

SPORE

The magazine
for agricultural and
rural development
in ACP countries

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INTERVIEW

Akinwumi Adesina, new
President of the African
Development Bank and former
Minister of Agriculture
for Nigeria

N°176
JUNE-JULY 2015

ACCESS TO FERTILISERS

Finding the right path

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Editorial

Making the Malabo Declaration a reality

Throughout 2014, African agriculture was in the limelight thanks to the African Union (AU) Year of Agriculture and Food Security, which was celebrated across the continent through a variety of events and numerous policy pronouncements.



The most significant outcome of the initiative was the Malabo Declaration, issued by the African Heads of State and Government in June 2014. This Declaration gave renewed impetus to the Comprehensive Africa Agriculture Development Programme (CAADP) launched in 2003. Providing specific investment and growth targets for Africa's agricultural sector, CAADP has become a well-recognised brand and a tool for advocacy, helping to align countries and their development partners towards a common set of targets. Many countries have developed national investment plans to drive their agricultural growth and transformation, based on CAADP recommendations.

The Malabo Declaration focuses on delivering measureable results and impact in seven areas of commitment, in order to transform African agriculture by 2025, including doubling agricultural productivity, halving postharvest losses, creating jobs in agriculture for 30% of Africa's youth and tripling intra-African trade. It also highlights the importance of institutional and policy change to create an enabling policy environment at the national and regional level.

The 11th CAADP Partnership Platform, held in Johannesburg on 25–26 March 2015, brought together a large number of stakeholders to discuss specific actions and modalities for the implementation of the Malabo Declaration. Each stakeholder was asked what they would do to realise the goals set out in the Declaration. Empowering women was a key theme at the meeting in light of the AU's 2015 Year of Women Empowerment and Development. With better access to productive assets, African women can make a greater contribution to agriculture and derive greater benefits from it.

Let us all do our best to make the Malabo Declaration a reality.

Michael Hailu
Director – CTA



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Finding the right path

Producing more and better is a priority for farming worldwide. But in Africa, the task is even more difficult given that agricultural productivity is lower than in any other region. Providing access to fertilisers is therefore vital.



Until recently, increasing food production in Africa had generally been achieved by extending cropland. But population pressure, increased competition between crop and livestock farming, and declining soil fertility are forcing African countries to ramp up their investment in fertilisers. So what fertilisers are best – chemical, organic or mixed? While some promote fully organic farming, most experts agree that chemical fertilisation is necessary to a greater or lesser extent, albeit in combination with a relatively high level of soil organic matter and good cropping practices. Opinions differ, but all agree on the importance of producing more on the

same amount of land without damaging the resource base, an ambition now widely known as ‘sustainable crop intensification’.

The statistics are startling: on average, fertilisers are applied at a rate of 10 kg/ha in Africa, compared to 100 kg/ha worldwide and 200 kg/ha in Asia, and are typically focused on cash crops or commercial plantations. Africa’s minimal use of fertiliser can be explained by a number of factors: high fertiliser costs (up to four times greater than elsewhere in the world), insufficient ports, roads and distribution infrastructure, and weak access to credit among smallholder farmers are three of the most significant.

In Ethiopia, soil samples were taken to draw up a comprehensive soil map from which tailored fertiliser formulations were developed

Reducing fertiliser costs

Driven by international markets, fertiliser prices are high and will remain so, making them unaffordable to the majority of African smallholders. Many countries strive to offset this problem by subsidising fertilisers, but this is costly, weighs heavily on state budgets and is frequently ineffective: subsidised fertilisers do not always reach the targeted farmers and cases of misappropriation and fraud are common.

In response, ‘smart subsidies’ have been developed by the International Fertiliser Development Center (IFDC), which is active in various countries including Malawi, Mozambique, Nigeria and Rwanda. The subsidies come in the form of fertiliser vouchers that are issued on a case-by-case basis to targeted farmers, who in turn take them to registered distributors to obtain fertilisers at a discounted price. This more transparent system, typically implemented through a public-private partnership, is a way for countries to provide direct help to needy farmers and develop an effective fertiliser distribution network.

Tailored fertilisation

Farmers’ fertiliser expenditures may also be reduced by tailoring fertiliser formulations to soil and crop characteristics, thus boosting their efficacy. Ideally, specific fertilisers should be formulated to match the characteristics of each field; while this is clearly unrealistic, current trends in fertiliser manufacturing are moving in the right direction.

In Ethiopia, for instance, 3,500 soil samples were taken throughout the country to draw up a comprehensive soil map. Levels of nitrogen, phosphorus, potassium and trace elements in the samples were recorded. Fertiliser formulations were then developed for specific regions and crops, based on field test findings and mathematical model simulations. An initial 120 formulations were subsequently narrowed down to 12.

Ethiopia’s next step has been to invest in a number of fertiliser blending plants to manufacture complex, ready-to-use fertilisers, thus overcoming the need to import these formulations. The first plant, located in the Oromia region, began production in June 2014. Three others should soon be operational in Amhara, Tigray, and the Southern Nations, Nationalities and Peoples’ Region. The ultimate aim is to help 11 million smallholders increase their crop yields by giving them access to these tailored fertilisers. Farmers’ cooperatives are full partners in the initiative, operating the fertiliser blending plants with the support of regional governments and Ministry of Agriculture agencies.

“Bespoke fertiliser formulations will generate much higher agricultural and economic returns. Hence, at virtually the same cost, crop yield increases of over 35% can be achieved through just slight adjustments in the fertiliser compositions and especially by focusing on trace element levels,” says Patrice Annequin, IFDC senior market analyst and coordinator of the AfricaFertilizer.org initiative.

Reaching farmers

Fertilisers must be accessible for farmers, which means establishing distributor networks. While there are vast regions with no distributors at all, networks have been relatively well developed in some countries. Uganda, for instance, has around 2,000 input distributors, and since the turn of the century, Niger’s Ministry of Agriculture

has been developing fertiliser outlets (currently around 800) that are managed by farmers’ organisations. Farmers can purchase inputs in small quantities while also getting advice on how to apply them.

Another way to improve input availability is to link smallholders with markets i.e. input suppliers put fertiliser producers in contact with the farmers. For example, WIENCO, the main private fertiliser distribution company in Ghana, links farmers with the Masara N’Arziki maize farmers’ association. One hitch, however, is that farmers have to sow at least 5 ha of maize to qualify to be an association member, which in practice excludes farmers with small or very small farms. Apart from being privately run, this resembles the public integrated cotton production sectors in West Africa.

Towards ecological intensification

In terms of organic approaches, a number of new technologies and alternative solutions are being developed to help farmers address the challenges they face. These include agroecology, agroforestry, permaculture and crop-livestock integration. Overall, the trend is moving towards ecological intensification, which implies that nothing is lost and everything is transformed; dung becomes manure and plant waste becomes compost. New practices are being implemented, such as direct seeding, mulch-based cropping systems and crop rotations, especially with legumes or nitrogen-fixing trees. These ‘green manures’ enhance soil fertility management and are affordable for smallholders.

In Africa, a green revolution is in the making but will, undoubtedly, be very different to the model that prevailed in Asia and Latin America. ■

Anne Guillaume-Gentil

Africa benefits from experience in Bangladesh

For over 20 years, IFDC has successfully used the fertiliser deep placement (FDP) technique for rice fields in Bangladesh as an alternative to conventional fertiliser application methods. The fact that 70% of urea was lost via runoff or evaporation prompted the idea of compacting this organic compound into briquettes. These are buried in the soil manually or with a mechanical applicator to a depth of 7–10 cm near the plant roots, where they gradually release nitrogen. This practice boosts yields by 18% on average, while reducing fertiliser quantities by roughly a third. Since 2009, IFDC has been promoting FDP in 13 African countries and similar improvements have been achieved in rice crop fields in all of these areas. Annequin points out, however, that this process has so far only proven successful in irrigated cropping systems, which limits the scope of its use in Africa.



H.E Aakinwumi
Ayodeji Adesina

AKINWUMI AYODEJI ADESINA

Riding the wave of reformation

H.E. Akinwumi Ayodeji Adesina has almost 25 years of experience in managing successful agricultural programmes across Africa. As Minister of Agriculture and Rural Development for Nigeria, he pioneered the implementation of the e-wallet. He is now the new president of the African Development Bank.



There has been a great deal of interest in Nigeria's 'e-wallet'. What are the key elements and what made you decide that this system was needed?

We decided to implement the e-wallet system to reduce the Government's direct involvement in the procurement and distribution of agro-inputs. This joint initiative between the Central Bank of Nigeria and the Federal Ministry of Agriculture and Rural Development ensures that agro-inputs as well as key extension messages reach the farmers in a fast and transparent way. Key elements include modules on farmer registration, transaction management, agro-dealer lending, and third party auditing. By putting the power in farmers' hands, vouchers for subsidised inputs; seed and fertiliser are received on their mobile phones - or 'e-wallets' - which they use to buy inputs directly from the agro-dealers.

Since its launch, what have been the major benefits for farmers and the Government? What will be the long term impact of the e-wallet on Nigeria's agricultural sector?

Since 2011, we have reached about 20 million smallholder farmers. Fertiliser companies have sold €100 million and seed companies €10 million worth of inputs. Banks have lent €20 million to agro-dealers and the default rate has been 0%. We now have an up-to-date register with complete profiles of more than 15 million farmers. As a nation, we have produced an additional 21 million tonnes of food and reduced the food import bill. According to the National Bureau of Statistics, food imports declined from €6.3 billion in 2009 to €4.11 billion in 2013, and continue to decline. Our national import bill for rice has been reduced by 60%.

