K4D Newsletter
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Knowledge for Development
Observatory on Science, Technology and Innovation for ACP Agricultural and Rural Development

"K4D lets scientists and policy makers express themselves"

New feature articles

Harnessing the potential of indigenous rice lines: an issue of food sovereignty

Narottam Dey, Department of Biotechnology, Visva-Bharati, Santiniketan, India

In this feature article, Narottam Dey calls for renewed interest in indigenous rice lines to counter the erosion of the crop's genetic diversity. Given the high degree of genetic heterogeneity and a long evolutionary history, rice landraces have proven to be highly adaptive to diverse environmental conditions and are believed to harbour a number of valuable genetic resources for crop improvement. He argues that the Green Revolution led to the development of a number of high-yielding rice varieties (HYVs) that require both irrigation and fertilizer management and specific cultivation practices to achieve their full yield potential. The widespread use of these high-yielding rice lines has led to the premature abandonment of many indigenous lines. Dey believes the only way to popularise and utilize indigenous lines in future breeding programmes is through the development of a databank with detailed agro-morphology, physio-biochemical and molecular screening with trait-linked markers and specific genes. Many research laboratories are working on improving the knowledge base and a number of promising lines are being utilized in breeding through marker-assisted selection.

With regard to sustainable rice production, Dey concludes that if efforts are not made now to conserve and characterize extant landraces, the result will be a further marked reduction in the diversity, a narrowed genetic base, and eventually the genetic vulnerability of these species. Depending on a few selected HYVs is not an option for the future of food and farming and for sustaining livelihoods. It is also a food sovereignty issue that urgently needs to be addressed in responding to the global challenge of improving food and nutrition security.

Read the article

How realistic is the prospect of low-carbon rice production? Lessons from China

Sheng Zhou and Xiangfu Song, Eco-environmental Protection Research Institute, Shanghai Academy of Agricultural Sciences (SAAS), Shanghai, China

In this feature article, Sheng Zhou and Xiangfu summarize some realistic methods for reducing methane emissions in rice production. They present some case studies of efforts to mitigate methane emissions, such as irrigation management, the use of suitable rice cultivars (e.g. water-saving and drought-resistant

rice, WDR) and combinations of different fertilizers. The production, oxidation and transport of methane in rice fields are influenced by many factors, including the rice cultivars, the cultivation system, water regimes practiced, and types of fertilizer. Simultaneously, soil carbon sequestration in rice fields is a key potential approach for turning rice fields from being a source of greenhouse gas emissions to being a carbon sink.

The authors describe how and how much methane is produced from rice paddies, and give examples of mitigation measures. Promising techniques include water management, organic amendments during the growing season, fertilization regimes and the use of appropriate rice cultivars, with the first two having the greatest impact. Mid-season drainage, intermittent irrigation or pre-harvest field drying may also reduce methane fluxes. The first case study details mitigation by water management and choice of rice cultivar, while the second explains the potential of different combinations of fertilizers. The authors conclude that low-carbon rice production requires combining available mitigation options into comprehensive packages. Knowledge of the soil microbe communities associated with the leading rice cultivars is essential for recommending appropriate mitigation strategies.

Read the article

Building a new generation of agricultural scientists in Africa: networking universities – capturing economies of scale

Adipala Ekwamu, Executive Secretary, RUFORUM Secretariat, Makerere University, Kampala, Uganda and Malcolm Blackie, Senior Research Fellow, University of East Anglia, Norwich, UK and Joyce Lewinger Moock, Consultant to the Bill and Melinda Gates Foundation and other philanthropic organisations

In this feature article, Adipala Ekwamu, Malcolm Blackie and Joyce Lewinger Moock focus on the experiences of an African-led and -managed organisation, the Regional Universities Forum for Capacity Building in Africa (RUFORUM), which aims to capture regional economies of scope and scale, to support innovative curriculum design, fill crucial gaps in the availability of postgraduate degrees, and ensure a quality standard for courses. RUFORUM, through its innovative programmes in its member university system and its established regional convening power is an effective advocate for transformation of tertiary agricultural science training and research.

