Voice* to improve their service. But it is not only a campaigning force; each issue is stuffed with practical tips for the field and the workshop, with guidelines for drawing up business plans or marketing strategies, even at the most modest level, as well as a lively readers' section, background articles and dossiers, profiles of plants, animals and organisations, book reviews and more. Until August 2002, *The Farmer's Voice* was available only in print, in several editions – the French edition for

Cameroon and Chad (circulation 20,000), the English edition, read mainly in Cameroon (6,000) and the two Arabic editions for Chad and the western Sahel region (5,000 and 10,000, respectively).

The high quality of the Website edition attests to the dedication and skill of the editorial team. It has embarked not just on publishing the latest edition

online, but also on opening up the archives of earlier issues. At the moment the French edition of the newspaper, *La Voix du Paysan*, is online (www.lavoixdupaysan.net). Work is underway to put the English edition online too, and it will be announced soon in *Spore*.

Everything on the site is accessible free-of-charge and is clearly presented in thematic sections, with a large choice of articles just a click away. Even SAILD's famous cartoons have been included. All in all, a thoroughly professional approach which will no doubt inspire similar newspapers and bulletins in other countries to follow in SAILD's electronic footsteps, just as they have with their printed products.

The printed edition of *The Farmer's Voice* is available on a year's subscription of FCFA 6,000 (€ 9.25) in Cameroon and FCFA 13,000 (€ 20) elsewhere in Africa. Prices for other regions are available on request.

Service d'appui aux initiatives locales de développement
BP 11955, Yaoundé, Cameroon
Fax: + 237 222 5162
Email: saild@camnet.cm
Website: www.lavoixdupaysan.net

For people making books

"If education is the road out of poverty, books are the wheels needed for the journey," said Richard Crabbe, a Ghanaian publisher who chaired the African Publishers Network from 1997 to 2002. The regular flow of information about books, publishing and publishers in *Spore* underlines the key role of the book in technical and agricultural areas, and CTA's long support to the emergence of a healthy publishing sector in ACP countries.

The intricacies of publishing – it is an art, a science, a business and a joy to insiders – are mainly hard work, and the rest is inspiration and dedication. Recently, four more resource publications, in print and on the World Wide Web, have come on stream to help ACP

publishers organise themselves, and to complement the growing range of services from regional networks of publishers and booksellers.

The masterwork, *The African Publishing Companion* (see page 11) from Hans Zell Publishing Consultants, is rich in insight and experience; it is described in detail in the Publications section. From Book Aid International, the new *BookLinks* bulletin is a lively collection of news snippets, opinion articles and guides to resources for publishers and librarians alike. It is the successor to the fabulously supportive newsletter *Partners in Publishing*, and it hopes to continue the latter's coverage of francophone and lusophone Africa as well as English-speaking regions. Free on demand, and online, from Book Aid

International, 39–41 Coldharbour Lane, London SE5 9NR, UK; Fax: +44 20 7978 8006; Email: info@bookaid.org; Website: www.bookaid.org

The Bellagio Publishing Network (BPN) has grown in 11 years from a club of funders, publishers and mediators supporting publishing in developing countries into a network embracing practitioners and linking with regional networks. Its widely cast net captures all sorts of information of use to the ACP publishing profession: partnerships, training, studies, trade fairs, and new trends are all covered in a well-presented Website (www.bellagiopublishingnetwork.org). Contact: BPN, 103 Walton Street, Oxford OX2 6EB, UK.

Finally, *The Book Chain in Anglophone Africa: A Survey and*

Directory (Ed. Roger Stringer. INASP, 2002, 274 pp, ISBN 1902928112, GBP 30, or free on Website) gives concise and up-to-date descriptions of who does what, from governments, library associations to booksellers. Its sterile listings are enriched by revealing journeys along national book chains, country-by-country, with francophone perspectives. A French language edition is in preparation, and a parallel work is being considered for describing the book chain in francophone Africa. These will further complement a series of sound resource guides from the International Network for the Availability of Scientific Publications. Contact: INASP, 27 Park End Street, Oxford OX1 1HU, UK; Fax: +44 1865 251060; Email: inasp@inasp.info; Website: www.inasp.info

Publications

Tomatoes or cabbage for dinner?



■ Now here's a handy guide for controlling pests in tomatoes and brassicas (such as cabbages and broccoli). In a nutshell it describes the cultural, biological and chemical pest control methods and lists the common pests attacking the two vegetable species. The colour photos make it easy to recognise both the pest and the damage it does to crops; it is child's play to quickly find the information needed. Yellow-edged pages introduce the control measures, red-edged pages the tomatoes and green-edged ones the brassicas.

A good handbook for extension workers and trainers, written especially for the Zimbabwean context but the contents will be equally applicable elsewhere in sub-Saharan Africa and beyond.