We have successfully brought transparency, accountability and structure to the input distribution system in Nigeria and we can track whatever is going on within the system. It has also restored trust between the Government and farmers. Major local and international investors are investing in this new agriculture sector.

“Since 2011, we have reached about 20 million smallholder farmers. Fertiliser companies have sold €100 million and seed companies €10 million worth of inputs. Banks have lent €20 million to agro-dealers and the default rate has been 0%.”

The long term impact of the e-wallet system is the integration of all the elements of our national agricultural system: from production to consumption. Attaining our national food security and economic development goals is no longer unreachable. Agriculture has regained its rightful place as the major creator of jobs and increased incomes. We can reduce our dependency on oil wealth because we also have 'soil wealth'.

What have been the challenges? Is there need for continued government intervention or will farmers be willing to pay for future services?

Changing behaviour that has been entrenched over 40 years was not easy but we have succeeded in convincing farmers and agro-dealers, among others, to adopt

this transparent way of doing business. The second challenge was infrastructure. We need a more robust telecommunication, road and rail infrastructure. Our investments over the past 3 years are now bearing fruit. For example, more farmers have adopted mobile telephone technology, we have fixed major roads and we have increased

access to markets. We plan to upgrade the e-wallet by embedding a micro-chip to serve as an electronic identification bank card as part of the Nigerian Agricultural Payments Initiative.

What advice would you give to other African governments who are considering adopting the e-wallet?

Nigeria is the first African country to launch an electronic wallet system for the delivery of subsidised inputs to farmers. Our advice is simple; visit Nigeria to learn from our experience if you want to implement your programme at a faster pace. There is no need to replicate our mistakes. ■

Judith Francis
and Susanna Thorp

NUTRITION

The benefits of *chaya*

CARE is encouraging the production and consumption of *chaya* (spinach) in a pilot project with more than 150 farmers from Nampula district, in northern Mozambique. High rates of malnutrition, and the fact that *chaya* is a fast-growing plant with recognised nutritional qualities that can be produced all year round, have led to this change. The project will include cooking demonstrations and awareness-raising of its dietary importance.

CÔTE D'IVOIRE

Fresh boost for rubber tree

In 2012, the Ivorian government decided to increase the total area dedicated to rubber tree to more than 300,000 ha by 2020. In the Daoukro, Dimbokro, Prikro, Bocanda, M'bahiakro, Gagnoa and Bongouanou regions, farmers have shown their willingness to replace cocoa and coffee with more profitable rubber tree cultivation. It has the notable advantage of generating a monthly income. Rubber production increased to 311,429 t in 2014, up from 255,000 in 2012.

LOCAL CEREALS

Pasta made in Cameroon

Instead of imported wheat, Dorothy Selamo, a Cameroonian businesswoman, is using cassava, yam and cocoyam flour to make pasta. To achieve this, she discovered a technique to enable her products to maintain their viscoelasticity once cooked. The pasta is sold in Douala under the brand 'Miondonini'.

BEE INNOVATION

Insulated hive

A South African beehive protects bees from extreme temperatures, thereby reducing colony stress and maintaining productivity. The composite material used to make BeePak™ hives is lightweight, easy to transport and has a 50-year lifespan. The new hive produces around 5kgs more honey than traditional hives.

FARMER OWNERSHIP

Process and profit – Uganda's coffee revolution

Over 700,000 coffee farmers are benefiting from a new system for adding value to their coffee beans, and are earning more from their crop as a result.

In Uganda, coffee farmers have traditionally been price takers, selling their unprocessed coffee beans for whatever a buyer will offer. Under the Farmer Ownership Model, developed by farmer Joseph Nkandu and recently recognised as a CTA Top 20 Innovation, farmers join together, form partnerships with exporters and roasters, and take on several roles within the coffee value chain. This

process has been led by the National Union of Coffee Agribusinesses and Farm Enterprises (NUCAFE), and now involves over 700,000 farmers in 160 associations.

Under the new inclusive model, NUCAFE and its member associations do not buy the farmers' coffee, but rather provide farmers with affordable services. This allows farmers to retain ownership of the coffee during the value addition process, and thereby earn a higher return from the value added product. Farmers take responsibility and share in the benefits from the more lucrative parts of the value chain. Coffee processors have also benefited, achieving higher operational capacity for their processing equipment and increased revenue.

The model redefines the role of farmer organisations to being partners who work with farmers to increase the value they receive from commodity sales. Engaging in more profitable parts of the value chain has not only

increased farmer incomes, but is also challenging and reshaping power relations within the chain. Farmers have been motivated to invest in developing their entrepreneurial and leadership skills, as well as infrastructure and policy advocacy. As a result, the model has been incorporated within the National Coffee Policy, launched by the Ugandan government in December 2013. It has also been prioritised for adoption in other farming sectors by national and regional organisations responsible for agricultural development. ■



Joseph Nkandu, executive director of NUCAFE (on the right with a hat) training farmers on coffee bush management for better coffee, and improved investment returns under the farmer ownership model

Lenah Bosibori

WOMEN'S BUSINESS

Women count on cooperatives to change their lives

Hundreds of women from northern Mozambique, organised into rural cooperatives, have changed the lives of their families by creating a flow of agricultural products and fish to urban areas. These groups are also raising awareness in rural communities on women's rights, with a focus on civic and political engagement and resource management in the region. Rosa Halaneque, leader of a women's group in Meconta district, said her work in the last two years has helped change her family's life. "Now I can send my children to better schools and ensure they are well fed," she says, stressing that this change "has been shared by the members of most groups."

Aunício da Silva



© C Fricks

Haitian farmers are using good agricultural practices to help control aflatoxin contamination in groundnuts

AFATOXIN CONTROL

Saving lives and livelihoods in Haiti

Haitian groundnut farmers have adopted innovative strategies to tackle aflatoxin contamination, thereby improving their incomes and consumers' health.

In Haiti, the NGO Meds & Food for Kids (MFK) is providing a valuable market for locally sourced groundnuts. MFK is an approved supplier of groundnut-based ready-to-use foods (such as fortified peanut butter) to UNICEF (the UN Children's Fund) in Haiti, used in feeding programmes. Since 2004, MFK has sourced over 180,000 kgs of groundnuts from Haitian farmers, using a model that supports smallholders to control aflatoxin contamination through training, collaborative research and price incentives. As a result, farmers have been able to access credit and increase yields by 30% and farm incomes by 100%.

Aflatoxins – poisonous chemicals formed by soil-borne *Aspergillus fungi*, which are commonly found in the tropics – are highly carcinogenic, leading to liver cancer after long term exposure. Children are particularly at risk, and consumption of contaminated

foods is strongly linked with childhood stunting and reduced birth weight. Aflatoxins are also damaging to livestock health and can enter the human food chain through foods such as milk and eggs.

Meds & Food for Kids, with the support of their farmer networks, has been able to reduce aflatoxin contamination levels to within international standards. Developed in collaboration with national and international partners, MFK's model – one of CTA's Top 20 Innovations - promotes the use of appropriate control strategies throughout the entire value chain. At the field level, the model focuses on the adoption of good agricultural practices, for example use of vigorous varieties, crop rotation, timely planting, maintenance of soil fertility and weed, pest and disease control. Harvesting, threshing and drying to less than 10% moisture must be done as quickly as possible. Tarpaulins are used when drying and breathable bags are used for storage to prevent moisture build-up. MFK also conducts moisture and aflatoxin testing at the point of purchase. Collectively, these strategies ensure that aflatoxin levels are controlled.

Since 2012, a private company, Acceso Peanut Corp., has expanded the model to new regions of Haiti, opening up new markets to more farmers. ■

Soumaila Diarra

NATURAL MEDICINES

Plants for promoting health and well-being

In Palau, a recent survey of traditional medicine use found that seven out of ten people self-prepared medicinal remedies using plants such as *Morinda citrifolia L.* (used as a treatment for diabetes) and *Phaleria nishidae* (used to treat obesity). The plants are now being investigated in clinical trials.

CALLING FOR HELP

ICT support for medical emergencies

Rural people in Cameroon's far northern district of Lagdo have gained improved access to health services thanks to a new, ICT-supported, emergency alert system. Under M-Health, farmers warn local health facilities of an emergency via text message, the system pinpointing their location using GPS.

BIOFORTIFICATION

Interactive tool for investments

A new interactive online tool, the *Biofortification Priority Index (BPI)*, is now available to guide stakeholders in making investment decisions on seven crops biofortified in vitamin A (cassava, maize and orange sweet potato), iron (bean and pearl millet) and zinc (rice and wheat). The BPI, developed by HarvestPlus – a global research partnership - gives useful information to determine which crops the investment will have the highest payoff for in reducing micronutrient deficiencies. <http://tinyurl.com/osf7l7g>

PESTICIDES

Improved health

In Kenya, pesticides are widely used on vegetable crops. In order to limit the damage caused by insects and to protect the health of agricultural workers, researchers from the African Insect Science for Food and Health (icipe) have developed polyethylene nets to place over crops. This has effectively reduced pesticide use for tomatoes and beans by 100%.