Currently, Africa records the lowest numbers of PhDs per 1000 inhabitants and the lowest contribution to global knowledge resources (~2%). The recent surge of renewed interest in the agricultural sector as an engine of economic growth in Africa has resulted in many new initiatives and the strengthening of ongoing programmes that have been identified as successful. Operating in 18 countries, RUFORUM has a mandate to oversee graduate training and specialized networks in the Common Market for Eastern and Southern Africa (COMESA) countries. Under the guidance of senior African professionals, RUFORUM has grown from a crop-based network of 10 agricultural faculties into a regional broad-based consortium of 32 universities in Central, Eastern and Southern Africa. RUFORUM assumes that development is more likely to occur where there is an active, well-informed critical mass of locally based agricultural professionals to conduct relevant research. Another assumption is that the results of such research are more likely to be applied by strengthening a demand-driven research agenda – via linkages to smallholder farmers, small- and medium-sized agro-based enterprises post the farm gate, community

organisations and policy makers to ensure the relevance and impact of such research, and by matching training and education to the potential job market.

In 2014–2018, RUFORUM will strengthen and scale its core activities, while stepping up its representational role for higher education.

Read the article

Read also the Communiqué from the RUFORUM 10th Anniversary Biennial Celebrations held in Maputo, Mozambique in July 2014.

CTA and S&T policy

Reflections on RUFORUM 10th Anniversary Biennial Celebrations

In her reflections shared during the RUFORUM 2014 biennial, Judith Francis, CTA considered four critical issues and posed four direct responses/conclusions. Judith Francis approached the reflections based on her collaboration with RUFORUM over the past 10 years: (i) CTA as a RUFORUM partner connecting RUFORUM within the continent, across the other CTA regions (Caribbean and the Pacific) and in Europe; (ii) as a member of the International Advisory Panel of RUFORUM; (iii) as Executive Secretary of the European Forum for Agricultural Research for Development and (iv) in her professional and personal capacity. In her speech she talked about the lack of 'hardware' and infrastructure in university laboratories, and why African universities must be more responsive to societal challenges and more accountable for Africa's progress.

Read Judith Francis' reflections

Winners of the 2nd Caribbean Science and Agriculture Film and Video Competition "Adding Value to Local Foods"

The *Technical Centre for Agricultural and Rural Cooperation – ACP/EU (CTA)* and partners; the *Caribbean Council for Science and Technology (CCST)*, The *Caribbean Agricultural Research and Development Institute (CARDI)*, The *University of the West Indies (UWI)*, *Columbus Communications Trinidad Limited (FLOW Trinidad)* and the *Trinidad & Tobago Film Company*, are pleased to **announce the winners** of the second Caribbean Science and Agriculture Film and Video Competition **"Adding Value to Local Foods"**. The Finals and AWARD ceremony were successfully staged at the Carlton Savannah Hotel, Trinidad and Tobago from 27th – 29th August 2014.

The winners are :

1st Place: *'The Fruit of Life'* by Kareem Larcher and Jelani Paul, St Lucia.

2nd Place: *'Breadfruit Versatile'* by Randy McLaren, Julene Robinson, Veronique Smith and Brian Johnson, Jamaica.

3rd Place: *'Captain V'* by Kemar McInnis, Tannecia James, Marc James and Cleon Ewers, Jamaica.

Special prizes were awarded to:
'*CEMEPRO*' by Lionel Stevens, Kareem Warner, Kurt Richards and Damien Woodley, St Kitts/Nevis.
'*Food Apocalypse*' by Kelly-Ann Murphy, Jason Carmichael, Sharika Stanford and Julian Evelyn, Barbados.

The viewer's choice was awarded to:
'*3 Fey Epina*' by Renel Pierre Louis, Haiti

Pacific Islands University Research Network (PIURN) Memorandum of Cooperation launched

A Memorandum of Cooperation (MOC) was signed on 29 August 2014 in Apia, Samoa, for the Pacific Islands Universities Research Network (PIURN). The document spells out how Pacific Universities can work together while maintaining their unique identity, independence and intellectual property. The first major network activity will be the 1st PIURN Conference to be held 5-7 November in Noumea. PIURN is working with the Technical Centre for Agriculture and Rural Cooperation ACP-EU (CTA) to enhance the skills of Pacific researchers. Under the PIURN umbrella, four Pacific Islanders have attended a specially designed postharvest pre-congress training workshop and the international horticultural congress in Australia. In November 2014 PIURN and CTA will hold a workshop on food and nutrition security for all member universities. PIURN members have agreed to collaborate in three priority areas in the region: environment & climate change, biology & medicine, and food & agriculture.
Read the press release

CTA Top 20 Innovation – The Farmers have voted

In December 2013 CTA issued a call for proposals for the Top 20 Innovations that are benefitting farming communities, especially small-scale farmers, fisher-folk and agro-processors in Africa, Caribbean and the Pacific. The call yielded 251 responses, of which 40 were shortlisted by a team of ACP experts. Farmers have voted for the Top 20 based on the 40 shortlisted innovations. Brief descriptions of the 40 innovations are available in two documents: For the first 20 annotations, click here, and for the next 20 annotations, here.