Integrated Vegetable Pest Management. Safe and Sustainable Protection of Small-scale Brassicas and Tomatoes
By Natural Resources Institute (NRI) UK, 2002. 180 pp.
ISBN 0 85954 536 9
US\$ 4 • € 4.50

Individual extension workers can apply for a free copy.

In Zimbabwe:
Dr S Sithole, Plant Protection Research Institute
Department of Research and Extension
PO Box CY550, Causeway Harare
Zimbabwe
Email: ssithole@africaonline.co.zw

Outside Zimbabwe:
H Dobson
NRI, University of Greenwich
Chatham Maritime
Kent ME4 4TB, UK
Email: h.m.dobson@gre.ac.uk

Donkey work

📖 Donkeys. Those silent stubborn plodders that carry loads, plough fields and just need forage for fuel. Where would we be without them? Among the animals used for traction and tillage, donkeys are the most undervalued power source in many parts of the world. Their price is way below what they yield. Perhaps this straightforward manual in the Agrodok series, devoted to donkeys' work, will change that.

Apart from the chapters on care, harnessing, hitching and equipment for tillage and traction, one chapter is dedicated to training donkeys and includes a list of commands. Not so stubborn after all? The manual provides the answer: donkeys refuse to do what

they're told only if the job is really impossible.

The sweetest bit of advice is that donkeys suffer when alone and will perform better in company of other donkeys or animals.

Donkeys for Traction and Tillage
By L Oudman, Agromisa – CTA co-publication, Agrodok Series, 2002.
84 pp. ISBN 90 77073 17 5
CTA number 1086. 5 credit points



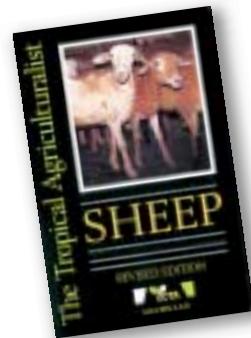
A must have

■ Only very rarely do you come across a standard work on agriculture which you simply must have on your – solid – bookshelf as a reference guide. The Belgian Directorate General for International Cooperation (DGCI) recently published such a sturdy work on tropical crops and trees in sub-Saharan Africa.

It groups the plants per kind: cotton and kenaf in the fibre crops chapter; cassava and yam in the roots and tubers and cocoa section; coffee and tea in the stimulant crops section, and so on. Each plant and its uses are described extensively in about 10 pages. There are also short guides to each sub-Saharan country. Over 1,500 pages, attractively laid out and easy to read, not at one sitting though, just whenever needed. A book to always have at hand, or at least to go home to. It is the size and weight of a brick.

Crop Production in Tropical Africa
Coordinated by R H Raemaekers, DGCI, Ministry of Foreign Affairs, Foreign Trade and Development Cooperation, 2001. 1540 pp.
ISBN 90 806822 2 5
Available free-of-charge in English and French upon written request by email only.
Email: luc.sas@diplobel.fed.be

Sheep know-all



📖 Here is all you need to know about feeding and keeping sheep in a completely revised edition in The Tropical Agriculturalist series. The previous 1991 edition has been supplemented with information on sheep's genetic resources, the use of biotechnology in breeding, various types of fodder and pasture, and plants that are harmful to sheep. Other additions cover new techniques for artificial insemination and anthelmintics for expelling or destroying parasitic intestinal worms.

Sheep
By R M Gatenby, The Tropical Agriculturalist, CTA – Macmillan, 2002. 184 pp. ISBN 0 333 79881 3
CTA number 304. 10 credit points

Bountiful

■ From the doyen of knowledge about African publishing, this new resource guide deserves to be an instant classic. It is quite simply the best-researched, best-presented and most comprehensive guide in the field. Never has the fad phrase 'must have' been more appropriate, whether for established publishers or come-lately ICM managers. And since it is for serious people in publishing, the only way to obtain it is to buy it. Do not even think of asking for a complimentary copy.

Buying the print edition entitles purchasers free access to the fully searchable electronic version and free updates for a period of 24 months.

The African Publishing Companion: A Resource Guide
By Hans Zell Publishing Consultants, 2002. Wire-bound. 258 pp. ISBN 0 9541029 0 8
GBP 80 • € 124 combined print and online version (not available separately)
Hans Zell Publishing Consultants
Glais Bheinn, Lochcarron Ross-shire IV54 8YB, Scotland
Fax: +44 1520 72 29 53
Email: hzell@dial.pipex.com
Website: www.hanszell.co.uk and www.africanpublishingcompanion.com

Back to stay

■ After 10 years' absence, this journal is back in business, with articles on coffee production, the impact of mono- and intercropping on maize yields and the role of processed sweet potato in household economies. In a subject area with so many developments taking place, it really should be able to survive.