FISHERIES AND LIVESTOCK

BIOGAS

Recycling livestock waste

In Uganda and Kenya, abattoir waste is being used to produce biogas and bio fertiliser for use as organic manure.

With a daily slaughter capacity of over 700 cattle and 450 smaller livestock, Kampala City abattoir produces around 400 m³ wastewater per day, with a damaging impact on both the ecology and the quality of drinking water in the area. Researchers at Makerere University are working with Bio-resources Innovations Network for Eastern Africa to help the abattoir reduce and clean its wastewater. Waste from the abattoir is first passed through digesters to produce biogas. The digested waste is then separated into a nutrient-rich sludge for use as a bio-fertiliser. The effluent, meanwhile, is passed through a hydroponic system constructed in an artificial wetland, to be further cleaned before it is dispersed into the environment.

In Kiserian town in Kenya, 320 Maasai pastoralists running Keekonyokie slaughterhouse are also producing biogas from livestock waste. The digested waste is then used as manure to replenish their grazing pastures. The abattoir is capable of generating biogas for 100 x 6 kg cylinders per day, which are sold for €6.5 per cylinder, about half the cost of conventional LPG gas. According to Professor Erastus Gatebe of Kenya Industrial Research and Development Institute, a biogas flame is hotter one than that produced from LPG gas, and guarantees 30 to 40% greater energy efficiency. ■

Sophie Mbugua and James Karuga

A biogas collection system at Wambizzi abattoir in Kampala, Uganda



TRADITIONAL KNOWLEDGE

Ethno-veterinary database

Ancestral knowledge of goat, sheep and cow diseases is being tapped from 250 ethno-veterinarians in four districts in Rwanda. Their knowledge is being used to compile a French-Kinyarwanda (local language) database of animal diseases and their symptoms. The ethnovets are also helping researchers from VSF Belgium, Rwanda Scientific and Technological Research Institute and Rwanda Agriculture Board and National Veterinary Laboratory identify the ethno-medicinal plants and herbs and their active ingredients used to treat livestock diseases. The focus of the collaboration is on common diseases like mastitis and worm infections.

James Karuga

FODDER

Solar incubator for stockfarmers

A fodder production unit has been set up in Fatick. Acquired under a cooperation programme between Senegal and Saudi Arabia, the unit can produce within a very short time (7 days), up to 1 t of fodder a day. A special feature of this incubator is that it is powered by solar energy with the possibility to switch source to electrical energy powered by a generator.

CAVIES

Protein-rich rodents

In South Kivu region of DRC, over 18,000 households displaced by war have increased their protein intake by 20% after engaging in cavy husbandry. After maturing at 6-8 months, locals use them for home consumption or sell them at €0.8-1.5. According to researchers, protein content of cavy meat is higher than chicken and ideal for malnourished children.

FISH FARMING

Indoor aquaculture centre boosts production

An indoor fish farming unit in the south of Cameroon is boosting production and providing employment to over 200 people.

Cameroon's Miyomesala indoor fish farming centre, established in 2012, is supplying around 250 t of fish per year to the Cameroon market, and aims to double this production within the next three years. Built by the national government and local council authorities, the indoor system aims

to maximize production in a relatively small amount of land, while reducing water usage. Wastewater from the fish rearing process is largely re-circulated after treatment.

The centre practices polyculture of Nile tilapia and African catfish and directly employs 23 young, trained fish farmers. Over 200 people benefit indirectly through marketing, fish smoking and production of feeds. According to the local authorities, fish farming has become a major source of income for the council, already earning over €120,000. This success has encouraged the government to rethink its aquaculture policy, with plans to invest money normally used for fish importation to train farmers and subsidise indoor aquaculture through cooperatives and local council projects. ■

Elias Ntungwe

EXPANDING SECTOR

Aquaculture set for rapid growth

Increased investment in the aquaculture sector will boost production of farmed fish by as much as 4.14% per year over the next decade, according to a recent report by FAO. Enhanced technologies in water use, breeding, hatchery practices and feeds will be the main drivers of growth in the sector, which in 2014 contributed more to direct fish consumption than captured fish. However, alternative forms of fish feed, such as those based on vegetable protein, will be required to meet expanding needs and respond to price pressures, particularly in Africa where many fish farmers rely on imported feeds.

Mike Davison

CARBON PROJECT

Making money from mangroves

By restoring degraded mangroves, communities in Kenya and Mozambique are earning funds for community projects and protecting themselves against flooding.

Mikoko Pamoja, a small-scale carbon offset project in Gazi Bay, Mombasa, Kenya is helping local communities to protect and rehabilitate their mangrove forests and thereby qualify to receive carbon funds. The community project has been accredited by Plan Vivo to sell credits to the value of 3000 t of carbon per year over the next 20 years, which is derived from a mix of avoided deforestation and forest degradation plus reforestation activities.

As well as offering crucial nursery habitat for marine life and protecting the coastline from storms and tsunamis, mangrove forests are natural carbon sinks. Able to lock and store CO₂ in their sediments, the forests help lessen the impacts of global warming. Their carbon storing powers are thought to be on average five times that of tropical rainforests.

Women from Mtepeni village in Kilifi County replant mangroves to qualify for carbon credits



The sale of carbon credits from replanting mangroves will help fund local community needs

However, according to Professor Mark Huxham of Edinburgh Napier University, one of the key forests in Mikoko Pamoja, Kenya has lost 20% of its mangroves in the last 25 years.

Through its activities, Mikoko Pamoja ('Mangroves Together' in Kiswahili) expects to generate an average of €11,000 each year from sale of carbon credits, 30% of which will go towards meeting local community needs. In 2013, a very good year for the project, they sold 3,000 t and received approximately €13,700, which the Mikoko Pamoja Committee decided to use to improve the education system in the area. As a result Makongeni primary school benefitted from books and Gazi primary school saw their leaking classrooms renovated.

Meanwhile in northern Mozambique's coastal districts of Moma and Angoche, local communities are drawing on knowledge gained in training activities to invest in replanting of mangroves and more robust construction of houses. Replanting has been recommended by a number of NGOs as a means of minimizing the impact of floods, a high priority in the context of climate change. Construction of smaller, more robustly designed houses in less windy locations is also a climate coping strategy, with more frequent and intense storms posing a dangerous threat to stored crops and other household goods. ■

Sophie Mbuguah and Aunicio da Silva

PRODUCTIVITY RESTORED

Land rehabilitation in Ethiopia fights food insecurity

In Ethiopia, 1.3 million ha of degraded land have been restored to productivity since 2003 by a joint programme between the Ethiopian government, the World Food Programme and local communities. Terracing to stop soil erosion, reforesting of bare land and water harvesting have been key activities.

SMS SERVICE

Improved weather forecasting for Africa

An innovative, SMS-delivered tropical weather forecasting service, which provides smallholder farmers with more accurate, location specific information, has been developed for West Africa and tested in Ghana. The ISKA™ service, a CTA Top 20 Innovation, is being delivered in partnership with the MTN telecoms company.

INVASIVE SPECIES

South Africa regulates tilapia farming

Farming of Nile tilapia (*Oreochromis niloticus*) in South Africa has been put under strict regulations, with the species declared invasive. Research has shown that the species, favoured for aquaculture, is breeding with and threatening the indigenous Mozambique tilapia (*Oreochromis mossambicus*).

GLOBAL TOOL

New atlas measures yield shortfall

The recently launched Global Yield Gap Atlas, developed by the University of Nebraska and other project partners, allows users to estimate the gap between potential and actual crop yields, based on plant, soil and climate data for a given area. It aims to boost production while conserving land and water.

CARIBBEAN NETWORK

Engaging youth with the environment

Targeting young people aged 15–31, the Caribbean Youth Environment Network (CYEN) is currently involved in a wide variety of youth education, information delivery and advocacy projects. With over 800 individual members and more than 30 organisational members at the start of 2015, the network is focusing on a number of key issues connected to climate change and the impact of natural hazards. Potable water conservation, wastewater management, sustainable agriculture and land degradation are among the leading priorities, with a CYEN statement on climate change delivered at the Small Island Developing States conference in Samoa in 2014.

Luke Smith

URBAN AGRICULTURE

Assessing environmental risks

For the first time, researchers from the French research institute CIRAD and the University of Abomey-Calavi in Benin have quantified the environmental impact of tomato farming in the urban gardens of Cotonou, Grand-Popo and Ouidah in Benin. Despite a great variability of situations, the study shows that the overall low results and high environmental impact are due to excessive use of pesticides.

REMOTE CONTROL

Farming by phone

Edyn has developed a solar powered, smart phone operated system enabling gardeners to both monitor and respond to changes in their garden from a distance. The Garden Sensor monitors humidity, pH, temperature and light and can advise on which crops to plant. An automated watering device is also available.

NITROGEN USE EFFICIENCY

GM rice trials in Ghana

Ghana's Crops Research Institute, investigating Nitrogen Use Efficiency (NUE) in rice plants, believes it may have identified genes that offer a 15% yield advantage over non-GM varieties. Future experiments will evaluate plants for greater efficiency in water use and salt tolerance, as well as NUE.



Voice technology is helping farmers to market their products via the radio

ACCESS TO ICT

Voice technology supports rural communities

Radio Marché enables rural communities in the Tominian area to access market information available online for farming businesses.