CTA will hold a cross-learning writeshop from 13-17 October in the Netherlands for the authors of the Top 20 Innovations who will finalize the production of the guidebook/brochure, factsheet and poster for each of their innovations. These publications will be used to promote the innovations across the ACP region to gain buy-in from researchers, extension agents and farmers as well as lobby government policymakers and the private sector to invest in research and innovation that benefit smallholder farmers.

International Forum: 'Unleashing Science, Technology and Innovation for Food and Nutrition Security'

The CTA International Forum on Unleashing Science, Technology and Innovation for Food and Nutrition Security, to be held in Arnhem, the Netherlands, 15-17 October 2014, will bring together leading

scholars, senior scientists/ researchers/ academics, policy makers, development practitioners, innovators and private sector representatives, including farmers, to:

- Assess the relevance and effectiveness of current agricultural research and innovation policies and programmes for addressing the challenges of food and nutrition security;
- Analyse and generate evidence on innovations occurring in ACP agriculture for shaping future STI policy formulation and implementation for achieving food and nutrition security;
- Agree on how best to move forward in sharpening the STI focus, strengthening national innovation systems, and increasing public and private investments to effectively address food and nutrition insecurity in the future.

It is expected that this forum will influence CTA partners' future programmes for agricultural research, higher education and innovation for addressing food and nutrition security.

Read the concept note

Developments and publications

Africa science plan attacked

Scientists have raised concerns about Science, Technology and Innovation Strategy for Africa (STISA) that African heads of state adopted on 2 July 2014. This ten-year pan-African science and innovation strategy prioritizes the use of research to drive economic and social development across the continent. The success of the strategy will depend on the quality of research projects in individual countries. To help scientists win domestic support for research programmes, STISA plans to set up a research and innovation council that will bring together academies and funders to coordinate national activities. It will also take control of a European Union-funded competitive grant scheme that has spent almost €14 million on research projects in water and sanitation, agriculture and energy. But critics fear that the strategy's top-heavy administrative structure and lack of firm pledges may render it ineffective. They also believe that its aims may be beyond the continent's limited resources, especially given that it contains few financial commitments. However, despite their concerns, critics agree that STISA is an improvement on its predecessor, Africa's Science and Technology Consolidated Plan of Action (CPA). (*Nature*, 25/06/2014)

Six innovations revolutionizing farming

In 1798, economist Thomas Malthus predicted that the world would exceed its food supply by the late 20th century. While he was right to identify the challenges of feeding a growing population with a finite amount of land, in the last half century agricultural production has tripled. Innovations in farming technology made this possible, in particular on smallholding farms. The Guardian newspaper crowd-sourced the science community to identify the innovations that have made a difference and found that the following technologies are driving the increase in agricultural productivity: dairy hubs, deep placement of fertilizers, mobile apps, high roofed greenhouses, new feeding systems for farm animals and farm management software and training. (*The Guardian*, 8/07/2014)

North-South research partnerships: Academia meets development?

This working paper examines recent experiences in North-South research partnerships, identifying worst and best practices. It draws on work undertaken by the European Association of Development Research and Training Institute's (EADI) Sub-Committee on Research Partnerships over the last two years. The paper explains that research partnerships are not immune to the typically unequal, biased donor-recipient relations that have plagued international development cooperation for decades. It argues that despite improvements in recent years, entrenched behaviour and enduring practices still affect the quality and effectiveness of research partnerships. Power relations influence the ability to combine capacity building aspirations with the drive for academic excellence. Mounting pressure to publish research outcomes fast in journals edited in the North, combined with harsh competition for funding, seriously limit the time and scope available to establish equitable partnership frameworks and support institutional capacities. The paper calls for addressing funding, knowledge and power issues in development research partnerships. (EADI Policy Paper Series, 06/ 2014)

Managing research collaborations: Bridging disciplines, knowledge systems and cultures

This posting outlines four ways to improve scientist-stakeholder collaborations in environmental management. It points to the need to develop committed relationships; use facilitation to address common problem communication gaps; create a culture of critical reflection among participants; and utilize expanded measures of success. SparksforChange argues that these four elements are important because an increasing number of research programmes in natural resource management are being developed using collaborative or social learning approaches. However, the details of these collaborative and social research components often remain hidden in proposals and published conclusions. Sparksforchange calls for scientists to be more explicit about how these components work, how they will be assessed, and how we can build capability to improve them. (Sparksforchange, 17/06/2014)