Eastern Africa Journal of Rural Development (EAJRD)
Published by the Department of Agricultural Economics & Agribusiness, Makerere University, Uganda, biannual journal.
Free for members of the Eastern Africa Agricultural Economics Society. Information on subscription rates and ordering single copies available on request.
EAJRD c/o Makerere University
PO Box 7062, Kampala, Uganda
Fax: +256 41 53 16 41
Email: agecon@infocom.co.ug

Agriculture's shelf life

■ Conservation agriculture involves smart management of soil, water and biological resources. This study, for policy-makers and planners, lists the financial and non-financial factors that define its success.

The Economics of Conservation Agriculture
FAO, 2001. 74 pp. ISBN 9251046875. US\$ 12 • € 12.15
FAO Sales and Marketing Group, Information Division
Viale delle Terme di Caracalla 00100 Rome, Italy
Fax: +39 06 5705 3360
Email: publications-sales@fao.org

Development in a bee line

■ These symposium proceedings advocate beekeeping as part and parcel of a sustainable livelihood approach. The essays cover specific African countries and the Caribbean. A good reader.

Strengthening Livelihoods. Exploring the Role of Beekeeping in Development
N Bradbear, E Fisher & H Jackson, Bees for Development, UK, 2002. 122 pp. ISBN 1 898807 01 9 GBP 27.50 • € 42.50
Bees for Development Troy, Monmouth, NP25 4AB, Wales
 Email: info@beesfordevelopment.org
 Website: www.beesfordevelopment.org

Biotechnological overview

■ If you enjoyed reading Albert Sasson's book *Biotechnologies in Developing Countries*, Volume 2 (see Spore 81), you'll be enthralled with the even larger Volume 3 and its revealing overview of State and public-private partnerships on biotechnology.

Biotechnologies in Developing Countries: Present and Future Volume 3 – Regional and Sub-Regional Co-operation, and Joint Ventures
By A Sasson, Future-oriented Studies, UNESCO Publishing, 2001. 1104 pp. ISBN 92 3 103792 7 € 45.75
UNESCO Publishing 7 place de Fontenoy 75352 Paris 07 SP, France
 Fax: +33 1 45 68 57 37
 Website: <http://upo.unesco.org/>

One for all

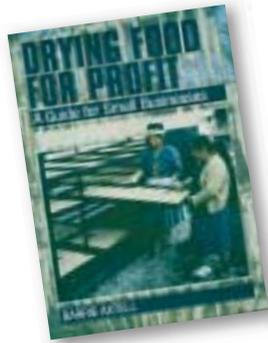
■ A thorough study of the difficult relationship between indigenous people and government, and the recognition of the San people as a minority group. Applicable to other countries facing a similar challenge – and which country doesn't?

The Inconvenient Indigenous. Remote Area Development in Botswana, Donor Assistance and the First People of the Kalahari
By S Saugestad, Nordiska Afrikainstitutet, Sweden, 2001. 230 pp. ISBN 91 7106 475 3 SEK 220 • € 23.75
Nordiska Afrikainstitutet Box 1703 SE-751 47 Uppsala Sweden
 Fax: +46 18 56 22 90
 Email: nai@nai.uu.se

You read French?

■ Access to French-language books is now much easier, thanks to the new Afrilivres Website set up by African publishers. You can even order and pay online. Website: www.afrilivres.com

Dry, dry and dry again



■ Do you want to take up the challenge of starting a business and making money from selling dried foods? Then this is the book for you. Meat, fish, vegetables, fruits and nuts, just name it and it can be dried. You will need, however, some entrepreneurial skills and traits to establish a going concern in

drying, as in anything. *Drying Food for Profit* is a clear guide with a lot of advice on business planning, drying technologies, marketing and many other commercial aspects to take into account.

And it provides many examples from around the world. The book is aimed at people who – with the information provided here – could design a food dryer. But remember, the entrepreneurial spirit has to come from you.

Drying Food for Profit: A Guide for Small Businesses
By B Axtell & A Russell, ITDG Publishing, 2002, 96 pp. ISBN 185339520X GBP 9.95 • € 15.50
ITDG Publishing 103-105 Southampton Row London WC1B 4HL, UK
 Fax: +44 20 7436 2013
 Email: itpubs@itpubs.org.uk

Time to waste

■ Rapid urbanisation in the world is creating a huge challenge with regard to waste management and environmental protection in urban areas. As is food security. One way to turn a challenge into an advantage is by converting waste into compost and using it for urban agriculture.



This slightly academic collection of essays focuses on planning, modelling and managing nutrient flows in the transformation of waste into compost. It is not a 'how to' manual but offers enlightening insights for urban authorities, planners and researchers.

Special reference is made to sub-Saharan Africa, with cases drawn from Ibadan, Lagos, Accra, Kumasi, Dar es Salaam and Lomé.