How do you bridge the digital divide to benefit illiterate rural communities who have no access to the internet or a computer? Voice technology appears to be a solution. Amadou Tangara, a Malian innovator, has developed three platforms giving rural communities access to new technologies through voice: Tabalé organises events, Foroba Blon supports citizen journalism and Radio Marché links together 600 small farmers (70% women).

Thanks to Radio Marché, more than 20 rural communities in the Tominian area, south of Mali, are now selling honey, shea nuts, tamarind and other products. It's a business system that helps farmers to find customers for their products by converting market information sent through mobile

phones into computer generated voice communiqués broadcasted on the radio.

How does this virtual farmers' market work? On a weekly basis, farmers send an SMS to the project coordinators with the type and quantity of goods they want to sell. These offers are entered into a form on the Radio Marché website. The system automatically converts the information into a voice communiqué in French and notifies the radio by SMS. The radio journalist simply dials a phone number and hears a communiqué, which can be saved and broadcast on the radio directly from a mobile.

The radio station can broadcast the message several times a day. This saves the journalists' time, in no longer needing to read long data lists, and ensures that the information is broadcasted accurately. Stations connected to the internet can receive the voice communiqués as audio files sent by e-mail.

To create the automatic voice messages, the project team recorded and processed the personal voices of two journalists, one from a rural radio and the other from the Malian public radio, to make the communiqués sound natural although computer generated.

Today, Radio Marché is generating voice communiqués only in French but is aiming to extend the service in vernacular languages and to other areas in Mali and the West African sub-region. ■

Soumaila Diarra

These 6 pages were produced with contributions from: **N Ackbarally** (Mauritius), **M Andriatiana** (Madagascar), **B Bafana** (Zimbabwe), **B H Carreon** (Palau), **S Diarra** (Mali), **K A Domfeh** (Ghana), **O Issa** (Niger), **J Karuga** (Kenya), **M A Konte** (Senegal), **M Makoni**, (South Africa), **A. Matho** (Cameroon), **C Mkoka** (Malawi), **S Mubuguah** (Kenya), **S Norte** (Mozambique), **E Ntungwe** (Cameroon), **P Sawa** (Kenya), **A Silva** (Mozambique), **L Smith** (Trinidad & Tobago)

FRUIT FLY

Decisive discovery

Since 2009, a multidisciplinary team involving close to 50 researchers from 20 countries and coordinated by FAO and the International Atomic Energy Agency has been studying fruit fly, one of the most destructive fruit pests. The results recently released show that Oriental, Philippine, Invasive and Asian Papaya flies all belong to the same biological species, *Bactrocera dorsalis*. According to Dr Marc Schutze, this outcome has major implications for global plant biosecurity. It will lead to reduced barriers to international trade and improved pest management, and will facilitate transboundary international cooperation. Furthermore, quarantine measures will be more effective, post-harvest treatments more widely applied and fundamental research improved.

Anne Guillaume-Gentil

With many of Africa's economies amongst the fastest growing in the world, middle class urban consumers are increasingly changing the face of the food market in Africa. This evolving, more sophisticated market brings with it new challenges and opportunities.

MARKETING AND PACKAGING

The retail revolution



17 | VIEWPOINT
Joab Ouma:
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A direct approach

With 40% of its population living in cities, Africa is now more urbanised than India (30%) and almost as urbanised as China (45%). By 2016, over 500 million Africans will live in urban areas and the number of cities with over 1 million residents is expected to exceed 65, up from 52 in 2011. This development is critically important for retail companies, with a McKinsey report - *Rise of the African consumer* - forecasting that annual consumer spending in Africa is poised to surpass €1.3 trillion during 2015, up from €810 billion in 2008. However, whilst urbanisation and rising incomes are an attractive prospect for food companies, urban areas cannot be viewed as a single, uniform market. Consumer preferences and needs vary significantly according to available income and geographical location, and the creation of relevant packaging and marketing strategies requires detailed market research.

The World Bank estimates that by 2030 Africa's food market will be worth €0.95 trillion. Over the last 20 years, the food retail sector has been transformed by the rise of supermarkets and sales of packaged foods. This trend is showing no sign of abating, with packaged food sales enjoying double-digit growth during 2013-4. The largest market in sub-Saharan Africa (SSA) can be found in Nigeria, where a booming urban population is fuelling demand for convenience foods, such as drinking yoghurt, pastries and sweet and savoury snacks. The modernisation of urban consumer tastes in Nigeria, and a rising demand for standardised, packaged and better quality products has also coincided with the rapid growth of supermarkets and hypermarkets. Thus, whilst open markets and kiosks have been the traditional channel for packaged foods, as elsewhere in Africa, many consumers appear to be favouring the convenience of having all their household needs met by a single, large store which, through its high volumes of produce, can offer competitive prices and easy comparison between large numbers of brands.



Local focus

However, as Africa's dependence on food imports has grown and foreign companies seek to invest in the urban retail markets, many African countries are attempting to boost the availability of local products. Senegal, for instance, is one of the most food-import dependent countries in SSA, especially when it comes to rice, a main staple. In 2011, rice made up almost 40% of the country's total agricultural imports by weight, with imported rice contributing around 60% of national rice consumption. In response, the Senegalese government have been increasing their focus and investment in local

Supermarkets offer urban consumers competitive prices and easy comparison between large numbers of brands

Cashing in on convenience

Cherubet foods, based in Nairobi, supplies ready-to-eat, nutritious foods to urban consumers through five of Kenya's major supermarket chains. Established in 2007 because owner and working mother, Mary Cherop Maritim, felt nutritious local foods were not conveniently available for urban consumers, the company now supplies up to half a tonne of frozen pre-cooked foods (including beans, green maize, pigeon peas, black beans and boiled maize) each week. For her products to be accepted for sale, inspection teams from each of the supermarkets visited her factory, where the foods are cooked and packaged, to verify safety standards were being met. Her employees also received training on good manufacturing practices and aflatoxin testing from the African Alliance for Improved Food Processing. Her market is currently predominantly urban middle class. However, by investing in equipment to increase production, she hopes to lower her prices and sell products in 0.5 kg packet at less than KSh 50 (€0.50), which will be more affordable for poorer communities.



© CapitalFM Kenya

rice production, and the private sector has been working hard to develop appropriate packaging and branding for the product, which many consumers regard as inferior to imported rice.

A consumer preference research project found packaging to be a key factor in rice purchasing, with 47% of women identifying brands by colours and/or symbols

rather than by brand name; consumers were willing to pay price premiums of 17% for their preferred brand. But urban consumers are not a homogenous group (see Viewpoint on p17). In Senegal, local brands were more popular among poorer women, who were not really brand conscious, and who traditionally purchased local rice; international brands were preferred among wealthier women, who tended to be more brand conscious.

Appealing to consumers' national loyalty by packaging only locally manufactured goods, Eastern Africa's Nakumatt supermarket launched 'Blue Label' - its own store brand - in 2013, which was designed to provide product variety alongside 'value for money'. The brand includes everyday products, such as beans, home baking flour and household cleaners, as well as more indulgent snack products, such as popcorn and chilli lemon crisps. Nakumatt has also adopted the strategy of marketing small-sized products by repackaging goods such as sugar, flour and grains under its Blue Label brand. By embracing what is popularly known as 'the *kadogo* economy' (*kadogo* meaning 'tiny' in Swahili), it is responding to consumer demand for products in large, medium and small packs.

In Zimbabwe, to attract consumers in the face of competition from cheaper, imported products, a government supported initiative, 'Buy Zimbabwe', was launched in 2011. At the time, the country imported €5.6 billion worth of goods against exports of €3.75 billion, the stimulus for the government to give priority to local producers of goods and services. The initiative has established partnerships with 60 companies who have embraced new marketing methods. For instance, Irvine, a local chicken producer, has repackaged its products with a new seal that keeps them fresher for longer. Olivine Industries (established ▶

Kershelmar Dairies in Zimbabwe is packaging its dairy products in eye catching and conveniently sized containers to suit the needs of urban consumers



© B Buřana

Keeping up with the trends

Conscious of remaining competitive in the face of cheaper, imported food products, Kershelmar Dairies – a leading Zimbabwean manufacturer – is packaging its juice and dairy products in eye catching and conveniently sized containers that suit the pockets of increasingly discerning urban consumers. Previously bulky, blandly labelled containers have been replaced by smaller, lighter, attractively labelled versions. Juices come in 250ml, 330ml, 500ml and 5l bottles. Dairy blends come in 250ml bottles and 500ml sachets. Other products, including fresh cream, butter, full cream milk, drinking yoghurt and sour milk, are sold under the brand 'Inkomaas'. "The environment is ever changing and customers have become very price conscious," says Roland Bent, Kershelmar Dairies marketing manager. "So we are continually improving our packaging to keep up with current competition and trends."

► in 1931) has taken a different strategy to marketing, re-introducing old and trusted product lines (cooking oils etc.) to appeal to urban consumers who will recognise the brand as providing quality.