International Food Security Assessment, 2014-24

This report of the US Department of Agriculture Economic Research Service (ERS) assesses and projects food security of 76 low- and middle-income countries based on two key determinants: food production and import capacity. Between 2013 and 2014, it is expected that the food security for these 76 countries will improve and the number of food-insecure people will fall by 9%, from 539 million in 2013 to 490 million in 2014. The share of the population that is food insecure in these countries is expected to decrease from 15.5% in 2013 to 13.9% in 2014. In Africa, the biggest changes are projected for Tanzania, Chad, and Madagascar. (USDA, June 2014)

Global food security: CIRAD and INRA suggest innovative lines of research

CIRAD and INRA have joined forces to conduct joint, long-term programmes to address novel issues at the interface between more conventional lines of research in food security. Their collaborative programme, Transitions to Global Food Security (GloFoodS), was launched in Montpellier in June 2014. The programme will be guided by four main questions: (i) How does food security governance affect farming practices and land use? (ii) In what way do food transitions – how we consume – affect the equation between food requirements, farming practices and land use? (iii) How do changes in agricultural production practices and systems affect food transitions and households' access to food? (iv) How do agricultural production practices interact with the efficiency and sustainability of agrifood processes, particularly with regard to losses and wastage? (CIRAD, 16/07/2014)

Frontiers in Food Policy: Perspectives on sub-Saharan Africa

This book is a compilation of research stemming from the Global Food Policy and Food Security Symposium Series, hosted by Stanford University from 2010-2013 by the Center on Food Security and the Environment (FSE). It brings together contributions of policy experts from around the world in the fields of food and agricultural development. They examine the major themes of hunger and rural poverty, agricultural productivity, resource and climate constraints on agriculture, and food and agriculture policy. With a focus on sub-Saharan Africa, the volume also draws on lessons from other parts of the world, notably Asia. (Stanford Center on Food Security and the Environment, 7/07/2014)

Food Losses and waste in the context of sustainable food systems

This report from the High Level Panel of Experts on Food Security and Nutrition (HLPE) presents a synthesis of existing evidence about the causes of food losses and waste at micro-, meso – and macro levels, and suggests action to reduce them in order to improve food and nutrition security and the sustainability of food systems. The solutions can be implemented, alone or in a coordinated way, by the public and private sectors, civil society, individual producers, wholesalers, retailers and consumers. (FAO/CFS High Level Panel of Experts, released in July 2014)

Fundamentals of agricultural sustainability or the quest for the Golden Fleece

This paper highlights different aspects of development sustainability and identifies its drivers in the fields of agriculture, nature and the environment, including those of a human, cultural, social and political nature, together with components of metabolism, genetics, energy, environment and farm management. Marc Janssens, University of Bonn, Germany, and colleagues argue that sustainability approaches should be precisely documented using exact parameters and avoiding unproven social or emotional elements. Quantitative cost–benefit ratios are proposed as sustainability indicators. The article concludes that sustainability is an ideal state in an area of conflict between environmental change, evolution of life and thermodynamic laws. It cannot be defined as a stable state, but as a state of relative stability during a

certain but limited period of time. Sustainability strongly depends on a reliable energy resource that, in thermodynamic terms, enables the preservation of order in an open (eco-) system at the expense of the order of the environment. (*Journal of Natural Resources and Development*, 5-06/2014)

Measuring success: local food systems and the need for new indicators

In June 2014, the Institute for Agriculture and Trade Policy (IATP), USA, published this report for policy makers, analysts and researchers, who often use sets of indicators to assess whether a farming system, or new technology, is succeeding. These indicators focus almost exclusively on production. But just as weight alone is not a good measure of human health, a single-minded focus on production is an inadequate measure of the health of a farming system. Indicators of other aspects of agriculture such as the nutrition, health, environmental sustainability, rural development and other needs of the population also need to be taken into account. In partnership with the Main Street Project (http://www.mainstreetproject.org), IATP has developed a new set of indicators that better represent the diverse benefits of local, agro-ecological food systems that could be tracked over time. (IATP, 03/06/2014)