Waste Composting for Urban and Peri-Urban Agriculture: Closing the Rural-Urban Nutrient Cycle in Sub-Saharan Africa
Edited by P Drechsel, International Water Management Institute, Africa Office, Ghana, and D Kunze, Food and Agriculture Organisation, Regional Office for Africa, Ghana, 2001. 256 pp. ISBN 0851995489 GBP 45 • € 69.75
CAB International Wallingford, OX10 8DE, UK
 Fax: +44 1491 833508
 Email: cabi@cabi.org

Grow green between building

■ The Agrodok series has caught up with urban agriculture. The first two chapters of the manual are largely devoted to

coping with the practical differences between farming in cities and in rural areas. The practised urban farmer can skip these.

Otherwise, it is a decent review of pollution, environmental and health aspects, recycling of material, coping with lack of space, small-scale growing methods and socio-economic aspects – all are dealt with in detail.

A useful publication to get you going with growing vegetables and herbs in town.

What we're waiting for now is an Agrodok on keeping animals in urban and peri-urban areas.

Urban Agriculture: Growing Vegetables in Cities
By J Bolland, Agromisa – CTA co-publication, Agrodok Series, 2002. 84 pp. ISBN 90 77073 25 6 CTA number 1087. 5 credit points



French beans for dinner?

■ This pocket manual has a lot in common with the one on pest control in tomatoes and brassicas (*Integrated Vegetable Pest Management*) (see page 11), but this one deals with French beans (*Phaseolus vulgaris*), has a special emphasis on the Kenyan situation and has a different publisher. It lists the common pests and diseases and the suggested integrated pest management (IPM) strategies to apply.

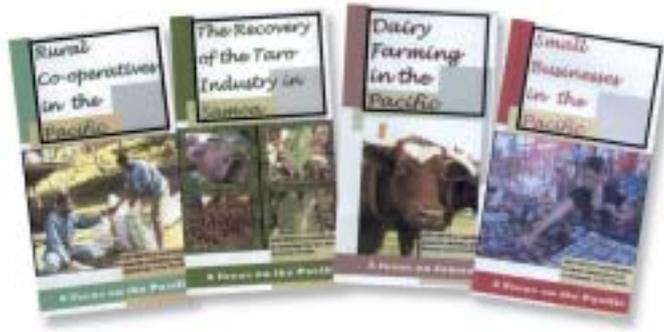
The booklet was published in response to the European Union's measures on maximum levels for pesticides used on imported crops, making it necessary for growers to reduce the use of pesticides. Also useful in other African countries apart from Kenya.

A Guide to IPM in French Beans Production with Emphasis on Kenya
By A Seif, A M Varela, S Michalik & B Löhr, ICIPE-CTA-GTZ-DSO, 2002. 88 pp. ISBN 92 9064 142 8



CTA number 1093. 5 credit points
ICIPE Science Press PO Box 72913, Nairobi, Kenya
 Fax: +254 2 860110/803360
 Email: isa@icipe.org

Pacific windows on their world



■ Membership of a rural cooperative is attractive for a farmer only if there is some kind of return for the money s/he invests in it. This fairly obvious message is one of the major points of the video on rural cooperatives in the Pacific, produced as one of a series of four by the Institute for Research, Extension and Training in Agriculture (IRETA) with support from CTA. It should do well in discussions in training courses or workshops on the topic.

Another title in this crop of videos deals with taro. It is an

account of the fall and rise of the crop after the outbreak of taro leaf blight in 1993. The first really promising harvest since then was expected in 2002. See for yourself how and why.

The third video gives step-by-step advice on starting small businesses: how to get advice from advisory services such as 'South Pacific Business Development' or 'Women in Business', how to make a business plan, use local materials, find markets and guarantee the quality of your produce. Well

illustrated, with good examples of mat weaving, *nonu* juice production and a wonderful business of jewellery making from coconut shells, which are sold even in the airport duty free shops and on airlines.

The final video is on dairy products in Samoa – the title says it all.

All in all, a good set of short informative accounts on video.

Rural Co-operation in the Pacific.

A Focus on the Pacific
USP – IRETA, 2001. PAL.
Duration: 11 min. 30 sec.

The Recovery of the Taro Industry in the Samoa.

A Focus on the Pacific
USP – IRETA, 2001. PAL.
Duration: 17 min.

Dairy Farming in the Pacific.

A Focus on Samoa
USP – IRETA, 2001. PAL.
Duration: 11 min. 30 sec.

Small Businesses in the Pacific.

A Focus on the Pacific
USP – IRETA, 2001. PAL.
Duration: 12 min. 30 sec.
US\$ 20 • € 20.50 for each video.

Borers beware!