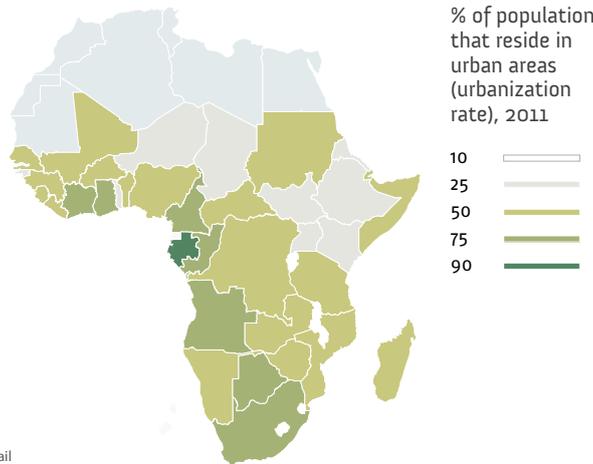
Following the Buy Zimbabwe campaign, which has taken place in-store, as well as through road shows and online marketing, retailers have said that around 50% of their consignment is now local and, as a result, Zimbabwe reduced its import bill by €1.5 billion in 2014 compared to 2013. "Many of our organisations have understood the importance of packaging; how the products appear affects the buying habits of the consumer," says Vandudzai Zirebwa, an economist with Buy Zimbabwe. "Some of our partners are now meeting world class packaging standards because they have been innovative and this has led to improved sales. However, some still have a way to go as they are operating on a tighter budget, but we encourage companies to aim high and invest in research and development." (see also box, *Keeping up with the trends*)

Opportunities for farmers?

Much of the packaging and marketing for food consumption is carried out at the top end of the value chain. But what about farmers who are endeavouring

African consumer choices in urban areas

With 40% of its population living in cities, middle class urban consumers are increasingly changing the face of the food market in Africa.

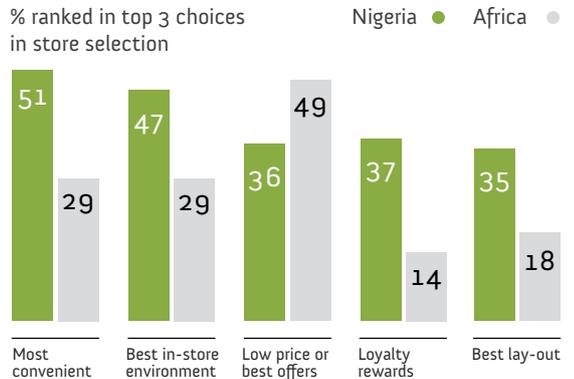


Source: A.T. Kearney African Retail Development Index, 2014

Price vs experience

As one of Africa's most developed markets, how do Nigeria's consumers' choices compare with the rest of Africa?

In more mature urban markets consumers tend to have stronger preferences for convenience and layout over lowest cost

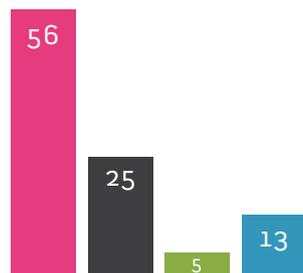


Source: - Africa Consumer Insights (ACIC), 2012 - <http://tinyurl.com/ooxywaj>

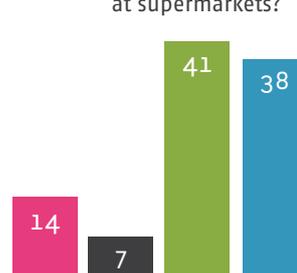
Choice vs convenience

Consumers choose different outlets according to their needs as shown in preferences for kiosks and supermarkets in Kenya

Why do people shop at kiosks?



Why do people shop at supermarkets?



- TOP UP** Buy a few specific items needed at the time
- LOCATION** Buy a few things when I am in the area
- RANGE** Buy products that I can't find elsewhere
- AVAILABILITY** Stock up on groceries across many categories

Source: Nielsen Emerging Markets Insights, 2013; Kenya

to tap into urban markets? In Zambia, the NGO Self Help Africa has supported small-scale farmers to set up a system for cassava processing and packaging in order to enhance their marketing opportunities. Before 2010, most of the farmers in Kaoma in Western Province sold pounded cassava in the market at a price that was dependent on what the buyer offered. However, in the past few years, training by Self Help Africa and Ministry of Agriculture extension officers has enabled men and women farmers to process and package their cassava in order to fix the price and quantity of their sales. Organised into Kaoma Cassava Processing, the farmers now package their processed flour into 2 and 5 kg bags which have a fixed price. And, due to the increasing demand for cassava flour by urban consumers, their attractively packaged flour is even sold by the supermarket company, Shoprite.

Through improved organisation, a greater number of Zambian farmers are now supplying grocery chains. Near Lusaka, for example, an independently owned packhouse, which supplies the retailer 'Pick n Pay', consolidates horticultural produce from about 60 farmers, who are trained in quality standards. At the packhouse, the vegetables and fruit are prepared and packaged (including trimming and wrapping) for supermarket shelves. For farmers in remoter areas, however, distance remains a problem, with fuel and transport costs from farm to packhouse still proving a significant drain on profitability. An alternative approach adopted by Farm Concern International in Kenya emphasises the creation of 'Commercial Villages', enabling smallholder producers to pool their efforts and their produce and thereby respond to increasing market demands, including in urban areas (See *Spore 172* 'Bagging a deal with onions').

Small island struggles

In the Caribbean and Pacific, urban populations are, of course, much smaller than in Africa. Nevertheless, FAO has warned that retail food outlets in small island states are increasingly selling imported, processed foods that are pricing locally produced, healthier foods out of the market and affecting the long-term health of islanders. Over 30% of the Caribbean population is obese and the cost to the economy of obesity-linked diseases, such as diabetes and hypertension, is estimated at almost €1 billion per year. If local food producers are to supply expanding urban and tourist markets and reduce demand on imported products, a policy-driven, multi-sector approach (including public and private sectors) will be required. This will be a particular challenge in the Pacific, however, where most countries currently lack the technical skills and resources to process and package local foods into the 'convenience' products demanded in urban markets. In responding to this challenge, FAO has stated that revenue generated from additional tariffs and taxes on unhealthy imported food products should be invested in greater nutrition awareness campaigns and in improving the competitiveness and availability of nutritious local foods. ■

Susanna Thorp

Viewpoint

Joab Ouma is the business development director for Lasting Solutions, Uganda – a commercial agro-processing company specialising in developing new products for the urban poor.



Meeting different needs

With expanding urban populations, rising incomes and high energy costs, what is the main priority as you see it for meeting the needs of urban consumers?

Developing affordable, convenient products for urban consumers is very important. Beans, for example, are a nutritious, popular staple but they are a slow-cooking food, which requires time and a lot of fuel. In Rwanda, they have had some experience in developing viable pre-cooked bean products that cook in less than 15 minutes, but this requires reliable production of appropriate bean varieties, effective marketing systems and competitive food products that are acceptable to consumers. We are now trying to do the same working with value chains partners in Kenya and Uganda.

How do you view the different needs of consumers and how can these needs be met through marketing and packaging?

We see that there are three different categories of urban consumers. There is the urban poor who need to have affordable food with low energy costs. Then there is the middle income group who want nutritious, value-added products that are easy to cook. Finally, you have the high income consumer who likes trendy, snack foods. To develop appropriate products, one has to determine consumer demand by assessing potential demand, package sizes and product prices. Our role in the pre-cooked bean value chain is to develop prototype products and packaging for market testing.

So how challenging is it to develop appropriate products to suit the needs of diverse consumers?

This is a new world that marketers are up against but it is a challenge we are embracing. The beauty of the challenge is that as much as consumers are diverse they have a lot in common. For instance, we all eat beans but we often eat beans very differently. Our job is to offer a range of products with a single core ingredient that is available in different pack sizes and sometimes even modify the branding to appeal to our different consumer groups.



A direct approach

In Nigeria, an innovative new scheme is bringing fresh produce from farms directly to urban consumers using young farmers and entrepreneurs.

While urban consumers are increasingly aware of the health benefits to be had from fresh farm produce, heavy city traffic and the pressures of modern lifestyles leave little time for visiting fresh fruit and vegetable markets. This, at least, is the situation in Nigeria's urban areas perceived by Afioluwa Mogaji popularly known as *Africanfarmer*, and is one of the reasons behind his 'Green Collar Jobs' project. Established in five Nigerian cities in 2012, the approach is an innovative and exciting model for agricultural marketing, which is simultaneously creating opportunities for young entrepreneurs and farmers, and bringing high quality, fresh vegetables direct to urban consumers.

Development of the direct marketing model has been driven by Mogaji's work to bring young people into profitable agriculture, through training, provision of inputs, and

negotiating access to disused government farmland – work for which the entrepreneur, chief executive of X-Ray Farms Consulting, has been recognised as a Fellow of Ashoka, the largest network of social entrepreneurs worldwide. Around 175 young farmers have, with Mogaji's support, established modern farming enterprises to grow maize, watermelons, off-season tomatoes, sweet peppers and leafy vegetables. Their produce is then sold to urban consumers by another team of young entrepreneurs who organise 'mobile markets' and direct sales.

The green collar entrepreneurs identify customers through their own networks, including professionals working in corporate organisations and church members or other social groups. With direct sales, they arrange for the farm produce to be delivered to the home, office, church or any other location the buyer chooses. For the mobile

Mogaji (left) and two 'green collar' farmers with farm fresh cucumbers to deliver direct to urban consumers



markets, rented canopies are erected and tables set up for a few hours, typically in wealthier neighbourhoods. Some of the produce is sold by the kilo, with others sold in more traditional quantities used in open markets. When sold, the profit is shared between Mogaji's firm, the entrepreneur and the farmer - an amount that farmers know will be a decent income compared to alternative marketing systems.