GM agricultural technologies for Africa: A state of affairs

This IFPRI report is a comprehensive, evidenced-based review of agricultural biotechnology – its current status, issues, constraints and opportunities for Africa. Agricultural biotechnology comprises several scientific techniques (genetic engineering, molecular marker-assisted breeding, the use of molecular diagnostics and vaccines, and tissue culture) that are used to improve plants, animals and microorganisms. However, in preparing this desktop analysis of peer-reviewed evidence and documented examples, IFPRI has focused on genetic modification (GM) technologies and on the agricultural contexts in which they are applied. The focus was chosen because GM technologies are at the centre of controversies about biotechnology's role in Africa. (IFPRI/African Development Bank, 16/07/2014)

Tissue culture, conservation biotechnology, virus indexing and seed systems of vegetative crops: A training manual

ASARECA has recently compiled a training manual with information on tissue culture, conservation biotechnology, virus indexing and seed systems for vegetative crops such as cassava and sweet potato and associated techniques. This manual brings together knowledge in these fields that is currently scattered over a large number of research institutes and is not readily available for use by practitioners. The manual is meant for research scientists and technicians and students, who are encouraged to adapt the references to their own working conditions and to add more materials as they deem fit. (ASARECA, 17/07/2014)

Vitamin A-enriched bananas for East Africa in the pipeline

Scientists at Queensland University of Technology (QUT), Australia, have developed new varieties of banana with enhanced beta-carotene content. Beta-carotene is converted to vitamin A in the body. The beta-carotene bananas are now being tested in a nutritional experiment. The (human) trials are to last for six weeks, and conclusive results will be known by the end of 2014. In addition, over the next three years, an elite line of banana plants is to be selected and used in multi-location field trials in Uganda. According to the scientists, by 2020 banana varieties with enhanced beta-carotene content could be grown by farmers in Uganda, where about 70% of the population survive on the fruit. These new varieties could be an important contribution to solving a worldwide health problem. According to the WHO, an estimated 250 million preschool children are vitamin A-deficient, and an estimated 250,000 to 500,000 of these children become blind every year, with half of them dying within 12 months of losing their sight. (*Rural 21*, 02/07/2014)

Sweet potatoes in Cameroon: Nutritional profile of leaves and their potential new use in local foods

The leaves of sweet potato (*Ipomoea batatas*), especially the beta-carotene fortified varieties, are rich in functional macro- and micronutrients such as dietary fibres, antioxidants and other micronutrients deficient in the predominantly starchy staples of most nutritionally vulnerable Africans. Geneva O. Nkongho, University of Buea, Cameroon, and an internal group of colleagues, evaluated the nutrient content of young leaves and succulent green stems of local and exotic varieties using standard analytical procedures. They found that the leaves soften *Gnetum africanum* vegetable sauce giving it an acceptable appearance, texture, flavour and taste, and can be readily used to substitute for *Talinum triangulare* (waterleaf) in the preparation of *G. africanum* sauce during periods of waterleaf scarcity. These leaves can therefore improve the nutritional base in African (especially Cameroonian) diets for the nutritionally vulnerable in rural and urban communities. (*African Journal of Agricultural Research*, 05/2014)

Strengthening African seed systems: Technical, economic and policy challenges

In July 2014, a regional dialogue on 'Strengthening African seed systems: Technical, economic and policy challenges' took place in Nairobi, Kenya, hosted by Future Agricultures and the Tegemeo Institute of Agricultural Policy and Development. The workshop examined the institutional, social and political dimensions of getting seed technologies into use, and highlighted the challenges of increasing access. This subject is important because seed systems are a crucial element in any effort to improve agriculture in Africa. Inadequate attention in the past to building and supporting viable and effective seed systems was a key reason why the original Green Revolution had a very limited impact in Africa. The workshop was informed by the AGRA's Africa Agriculture Status Reports 2013 and the African Union Commission's African Seed and Biotechnology Programme (ASBP) Second Communiqué on Integrated Sector Development. The proceedings will be published on the Future Agricultures website. (Future Agricultures Consortium)

Strategies for sustainable maize seed production in West and Central Africa

At present, the seed industry in West and Central Africa meets less than 10% of the region's requirements. Therefore the seed industry is urgently expected to at least double its present volume of production. This book, published by IIATA, provides information on many issues crucial to the seed sector development in West and Central Africa. The first five sections review (i) national seed regulations that facilitate the establishment of seed companies, (ii) methods for producing good quality seeds in adequate quantities, harvesting and seed processing, (iii) variety release and registration, (iv) strategies for promoting seed marketing and (v) the adoption of good quality seeds of improved varieties and hybrids. Another section discusses how the seed business could be managed and how outputs could be assessed in order to improve performance. (IIATA, July 2014)