■ The *International Journal of Tropical Insect Science* has come out with a special issue on the current state of affairs of the biological control of cereal stem borers in Africa. Twenty research and review articles cover country cases in eastern and southern Africa. Texts and abstracts also available at www.inasp.org/ajol/ and www.bioline.org.br

Insect Science and its Application
Special Issue, Volume 21,
Number 4, December 2001.
ISSN 0191-9040
Published by the ICIPE Science Press
International Centre of Insect Physiology and Ecology (ICIPE)
PO Box 30772
Nairobi
Kenya
Fax: +254 2 860110
Email: isa@icipe.org
Website: www.icipe.org/isa/isa.html

The root of all staples

■ This standard work covers the origin, taxonomy, physiology, agronomy and many uses and virtues of cassava. Separate chapters on cassava in Africa, the Caribbean and the Pacific describe technologies to improve and protect the crop from pests and diseases.

Cassava: Biology, Production and Utilization
Edited by R J Hillocks, J M Thresh, Natural Resources Institute (NRI), UK and A Bellotti, Centro Internacional de Agricultura Tropical (CIAT), Colombia, CABI Publishing, 2002. 352 pp.
ISBN 0851995241
GBP 75 • € 117.50
CABI Publishing
Wallingford, Oxfordshire
OX10 8DE, UK
Fax: +44 1491 833508
Email: cabi@cabi.org

Click, cluck, clock

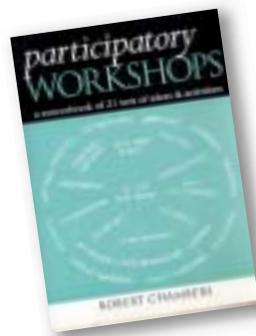
■ A scientific publication with data on poultry rearing in 12 African countries: inputs, timeframes and yields. Its structure allows the comparison of results and an overall analysis. A shame about the small typeface.

Characteristics and Parameters of Family Poultry Production in Africa
Animal Production and Health Section, FAO – IAEA co-publication, 2002. 208 pp.
ISBN 90 5782 094 3
Free-of-charge for people in developing countries.
Others pay € 36
FAO/IAEA
PO Box 100
A-1400 Vienna
Austria
Fax: +43 1 26 00 7
Email: official.mail@iaea.org

Join in!

■ Every trainer who reads *Participatory Workshops* will get really inspired by the countless exercises and hints on making sure that your training event or workshop keeps each participant active, interested and – most importantly – a full owner of the event.

Besides the obvious advice and sometimes well-known exercises and methods, the book offers ways of coping with every trainer's nightmare: embarrassing situations. These are often overlooked, and include dealing with dominant



participants, getting shy people to speak up, and the effects of different arrangements of chairs and tables in a room.

As a trainer, you'll already know more than half the points this book makes. Its major strength lies in bringing it all together, making it a kind of checklist of do's and don'ts for trainers.

Participatory Workshops. A Sourcebook of 21 Sets of Ideas & Activities
By R Chambers, Earthscan Publications, London, 2002. 240 pp.
ISBN 1 85383 863 2
GBP 8.95 • € 14
Earthscan Publications Ltd
120 Pentonville Road
London, N1 9JN, UK
Fax: +44 20 7278 1142
Email: earthinfo@earthscan.co.uk

How to obtain these publications



The green leaf symbol indicates publications that are on CTA's list. Subscribers to the Publications Distribution Service (PDS) can obtain them from CTA. All other publications, indicated by an orange square, are available from the publishers listed, or through commercial outlets, but not from CTA.

Publications on CTA's list are available free-of-charge to PDS

subscribers. Subscribers can order publications on CTA's list up to the value of the credit points available to them. Subscribers can only request publications on the order forms provided.

Non-subscribers who wish to join the scheme should write to CTA for an application form. Applications will be considered from agricultural and rural development organisations in the ACP (Africa, Caribbean and Pacific) Group of States; individ-

uals resident in ACP countries may also apply.

If you are not eligible for a free subscription to the PDS, or if you need publications beyond your free credit allocation, you may buy publications on CTA's list from our commercial distributor: *CTA Publications – ITDG Publishing*, 103–105 Southampton Row, London WC1B 4HL, UK — Fax: +44 20 7436 2013 — Email: cta@itdpubs.org.uk — Website: www.itdgpublishing.org.uk

The questions you ask

Alongside the many words of praise from respondents to the Uses of *Spore* Survey about CTA and *Spore*, some others asked about CTA activities and services. They wanted to know about seminars, training events, subscriptions and the credit points system and how they can join them. Some complained about the quality of CTA's services: publications not received; subscription requests denied; letters, sometimes a whole series, never answered. *Spore* held a 'Frequently-Asked-Questions' session with CTA staff.

Spore: How can people attend training sessions or seminars with CTA support?