Making the most of marketing media

Mogaji is frequently invited to speak about agribusiness on TV and radio, and seizes the opportunity to create awareness of the green collar scheme. However, most of the marketing is done by the entrepreneurs, who use whatever publicity channels are available to inform people in their networks. These include direct marketing phone calls, text messaging, emails, Whats App, BB messenger, Facebook and Twitter, and announcements at social and religious gatherings.

Working directly with 12 entrepreneurs and indirectly with about 20 in sales of the farm produce, Mogaji gives training to them and other potential green collar entrepreneurs on a regular basis. "They are mostly men," he says, "but we are now going to be focusing more on women. Young men are often restless and keep looking for greener pastures when we have challenges. But the women are more focused and calm as their green collar businesses grow."

Multiple benefits

Care in handling and transport are important selling points when it comes to the success of the marketing approach. "Fresh vegetables sold in the open markets are often in a dismal state because of the careless ways they are handled by some transporters," says Mogaji. "Even when they get to the open markets in a good state, the foodstuffs may be washed with dirty water, and they are displayed in such a way that flies and dust settle on them." In contrast, the green collar system tries to make regular use of the same transporters, who are made aware that careless handling is not acceptable. In addition, the produce only



tends to be displayed for a short time, as potential buyers are informed in advance of specific 'opening hours' for the mobile markets, which are deliberately sited very close to the homes or offices of urban consumers.

In explaining why selling directly to urban consumers is so successful, Mogaji highlights a number of practical advantages. Apart from pressures on time and the problem of reaching open markets in heavy traffic, people are also put off by a shortage of car parking spaces near markets and the potential for harassment from market touts. And, while supermarkets are more convenient and safe than open markets, only a few of the larger, more modern ones stock fresh farm produce such as tomatoes, sweet peppers and leafy vegetables.

In contrast, the green collar model offers consumers the convenience of having produce supplied directly or sold close to their residence or office, saving time and expense and providing them with the opportunity to give feedback. There are also financial benefits: with the number of people in the marketing chain reduced, prices are generally about 10-20% less under this model than in open markets. Mogaji's direct marketing seems to have created a win-win model for farmers, young entrepreneurs and Nigeria's urban consumers. ■

Oluoyinka Alawode

Top: Mogaji explaining to young professionals why his innovative approach in selling directly to urban consumers is so successful

Bottom: Mogaji provides training to young farmers in Lagos State on using climate smart agricultural practices for growing high quality vegetables



The root crop of the century

Cassava is a versatile crop that is vital for food security. ACP countries are therefore promoting the development of cassava value chains, including processing, marketing and research.

cassava's potential for fighting diseases while improving crop yields and nutritional quality. But it was not until grain prices soared in 2007-2008 that the resurgence of interest in cassava was followed up by tangible commitments. Funds were then made available to the research community, which is essential in order to find effective ways to boost the very low crop yields hampering farmers in ACP countries. Many initiatives are now underway to develop new, high yielding, disease-resistant varieties with improved protein and beta-carotene content.

instance, the Cervajas brewery is working with 10,000 contract farmers to produce its cassava-based (60%) Impala brand beer. Meanwhile, Nigeria is investing heavily in the cassava starch and flour industry.

More effective use of cassava helps cut grain imports, but is also important for reducing rural poverty. Farmers' incomes have been rising as a result of the dissemination of improved varieties to smallholders, the development of simple, tailored processing technologies and promotion of their products. The Cassava: Adding Value for Africa initiative is in turn developing value chains for manufacturing high grade cassava flour in several African countries to benefit smallholders, while also focusing on drying technologies, among others. Meanwhile, the Caribbean Agricultural Research and Development Institute has introduced production and marketing techniques to foster the development of cassava cropping and processing in several Caribbean countries. Policies are also playing a role, as seen in Trinidad and Tobago, where cassava-based muffins have been introduced in school meals through the School Nutrition Programme.



Farmer Sophia Hagan harvests, roasts and packages her own cassava for the market

Millions of Africans, Asians and Latin Americans – often smallholders – rely on cassava for subsistence, especially during the lean season, and as a source of income. The roots and leaves are generally prepared and consumed in simple ways, but there is a growing trend towards processing cassava roots into flour, semolina (*atieke*), pasta or chips. Livestock feed is another use.

Long considered a poor man's crop, cassava has more recently begun to attract greater international attention. In 2000, FAO launched the Global Cassava Development Strategy and subsequently created the Global Cassava Partnership for the 21st Century in 2003 with the twofold aim of unlocking

An agribusiness craze

The high market potential of cassava has also attracted private sector interest. In Côte d'Ivoire and Nigeria, Nestlé is now using cassava starch rather than imported maize starch in its manufactured culinary broths. This multinational company is supporting producers, providing them with improved cassava varieties and buying their crops.

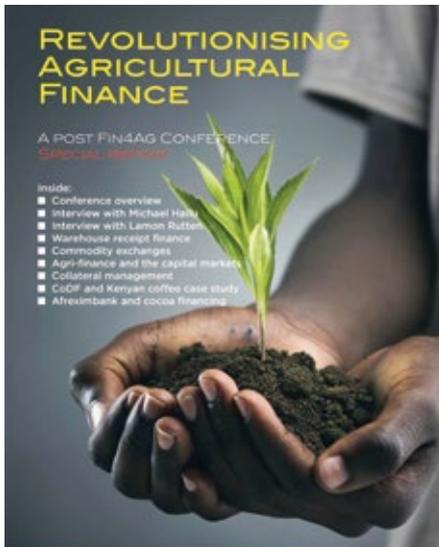
Brewers are also focusing on brewing cheaper beers using locally grown crops as a substitute for imported barley, an initiative that often benefits from government support through tax benefits. In Mozambique, for

A promising but threatened future

However, whilst the future looks bright for cassava, it could still be undermined by the spread of disease. Cassava brown streak virus disease – dubbed the 'silent killer' – has become widespread in Africa over the last decade. It is capable of destroying entire crops but farmers may only detect its presence when they harvest the damaged roots. Cassava mosaic virus may also hamper root growth and thus diminish crop yields by as much as 25%. Meanwhile, rising temperatures favour the development of whiteflies, vectors of this cassava disease. Scientists sounded the alarm in April 2013, which led to the launching of the Pan-African Cassava Surveillance Network. The stakes are high because cassava crops are very resistant to drought and therefore especially adapted to climate change. ■

Anne Guillaume-Gentil

Farmers and financiers



Revolutionising Agricultural Finance: A Post-Fin4Ag Special Report

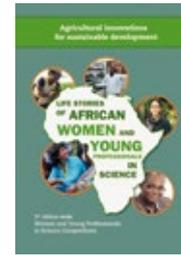
Edited by J Bell
CTA TXF, 2015; 56 pp.
CTA no. 1836
2 credit points

Downloadable as a pdf file from: <http://tinyurl.com/puab6x4>

in order to expand access to agricultural finance? This question was at the heart of the FIN4AG conference, held in Nairobi in July 2014 - the largest and most expansive event ever staged focusing specifically on agri-finance.

Achieving a better understanding between farmers and financiers was to be a major theme of the event, as reported in this attractively designed special report. Financiers need to understand the constraints faced by farmers and farmers need a better understanding of inclusive agri-finance products. Specific areas of focus during the conference included warehouse receipt systems, which in many cases have struggled to achieve the necessary scale to be viable. A nine-country review of warehouse receipt financing provides plenty of food for thought in how the approach could be refined and upscaled. African commodity exchanges also came under the spotlight, along with developments and opportunities for improved collateral management, new sources of finance such as crowdfunding, and the use of mobile phones and other ICTs, which are revolutionising the way in which agri-finance and insurance is delivered.

Scientific journeys



Life Stories of African Women and Young Professionals in Science

By R Engelhard, J A Francis, & N Ghezae
CTA, 2014; 32 pp.
ISBN 978-92-9081-572-3
CTA no. 1830
5 credit points

Downloadable as a pdf file from: <http://tinyurl.com/ojsnvt>

@ The 3rd Africa wide Science Competitions for women and young professionals, held in 2012-13, recognised the achievements of ten outstanding scientists working in the field of agriculture. This short publication tells their stories from their school experiences to their prize-winning research, and in so doing provides inspiration and guidance for other would-be scientists. Nafisa Sobratee, for instance, won first prize for her research to demonstrate the capacity of composting processes to transform poultry litter into a safe, organic fertiliser. "Optimising composting practices...is one of the solutions to Africa's soil fertility crisis," she says.

Commitment to solving the problems faced by African smallholders is at the heart of what these scientists do. Florence Kiyimba from Uganda, was recognised for her work on the forage chopper as a means of women's empowerment. Interestingly, she found that engineering challenges were only part of the issue. Social structures and support facilities within households and communities were also key if the new chopper was to be a success.

▼ A valuable framework

Value chain approaches can provide useful frameworks to examine the food system and the potential to achieve improved nutritional outcomes by leveraging market-based systems. However, understanding the links between value chains, the overall business environment in which they operate, and nutrition among targeted populations is complex. This discussion paper explores how a value chain framework can inform the design of interventions for achieving improved nutrition.

Value Chains and Nutrition

By A Gelli *et al.*
IFPRI, 2015; 72 pp.