Farmer-selected local varieties certified in Mali

In June 2014, farmers in Mali produced seeds of eight varieties of cowpea, fonio (*Digitaria exilis*), millet and sorghum, which were certified by Mali's national seed laboratory, the Laboratoire National des Semences (LABOSEM). This was a significant step for Mali, where the trade in uncertified seeds is technically illegal, even though 92–99% of seed demand is supplied by informal exchange among farmers. Improved varieties of important local crops such as Bambara groundnut do not always exist, and certification of local seed varieties has been difficult, mostly due to administrative challenges and the limited capacity to produce varieties that meet the quality standards required for certification. This first-time certification was the result of the work of Bioversity International and its local partners in Mali, to encourage farmers to experiment and evaluate different varieties of local crops, strengthen the dialogue and support linkages between the formal and informal seed sectors, and train farmers in quality seed production of varieties that are better adapted to local conditions. (Bioversity International, 9/07/2014)

Climate Change, Water and Agriculture

Water withdrawals from rivers and lakes for irrigation, household and industrial use has doubled in the last 40 years. At a global level, some 1.2 billion people live in basins where the physical scarcity of water is absolute. By 2025, 1.8 billion people will be living in countries or regions with absolute water scarcity, and two-thirds of the world population could be under stress conditions. This OECD report looks at what can be done to stop this worsening trend, starting now. It argues that strategies for adapting agricultural water management to climate change need to target five levels of intervention, and the linkages among them: (i) on-farm: adaptation of water management practices and cropping and livestock systems; (ii) watershed: adaptation of water supply and demand policies in agriculture and with the other water users (urban and industrial) and uses (ecosystems); (iii) risk management: adaptation of risk management systems against droughts and floods; (iv) agricultural policies and markets: adaptation of existing agricultural policies and markets to the changing climate and (v) interactions between mitigation and adaptation of agricultural water management. (OECD, 19/06/2014)

Rainfall monitoring dataset to support the early detection of drought

The US Geological Survey has released a satellite-based rainfall monitoring dataset specifically designed to support the early detection of drought around the world. Developed as a partnership between the USGS Earth Resources Observation and Science (EROS) Center and the University of California Santa Barbara (UCSB) Climate Hazards Group, this new dataset allows experts specializing in the early warning of drought and famine to monitor rainfall in near-real-time, at high resolution, over most of the globe (from 50°N to 50°S). The new dataset, named the Climate Hazards Group Infrared Precipitation with Stations (CHIRPS), reaches back to 1981 to place rainfall observed from space into the historical setting of over three decades of rainfall data collected at ground stations worldwide. CHIRPS data can be incorporated into climate models, along with other meteorological and environmental data, to project future agricultural and vegetation conditions. (Geospatial & Engineering International Conference, 03/07/2014)

Changing water availability during the African maize-growing season, 1979–2010

Lyndon Estes of Princeton University, USA, and colleagues have used a new bias-corrected meteorological dataset to analyse changes in precipitation, potential evapo-transpiration and water availability in 20 African countries between 1979 and 2010, and the factors driving changes. With this dataset, they have filled a gap in understanding how global climate change is impacting African agriculture. They found that maize-growing areas in Southern Africa, particularly South Africa, benefitted from increased water availability due in large part to falling demand driven primarily by declining net radiation, increasing vapour pressure and falling temperatures (with no effect from changing wind speed), with smaller increases in supply. The Sahelian countries and Ethiopia experienced strong increases in water availability driven primarily by increased rainfall, with little change or small reductions in demand. However, intra-seasonal variability of water supply increased in West and East Africa. Only a small number of countries, mostly in or near East Africa, experienced declines in water availability due to decreased rainfall, but exacerbated by increasing demand. Much of the reduced water availability in East Africa occurred during the more sensitive middle part of the maize-growing season, suggesting negative consequences for maize production. (*Environmental Research Letters*, 21/07/2014)

See also *Princeton Journal Watch*, Molly Sharlach's blog, of 21/07/2014

Different perspectives on irrigated rice by three large dams in the Sahel

The Global Water Initiative (GWI) in West Africa has compiled this report with recommendations to improve the performance of rice production systems in irrigated areas. The report is based on lessons learned from three case studies analyzing the strategies, aspirations and constraints of different categories of farmers living around the dams at Bagré (Burkina Faso), at Sélingué (Mali) and at Niandouba (Senegal). The report is available only in French. (IIED, 06/2014)