CTA: We sponsor the participation of ACP nationals in international and regional conferences, seminars and workshops relevant to their work in agricultural and rural development. In 2001, 189 individuals were supported. Detailed applications, preferably from event organisers, should reach CTA 6 months ahead. The Seminar Support Programme does not sponsor staff of international bodies, nor attendance at national meetings.

CTA's training events are listed on its Website. Normally, candidates are nominated and selected by the regional organiser; applications to CTA are passed on to the organiser.

Seminars which are (co-)organised by CTA are by invitation only. They too are listed on the CTA Website.

Explain your subscription system

Spore: Turning to the clients of your publications services, you use the word 'subscriber' a lot. It's a bit confusing.

CTA: For printed publications there are two types of subscribers. The full service subscription is to our Publications Distribution Service, known as PDS. A PDS subscriber (there are more than 30,000) gets a copy of *Spore*, plus a number of credit points each year for ordering books and other materials from our *Publications Catalogue*. A *Spore* subscriber gets *Spore*, but no other services. *Spore* subscribers number about 3,000. You have to apply to be a PDS or *Spore* subscriber and meet certain conditions.

Spore: No other subscribers?

CTA: Yes. You can subscribe to electronic services on the Internet, no questions asked; for example, to the *Spore* Email Ennouncement which summarises the latest edition and links to the CTA Website. That's very popular, with about 3,000 subscribers. Or you can get the bi-monthly *ICT Update* about information and communication technologies in agriculture, or the quarterly *Agritrade* bulletin about agricultural trade negotiations. These two have about 1,000 subscribers. The *ICT Update* is also available on demand in print.

Spore: Who can subscribe to what?

CTA: To be a PDS subscriber, you must be actively involved in agriculture and rural development in an ACP country. You should also be in a position, either as an individual

or professionally, to share and pass on information. You must show this on your application form – you can request one by mail, or get it from the CTA Website. We're strict about the criteria for PDS subscriptions because of the value of the publications we provide, the growing demand and our limited budget: two out of three applications get accepted. Basically, the more you do with the information (but you must *show* this, and not just say it), the more chance you have. We also encourage applications from women and people involved in small agricultural production and processing enterprises – they are under-represented in our clientele. And, to be honest, we have had so many requests from some sectors in some countries that we introduced a 'queuing' system, which we shall soon modify.

To be just a *Spore* subscriber is easier. You must be based in either an ACP or an EU country and give details of your active involvement in agriculture and rural development. To remove any confusion between PDS and *Spore* applications, we are preparing a separate form for *Spore*.

To subscribe to an electronic service, just follow the instructions given online.

Who gets credit points?

Spore: A lot of people want to know how to get credit points, or more of them.

CTA: We give credit points only to PDS subscribers; the exact number given each year depends on your work and your information needs. The leader of a village co-op may get, for example, only 50 points, but this could buy perhaps 10 practical manuals. A researcher may get 100 points, because the two or three books s/he needs are much more expensive than manuals. We try to be fair to everyone and it seems to work in most cases. A few people, about 20 a year, present sound arguments for getting more points. When there are good reasons, such as moving to a more responsible or 'outreaching' job, then we allocate more points. And we try to help everyone make the best selection: if you have wide responsibilities, we send you the *Publications Catalogue* and its supplements to choose from. Otherwise, we send special announcements about new publications which, as we all know, are always covered in *Spore*. By the way, credit points can be used only for ordering from this list, through CTA, and they cannot be transferred to another person.

Spore: Why do most PDS subscribers get fewer points in their second and subsequent years?

CTA: Simple! You get more in the first year to start off your collection. Later on, you'll have settled down and just be interested in new items and topping up the collection.

Spore: But all this is only for people in ACP countries and, for *Spore* subscriptions, EU countries too. Why these limits?

CTA: We operate under the Cotonou Agreement between ACP and EU countries, and we work for them. We know, of course, that our information is useful for people elsewhere, but they must buy our publications or a *Spore* subscription from our sales agent (see 'New commercial distributor' on page 15). If you can use the World Wide Web, you can download all CTA's own publications, and all *Spore* issues since 1997, free, without geographical restrictions.

And the complaints?

Spore: Every information service gets complaints, and you perhaps fewer than many others, but what are you doing about yours?

CTA: Some people do complain, it's true, and every complaint is one too many. Sometimes people want to know where their order is, or why they've received only four out of five books ordered. Often, they are impatient since the mail can be very slow, or maybe they didn't notice our letter saying that some books are temporarily out of stock and will be sent later. Sometimes, books disappear en route. We can't use safer courier services, or replace books, because it would eat up a year's budget in a few weeks! So much is outside our control. Our goal is for an order to leave our distributor's warehouse within 10 days of receipt. Right now, the average turn-around is 6 days, not bad at all.