Downloadable as PDF file from: <http://tinyurl.com/k25kw8v>

@ Better access to credit is key to transforming the agricultural sector. Yet historically, African banks have avoided financing for agriculture. With small and medium farmers perceived as high risk, having poor financial management and offering modest returns, their situation is compounded by the high costs of extending traditional banking to rural areas, which deters many lenders. Currently, 90% of investments in African agriculture are made by farmers themselves. So what are the best ways forward, and actions to take on all sides,

▼ Communal lands

2014 saw renewed momentum for securing community lands and protecting the world's forests, driven by stronger and more effective community and Indigenous Peoples' organizations. It is this momentum that makes 2015 a potentially pivotal year for the global recognition of land and resource rights, as highlighted in this annual review on the state of rights and resources worldwide.

Looking for Leadership: New Inspiration and Momentum Amidst Crises

By Fred Pearce *et al.*
RRI, 2015; 36 pp.

ISBN 978-0-9864402-0-5

Downloadable as PDF file from: <http://tinyurl.com/mjvg43n>

▼ Time to take action

In 2015, governments will aim to agree on a new framework that includes a set of longer-term Sustainable Development Goals, a future climate change agreement under the UNFCC, and a post-2015 framework to address disaster risks. Whether these actions promote food and nutrition security in the face of climate change will be one of the key benchmarks in assessing success. This brief outlines six issues that will be critical to the process.

Stepping Up to the Challenge: Six Issues Facing Global Climate Change and Food Security

By K Deering
CARE, CCFAS, and CTA, 2014; 8 pp.

Downloadable as PDF file from: <http://tinyurl.com/k25kw8v>

Poultry tips



Raising Geese

By I M Bidima
CTA, 2014; 26 pp.
ISBN 978-92-9081-565-5
CTA no. 1804
5 credit points

Downloadable as a pdf file from:
<http://tinyurl.com/nggjk5j>

 Raising geese is described in this introductory guide as a 'somewhat demanding process', and those considering it are advised to thoroughly research the potential market, to ensure that any investment will be rewarded. That said, geese have a number of qualities that make them an attractive proposition: more resistant to disease than chickens, they adapt easily to heat, cold and humidity and can also provide an effective alarm system against intruders.

Those considering goose production will find plenty of practical information in this illustrated guide, including details on housing, feeding, reproduction and raising of the young. Geese generally need to be provided with a pond or other small water body to encourage breeding, and should have access to a yard or open area for at least six hours each day. Common diseases and their treatments are listed. There are also details of foie gras production, although readers should be aware that this practice is banned in some countries on the grounds of animal cruelty.

Scaling up

In order for livestock keepers to benefit from the opportunities offered by the growing demand for livestock products, smallholder livestock production systems need to become more productive, efficient and environmentally sustainable. Interventions are required that are able to leverage investments and scale up results in a sustainable manner, on which subject this 'scaling up note' provides some useful insights.

Smallholder Livestock Development

By A Rota
IFAD, 2015; 8 pp.

Downloadable as PDF file from:
<http://tinyurl.com/phbmgp2>

Small business opportunity



Improved Techniques for Hand-Crafted Soaps and Detergents

By M G Oden Bella
CTA, 2014; 44 pp.
ISBN 978-92-9081-564-8
CTA no. 1806
5 credit points

Downloadable as a pdf file from:
<http://tinyurl.com/opgnsls>

 Small-scale production of household soaps and detergents can be a rewarding business opportunity, particularly in rural areas where the market is generally stronger than amongst urban consumers. This introductory guide provides clear instructions for making five main products: bathroom soap, laundry soap, detergent powder, liquid detergent and shampoo. For the bathroom soaps, major ingredients include a variety of oils (e.g. palm oil, coconut oil, almond or olive oil) and caustic soda, plus one of several special ingredients, such as honey, shea butter or aloe vera, depending on the type of soap to be made.

While the basic equipment needed in soap making consists of commonly available items, ingredients for the detergents and shampoo include several chemicals, which may need to be sourced from specialist suppliers. Use of safety equipment, such as gloves, goggles and a face mask, is also essential at various stages of the process, in order to avoid skin burns and inhalation of harmful gases.

Policy change

In the past decade, governments have pushed to increase use of bioenergy; increasing energy supplies and helping to combat climate change have both been key drivers. However, bioenergy that entails the dedicated use of land to grow energy feedstock will undercut efforts to combat climate change and achieve a sustainable food future. This working paper recommends distinct policy changes to phase out bioenergy forms using crops or dedicated use of land.

Avoiding Bioenergy Competition for Food Crops and Land

By T. Searchinger
8 R Heimlich
WRI, 2015; 44 pp.

Downloadable as PDF file from:
<http://tinyurl.com/okpf3fg>

Holistic approach



Climate Smart Landscapes – Multifunctionality in Practice

By P Minang *et al.*
World Agroforestry Centre, 2015;
405 pp.
ISBN 978-92-9059-375-1

Downloadable as a pdf file from:
<http://tinyurl.com/puglvzg>

■ With contributions from 86 authors, this exploration of how landscape approaches can address the challenges of sustainable development represents a major body of research knowledge. Achieving sustainable development is recognised as being a 'wicked' problem, i.e. one that is highly complex and difficult to solve. But taking a landscape approach to development, and challenging the 'one-place-one-function' view that would regard urban areas, for example, as off limits for agriculture or forestry, can enable countries to simultaneously achieve a range of objectives, whether social, environmental or economic.

Looking at landscapes within the context of climate change, this book provides a set of concepts, tools, incentives, past experiences and practices to better understand integrated landscape approaches and climate-smart landscapes, and how such concepts can be applied in practice. Written for researchers, professionals and policymakers, it is detailed and technical in style, making an important contribution in a challenging field of study.

Natural resources

This discussion paper details participatory research conducted in four countries (Bangladesh, Ethiopia, Kenya and Mali) and highlights how vulnerability to climate change is exacerbated when individuals' asset base is limited or insecure, and how this in turn is highly influenced by gender. It also reveals the degree to which assets and group participation play a role in adaptation strategies, as well as the degree to which women and men's adaptive approaches are intertwined as interdependent members of a household.

Climate Change Adaptation Assets and Group-Based Approaches

L Abermann *et al.*
IFPRI, 2015; 28 pp.

Downloadable as PDF file from:
<http://tinyurl.com/n5c4uxc>

Business guide



 Targeting those already engaged in food processing operations, this detailed and comprehensive handbook aims to raise awareness of the exciting opportunities in production of high value foods and ingredients. These include mushrooms, spices, essential oils, high value nuts, coffee, cocoa, tea and honey. For each, the authors offer a highly practical summary of the essential information needed by would-be producers, in terms of basic production and processing methods. Readers should note, however, that the handbook does not set out step-by-step instructions on food processing operations.

▼ Reducing risk

During El Niño episodes, normal atmospheric patterns become disrupted triggering extreme climate events: droughts, floods and more intense and frequent hurricanes. This study aims to enhance understanding of the El Niño phenomenon using FAO's Agricultural Stress Index System, which will in turn improve effective early warning capabilities of FAO and partners to issue timely disaster risk reduction measures.

Understanding the Drought Impact of El Niño on the Global Agricultural Areas

O Rojas
FAO; 2015; 51 pp.

Downloadable as PDF file from:
<http://tinyurl.com/nx5zh5z>

Setting Up and Running a Small-Scale Business Producing High Value Foods

Edited by B Axtell & P Fellows
CTA, 2014; 454 pp.
ISBN 978-92-9081-556-3
CTA no. 1808
40 credit points

Downloadable as pdf file from:
<http://tinyurl.com/p3pezgo>

Other sections offer valuable information and advice on topics such as marketing and quality assurance. Meeting consumers' needs, product differentiation and development, packaging and exporting are just some of the areas covered, with the authors also highlighting ways to access different types of value chains for the products. There are also details of food, hygiene and sanitation legislation, labelling and international regulations. Real life case studies offer inspiration and encouragement for those with an interest in entering the sector, and helpful summaries and 'tips for success' make this a highly reader-friendly publication.

This is the seventh and final volume in CTA's Opportunities in Food Processing series. Previous handbooks look in detail at five sectors: meat and fish; milling and bakery products; cooking oils; fruits; and dairy products, with the first volume in the series providing an overview of small-scale processing. All the volumes are available from CTA for free. Download from:

<http://tinyurl.com/q5aeycz>.

▼ Lucrative markets

This report challenges some common precepts of value chain development. It examines the influence of risk in farmers' decision-making, the role of cash, the competition provided by independent traders, and the limitations of producer organisations, issues which all point to a need to design interventions and 'inclusion' around the reality of smallholder engagement in markets.

Growing Inclusion? Insights From Value Chain Development in Ugandan Oilseeds

By B Vorley *et al.*
IIED, 2015; 85 pp.
ISBN 978-1-78431-003-5

Downloadable as PDF file from:
<http://tinyurl.com/ooc7osv>

Digital developments



ICT4Ag (ICT Update) 79: Data Revolution for Agriculture

Edited by A Brandusescu, E Huet, M Issa, J C Nduwimana & L R Ndagire
CTA, 2015; 24 pp.

Downloadable as a pdf file from:
<http://tinyurl.com/pgvdcun>

 From mobile phones to satellites, the proliferation of devices that are capturing and transmitting data has major implications for almost any sector of activity, agriculture being no exception. Much of this data is 'open' – freely available to be used, analysed, modified or shared. From an agricultural perspective, such open data can be used, for example, to set productivity targets, whether for governments or individual farmers. At a policy level, it can help to measure investment and calculate the impact achieved, while for farmers, open data can inform their decisions on what to plant and where to sell it.