Good practices in small-scale irrigation in the Sahel

This new handbook on small-scale irrigation in the Sahel, published by GIZ Germany, describes many successful planning approaches, and implemented infrastructure and agronomic practices that could be used for investments in conservation, processing and marketing programmes. The handbook summarizes 44 good practices that have been made available by a dozen institutions in Mali, including the Ministry of Rural Development, Helvetas Swiss Intercooperation, IFAD, Canadian Cooperation, Afrique Verte, BORNEfonden and programmes funded by GIZ and KfW. (Global Donor Platform for Rural Development, 13/03/2014)

Trinidad to complete high-resolution aerial mapping of entire country

Trinidad & Tobago will soon complete high-resolution aerial mapping of the entire country, and produce imagery and elevation data. The new dataset will form the basis of the planned National Spatial Data Infrastructure. Further outcomes of this aerial mapping project will include elevation models, design of settlement layouts, planning and development of infrastructure such as roads, development of flood mitigation plans, disaster management planning and assessing the quantity and quality of state lands. The imagery and elevation data will be available to all public agencies in Trinidad & Tobago. (Caribbean GIS, 06/06/2014)

Major research initiative to leverage smallholder agriculture with remote sensing

The Faculty of Geo-Information Science and Earth Observation (ITC) of the University of Twente, the Netherlands, has launched the Spurring a Transformation for Agriculture through Remote Sensing (STARS) project to identify how Earth observation data products may help improve current information and decision support systems in the smallholder farming in sub-Saharan Africa and South Asia.
The project will be executed in close collaboration with research institutes in West and East Africa, Bangladesh, Australia, Mexico and the United States. Smallholder farmers often use small plots with variable boundaries, they often grow multiple crops and crop varieties on the plot at the same time, using a rich variety of farm practices. STARS will identify what remote sensing information is available for specific groups of smallholder farmers and how that information can be provided to inform decision making. STARS, which will last for 20 months, will develop open data products to be used by the wider research community. (ITC, 18/06/2014)

Research on camel milk's potential neglected

More research on camel milk is needed to develop potentially valuable dairy products for marginalized communities in desert regions. This was one of the conclusions of the first international meeting on 'Milk, factor of development' (Rennes, France, in May 2014). Of the 10,000 studies of milk published each year, only about ten are devoted to camel milk. Bernard Faye, a camel milk expert with CIRAD, France, argues that as a result little is known about the proteins in camel milk, which differ structurally from those in

other milks, and consequently about methods to preserve it. Unlike cow milk, for which the shelf life can be extended from weeks to months by sterilizing it using ultra-high temperature (UHT) treatment, a similar process for extending the shelf life of camel milk has yet to be found. (*Rural 21*, 21/06/2014)

Researchers set sight on free range chickens as demand soars

Recent research in Kenya revealed that 40% of those who buy chicken products prefer free-range varieties because of their nutritional value. Whereas indigenous brands of chicken were traditionally kept as a side activity, farmers are increasingly growing them on a commercial scale. Recently, the Kenya Agricultural Research institute (KARI) has stepped up its research to increase the productivity of indigenous chickens. The research is focusing on making improvements in feeding and nutrition, the selection and breeding of genotypes for eggs and meat lines, and the development of management packages for disease control. To boost the dissemination of the results of its research on indigenous chickens, KARI has trained over 60 indigenous chicken service providers at the Kenya Arid and Semi-Arid Lands (KASAL) indigenous chicken project. In turn, the service providers are reaching over 200,000 farmers with improved technologies. (Farm Biz Africa, August 2014)

UWI Mona and China Institute sign sweet potato research agreement

The University of the West Indies (UWI), Mona, and the Chinese Academy of Agricultural Science (CAAS) have signed a research agreement focused on developing and innovating technologies to preserve the shelf-life and quality of sweet potato and its by-products. Under the agreement, the Laboratory of Crop Science at UWI Mona will further develop the Modified Atmosphere Packaging (MAP) technology to extend the shelf-life of sweet potatoes, while the Xuzhou Sweet Potato Research Center, China will investigate the selectivity of the different genotypes of sweet potato and conduct basic experiments on their storability under standard storage conditions. (UWI Mona website, 08/07/2014)

Pan-African Cassava Surveillance Network (PACSUN)