We do have more serious delays with applications for subscriptions: in 2001, we had 3,400 and our backlog is now 3 months. It's due mainly to staff shortage and the need to screen applications. Even at the best of times, there are less than five people working in PDS, including marketing and promotion. Even if distribution is done by outside companies, for us to deal with 33,000-plus subscriptions and orders for more than 81,000 books in a year is quite an achievement. We hope we'll have a bit more breathing space soon. Maybe we'll even have time to draw up a Customer Service Charter, where all our service goals and procedures, including for complaints, will be there for all to see!

Then there are occasional delays in getting *Spore* into the hands of subscribers. Earlier this year there was a crush of work, including some management changes and an unforeseen excess of work for the compilers, plus the Uses of *Spore* Survey which got more responses than expected; we regret these delays and hope that the delivery schedule will soon be back on course.

New commercial distributor

With demand growing for publications on CTA's list, we are pleased to announce our partnership with our new commercial distributor, ITDG Publishing. From 1 January 2003, they will market and sell publications to people and organisations who are not part of the credit points system of CTA's Publications Distribution Service



Photo ITDG

On sale here in 2003: CTA books for non-subscribers

(explained on page 14). They will also promote and sell subscriptions to *Spore* for people who do not qualify for a free subscription. An annual subscription for six issues is € 36.

ITDG Publishing is part of the Intermediate Technology Development Group, founded in the mid-1960s. Their multi-lingual 'Books by Post' programme has provided a sound service to hundreds of thousands of people in ACP countries and beyond over the past three decades. As well as co-publishing several titles with CTA, they have been part of the DORA programme for distributing reference books. We are delighted that CTA's list is now available to readers worldwide through ITDG Publishing, and to people who can use their Web-ordering service or go in person to their bookshop in London.

CTA Publications
ITDG Publishing
103-105 Southampton Row
London WC1B 4HL
UK
Fax: +44 20 7436 2013
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Mailbox

The old saying "Two know more than one" is a good one for Mailbox. Read on... and don't forget to write in!



snail farming a commercial venture and a staple source of protein. Snails can be of high importance as human food in Africa. The protein content is higher than that of ruminants. So, I advise you: devise a means of converting and incorporating snail into human food."

Welcome to our place!

"Spore: Karibu kwetu!", writes **Ghislain Somba Byombo**, from the Democratic Republic of Congo. Working for the Gilman International Conservation NGO, he makes out a case for the conservation of national parks. "Believe us, *Spore* teaches and enlightens us, and is a great help to us all in our animation and extension work in the Okapis Wildlife Reserve which is a protected and inhabited area here in RDC."

A gnawing question...

■ **Anna M Mutinda** (Ministry of Agriculture and Rural Development, PO Box 4298, Kitale, Kenya), is pursuing her Masters degree in crop protection, focussing on vertebrate pests, especially rodents. She writes to ask fellow readers to send her "current information on rodent damage in maize farms, surveys on the same and any related research findings".

...and a tasty answer

■ It took **Norbert Nganga's** letter from Pointe Noire, Congo, more than a year to arrive at *Spore's* desk. But it's never too late for a good idea! He reacts to a question from Godfrey Scentongo in Mailbox in *Spore* 89 about how to conserve brewery dregs (or 'draff', the residual cereal after brewing, which can be used as animal feed). "I put them into airtight plastic bags. I stack them up in a dark place for a month, and it makes good quality stuff. The moisture has been absorbed, and the dregs still have their colour and smell. Try it yourself."

Snail mail

■ While snails pose a threat to many vegetables, **Gideon Osuji** from Nigeria sees mainly advantages in them. "Innovative farmers of West Africa are eager to make



Association des Jeunes pour le Développement Intégré à Kalundu (AJEDIKA), have sent us three photos (nice ones) on their maize harvest, reforestation and a plant nursery.



NECOFA (Network for Ecofarming in Africa) have sent us photos of their activities, showing a beekeeping instructor at work and another with project worker (a she) inside a beehouse with hives.



Spore is a bi-monthly publication providing information on agricultural development for ACP countries. *Spore* is available free-of-charge to relevant organisations and individuals in ACP and EU countries. Subscriptions may also be purchased from ITDG (see page 13).

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CTA: Postbus 380, 6700 AJ Wageningen, The Netherlands

Tel: +31 317 467100

Fax: +31 317 460067

Email: cta@cta.int

Website: www.cta.int

Email for readers' letters: spore@cta.int

Compiler: *Spore* is compiled by a consortium formed by Louma productions and Médiateurs

Louma productions, 3 rue Neuve, 34150 Aniane, France

Fax: +33 467 570 180

Email: louma@louma.fr

Médiateurs, W-Alexanderpoort 46,

1421 CH Uithoorn, The Netherlands

Fax: +31 297 540 514

Email: info@spore-magazine.org

This issue was compiled by

Marcel Chimwala, O'Neil Cuffe, Bernard Favre, Singy Hanyona, Erik Heijmans, Isabelle Mamaty, Paul Osborn, Jacques Sultan.