This edition of *ICT4Ag (ICT Update)* highlights some practical data-based tools, including FarmDrive, a Kenyan application that aims to promote access to credit and financial services for smallholder farmers. There is also a report from the first conference of the Global Open Data for Agriculture and Nutrition Initiative (GODAN), a librarian's perspective on links between libraries and farmers, and an article on 3D modelling as a form of participatory data collection.

▼ Agri-gender

This new journal is an international, open access, peer-reviewed and refereed journal which aims to provide a platform for researchers to publish their work related to gender and the agricultural and food sciences. The first edition contains four papers, including research from Malawi, Nigeria and Zimbabwe. The next edition, to be published in the latter part of 2015, will be a special issue focusing on how gender interacts with policies, institutions and markets in the areas of agriculture and food security.

Journal of Gender, Agriculture and Food Security

Edited by J Njuki
Africa Centre for Centre for Gender, Social Research and Impact Assessment
March 2015, Vol 1, Issue 1

Downloadable as PDF file from:
<http://tinyurl.com/og3p6n1>

Worthwhile investment?



Small-Scale Farmers, Certification Schemes and Private Standards: Is there a Business Case?

Edited by M Kuit & Y Waarts
CTA, 2014, 156 pp.
ISBN 978-92-9081-550-1
CTA no. 1823
20 credit points

Downloadable as a pdf file from:
<http://tinyurl.com/owzvbku>

  Certification schemes such as Fairtrade, Rainforest Alliance, organic or GLOBAL.G.A.P have been growing in popularity over the last decade among consumers, development organisations and private sector companies. Those promoting them point to a wide range of benefits, from poverty alleviation and agricultural development to reduced environmental impact and increased food safety. But what is the true picture for small-scale farmers? Does investing in certification make good business sense?

This important publication synthesises 270 studies of the costs and benefits of certification in coffee, cocoa, cotton, and fruit and vegetables. Of these, the most detailed analysis is given to coffee, with the findings suggesting that there is only limited evidence for a positive impact from certification, and that costs of being certified are only recoverable by farmers producing above-average volumes. Among several recommendations, the authors suggest increased transparency about costs and benefits in certification so that farmers can make a sound economic decision.

▼ Informing debate

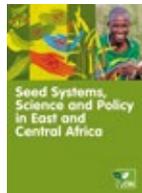
This report explores evidence and insights from five case studies (India, Kenya, Mongolia, Rwanda and Tanzania) that reflect significant recent progress in addressing the challenge of insuring poor smallholder farmers and pastoralists in the developing world. Evidence from these case studies will help to inform the ongoing debate about the viability of scaling up index-based insurance.

Scaling up index insurance for smallholder farmers: Recent evidence and insights

H Greatrex *et al.*
CCFAS, 2015; 32 pp.

Downloadable as PDF file from:
<http://tinyurl.com/los5moq>

Towards coherence



Seed Systems, Science and Policy in East and Central Africa

Edited by J A Francis
CTA, 2014; 130 pp.
CTA no. 1832
10 credit points

Downloadable as pdf file from:
<http://tinyurl.com/psnytb>

  Currently, African countries contribute less than 2% of the global seed trade. Across the continent, the development and commercialisation of high quality seed faces numerous constraints that discourage investment in the sector. Inconsistent policies, standards, regulations and procedures; high costs for registering new varieties; and inadequate infrastructure underpinning the industry all play their part, resulting in poor availability of locally adapted and improved crop varieties to farmers.

An output of the CTA/ASARECA 'Seed Science and Policy Learning Writeshop' held in Burundi in December 2013, this publication suggests that improving the quality of the informal seed sector and enhancing linkages between formal and informal seed systems are critical priorities, but will depend on the creation of a strategic partnership between research, enterprise and government. It offers a wide range of recommendations for policy, in order to provide coherence to the sector; encourage private sector investment and ensure institutional support to develop new and improved varieties.

▼ Food security

In 2012, 179 million t of fertiliser were applied to 1,563 million ha of arable land and permanent crops. This guide aims to improve general understanding of the best management practices for the use of water and fertilisers throughout the world to enhance crop production, improve farm profitability and resource efficiency, and reduce environmental impacts related to crop production.

Managing water and fertilizer for sustainable agricultural intensification

Edited by P Drechsel *et al.*
IFA, IWMI, IPNI & IPI, 2015; 266 pp.

Downloadable as PDF file from:
<http://tinyurl.com/kqwpqvm>

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KNOWLEDGE MANAGEMENT – SHARING, COLLABORATING AND BUILDING ON EXPERIENCE IN ACP COUNTRIES

The term 'knowledge management' has been used for many years. Even though the term and concept have been used widely by the private sector it has a different perspective in the development world. Krishan Bheenick, senior programme coordinator at CTA, explains how this concept is understood by CTA and how CTA helps partners apply a knowledge management framework to their work.



1 *One of CTA's three strategic goals is to enhance ACP organisations' capacity in information, communication and knowledge management for agricultural and rural development. How is this being achieved?*

CTA focuses on the development of learning resources and training of trainers. We support regional organisations by strengthening their knowledge management (KM) capabilities to achieve regional objectives. KM also involves good practice in information and communication management; CTA already has a well-established tradition of supporting this through our publications, web-based platforms, and support to regional thematic activities.

2 *Isn't knowledge management a topic that has already been well covered?*

The term 'knowledge management' has been around for over 20 years and is interpreted in different ways. However, we now increasingly recognise the value of tacit knowledge – knowledge developed internally through experience – as an important asset to any organisation or community. CTA and its partners are developing learning resources that take into consideration this evolving understanding of KM.

We are flooded with literature from the business world about how KM can generate profits for a company. In the development sector, we promote knowledge-sharing to build social capital, based on collaborative knowledge creation and sharing. Consultations with ACP institutions and international partner organisations have guided the development of CTA's KM interventions. We now have an integrated framework to assess knowledge management within organisations, networks and communities, identify needs for good practices in KM and plan capacity-strengthening activities.

3 *What are the latest developments in knowledge management at CTA?*

In 2014-2015, CTA is bringing together several KM-related resources which reflect its integrated KM framework. A number of regional organisations have already applied the framework to their work, starting with a 'knowledge scan' which identifies appropriate interventions. CTA will support these organisations in planning and implementing good

practices in KM, including the passing on of these practices to organisations' national partners. Studies commissioned by CTA on KM processes which support policy processes and value chain development will be validated by stakeholders and will serve as guidelines for future KM work.

Using the collective wisdom of KM experts, CTA has also designed and developed curricula for short courses to (re-)introduce KM for agricultural and rural development. Courses include a 2-hour side event for high level policy meetings and conferences; a 2-day course for senior management of institutions; and a 5-day introductory course for new KM practitioners. These curricula will be easily accessible under creative commons licensing.

In addition, CTA, together with 13 other organisations, has developed free and open source e-learning materials as part of the Information Management Resource Kit (IMARK) (www.imarkgroup.org). New modules on mobile services for development and experience capitalisation are under development.

To support the community of practice on KM4ARD, CTA is also working alongside global initiatives such as CIARD (www.ciard.net), GODAN (godan.info) and KM4DEV (km4dev.org) to highlight resources which can help ACP organisations adopt good practices in KM. These resources on KM, as well as those developed by CTA, are available on our website (www.cta.int/km4ard). We are at the point where KM4ARD can be picked up and incorporated by ACP organisations and policymakers. My hope is to hear more examples of how good practice in KM is behind each success story of ACP organisations.

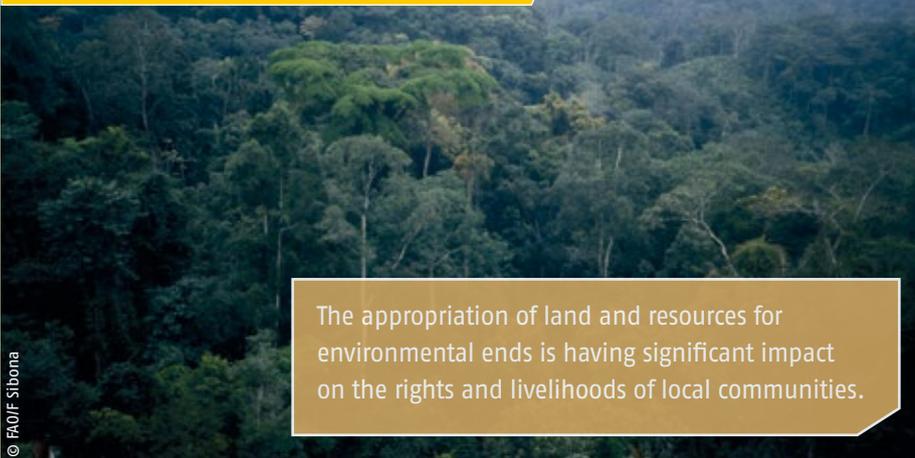
Coming up in the next issue

DOSSIER | Nutrition sensitive agriculture



The fight against malnutrition is far from over. How can agriculture contribute to combating this issue?

COVER STORY | Green grabbing



The appropriation of land and resources for environmental ends is having significant impact on the rights and livelihoods of local communities.

VALUE CHAIN | Eggs



Valuable opportunities exist for small-scale farmers to be part of sustainable value chains to produce fresh table eggs or sell them for processing.

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