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Born in Kenya, Bernard Keraita is an irrigation and water engineer. He currently works with the International Water Management Institute (IWMI) in its Ghana office, where he coordinates the Wastewater Use in Agriculture Research project that covers the West African region.

Wastewater irrigation

No water to waste, not even wastewater

With competition stiff for high quality fresh water for domestic and industrial users, the use of wastewater for agriculture can release better quality water for these other sectors. Wastewater unquestionably contains valuable nutrients, but poses health risks too. A look at the nuances.

Wastewater irrigation is a reality. Though generally unacceptable, irrigation using untreated wastewater exists and is practised in many ACP countries, where sanitation and treatment infrastructures are poorly developed and, besides, are not a priority. A senior government water engineer here in Ghana once told me, "The first priority is clean drinking water for all, then we shall think of wastewater."

Worldwide, 20 million hectares are reportedly under wastewater irrigation, but it is much more if we consider seasonal users who use it during the dry seasons, and those who use it in diluted forms from streams or rivers. Wastewater is basically the liquid waste suspended in water, mixed with groundwater or surface water.

The main sources of wastewater are domestic and industrial. As a general rule, 80–85% of water used is wasted. Most populations in ACP towns and cities have outpaced the sanitation facilities, if these facilities are present in the first place. I am not opposed to treatment – the technologies are there, ranging from the more complex trickling filters to simple ones, such as using duck weed and stabilisation ponds – but if I just take the cases of Ghana and Kenya at a glance, then treatment will solve only a very small part of this wastewater problem. It is going to be a long-term exercise.

A do or die situation

In Accra, Ghana, the local authorities enacted a bye-law in 1995 prohibiting the use of untreated wastewater in irrigation, but today, 7 years on, farmers are still using it. It is a 'do or die' situation. I know the risks of wastewater use, but stopping it is very impractical.

A major advantage of using wastewater is that it contains high levels of nutrients, reducing the need for and cost of fertilisers. Consequently, many farmers using wastewater are better able to support themselves and their families and often

create extra employment. In addition, many of these people are poor, small-scale farmers living on the fringes of towns and cities and I say, if we are aiming at poverty alleviation, this is the group that we have to focus on. If alternative sources of water are not available, which is usually the case, we have to do more research to come up with better strategies to reduce the negative impacts while they continue using untreated water.

The main constraint that often overshadows the benefits of wastewater irrigation is its negative public health image because of its contaminant constituents, such as heavy metals and microbiological pathogens. But in most ACP countries with limited manufacturing industry, heavy metals are not a major problem. The great worry in these countries is crop

"If we are aiming at poverty alleviation, it is the group of poor, small-scale farmers that we have to focus on"

contamination from microbiological pathogens, including *Escherichia coli* bacteria and helminths that cause dysentery and diarrhoea. Few farmers wear protective clothing while irrigating, due partly to lack of awareness and partly to lack of money to buy the gear. Here in Ghana it is fairly common to see a farmer eating while irrigating. This exposure can cause diseases and skin-related infections. Farmers should be trained to avoid these problems.

Without playing it down, I personally believe that the health issue is being exaggerated somewhat. Most research on this subject has focused on negative impacts on health rather than on positive impacts on food provision. This has led to an

unbalanced impression among policy-makers who have gone ahead to make by-laws that are against wastewater use. In turn, this has created distorted perceptions in public opinion. People claim that wastewater use in irrigation causes malaria, cholera, leprosy and so on. But this is not necessarily the case; these problems could stem from other farm activities or inputs such as manure. Besides, crop contamination can occur just as easily at market and consumer levels. We really have to do more research to clearly point out the actual effects of wastewater irrigation and their implications for both health and food security.

Raw or cooked

Nonetheless, several management practices can be implemented to reduce the negative effects. Instead of using overhead irrigation methods such as watering cans and sprinklers, applying water directly to plant roots is more appropriate, since soils and crops act as living bio filters. Furthermore, most pathogens die in 15–30 days, so if irrigation can be stopped well before the crops are harvested, then part of the risk can be reduced. The impacts of wastewater irrigation on crops that are eaten raw, such as lettuce or tomatoes, are likely to pose greater health risks than crops that are cooked before eaten. If crops are cooked well, most pathogens die at less than 60°C.

In short, I have every reason to believe that wastewater irrigation will expand in the near future. With lower levels of treatment required compared to fresh water for consumption, it must be possible to use wastewater safely in agriculture. But we need to make policy-makers, donors and all stakeholders aware that this is a real need and that we are short of alternatives.

The opinions expressed in Viewpoint are those of the authors, and do not necessarily reflect the views of CTA.