Scientists from agricultural research centres in Africa met at a workshop in Saint-Pierre, Reunion, from 10 to 13 June 2014 to contribute to the war against pests and diseases of cassava. The workshop resulted in the establishment of a pan-African network for surveillance of cassava diseases (PacSun) that will provide expertise in understanding the viruses and bacterial diseases that attack cassava in Africa; pool data via a website; develop applications with simple diagnostic fields on mobile phones for the benefit of African producers; and propose measures appropriate to each country to control the spread of pandemics such as cassava brown streak disease. The workshop participants also called for the establishment of an international transit cassava centre that would facilitate the exchange of cassava cuttings among African countries, which is currently prohibited because of the risk of spreading cassava mosaic disease and brown streak disease. (IRD, 02/07/2014)

Agro-Value Chain Finance and Climate Adaptation: The role of the banking sector

In June 2014, International Institute for Sustainable Development (IISD) published this brief to stimulate thinking and discussion on ways to design and deliver agricultural finance that supports adaptation to a changing climate for all actors along agro-value chains from producers to exporters. Agricultural finance refers to financial services (savings, transfers, insurance and loans) that are needed by the agricultural sector. This brief primarily targets the banking sector, particularly credit institutions, involved in financing agro-value chains in developing countries, particularly in Africa. The brief builds on the results and recommendations of a six-month pilot initiative on mainstreaming climate risk along the coffee value chain in Uganda, which was conducted in 2013 through a partnership between the Ugandan Ministry of Trade, Industry and Cooperatives, Makerere University (MAK) and IISD. (IISD, 06/2014)

Application of the Commodity Approach to Pigeonpea Value-Chain Analysis in Kenya

Pigeonpea is one of the most popular sources of protein for many Kenyans living in drier regions. However, government officials have neglected pigeonpea and other pulses such as chickpeas and cowpeas, to the extent that they are often excluded from the Ministry of Agriculture reports. But, faced with climate change that threatens food security in Kenya, pigeonpea has gained significance and interest due to its ability to withstand drier climatic conditions. In this paper, Kennedy O. Pambo of the Department of Agricultural Economics of the University of Nairobi, has applied the commodity approach to agricultural marketing to describe the stages in the pigeonpea marketing system in Kenya. Pambo shows that farmers perform minimal farm gate processing to their produce since the market offers no premiums for it. Therefore, improving the market structure to reward value addition through simple processing would be important in creating employment as well as improving farm gate margins. (AgEcon Search, 06/2014)

Monitoring the status of fisheries stocks at the ecosystem level

In this two-part study, FAO focused on determining the status of fish stocks at the ecosystem level taking into consideration the variety of species, their interactions and other factors that cannot be understood by looking at each stock in isolation. Part 1 of the report focuses on determining single-stock status and summarizes the results of simulation testing with four methods that can be applied to data-poor fisheries. Part 2 reports the results of an assessment of ecosystem-level production potentials using satellite-based estimates of primary productivity. This reports complements FAO's The State of World Fisheries and Aquaculture, and is important not just for policy formulation, but also for guiding the fishing industry and its managers to develop effective harvest strategies. (*Rural 21*, 22/06/2014)

Review of the Benefits of No-Take Zones

This recent study on the benefits of no-take zones for marine ecosystems and fisheries, by the Wildlife Conservation Society, shows that no-take zones in Belize have not only helped economically valuable species such as lobster, conch and fish to recover from overfishing, but may also help recolonize nearby

reef areas. The report, written by Craig Dahlgren of the Caribbean Marine Research Center (CMRC), comprises a systematic review of research literature from no-take areas around the world. The report has been published just before the signatory countries of the Convention on Biological Diversity are required to protect at least 10% of their marine territory. (Wildlife Conservation Society, 11 July 2014)

Results of the 2013 Harvesting Nutrition contest

Three projects have been selected as winners of the Secure Nutrition Knowledge Platform's 2013 Harvesting Nutrition contest for bridging the gaps between nutrition and agriculture and food security. The contest attracted 50 submissions for projects around the world seeking to showcase their efforts to improve the impact of agriculture and/or food security interventions on nutrition outcomes.

The winners are:

- Realigning Agriculture to Improve Nutrition (RAIN) in Zambia,
- Shamba Shape-Up, in Kenya, Tanzania, Uganda and
- N2Africa, in Democratic Republic of the Congo, Ethiopia, Ghana, Kenya, Liberia, Malawi, Mozambique, Nigeria, Rwanda, Sierra Leone, Tanzania, Uganda, Zimbabwe

(Secure Nutrition, 2014)

Events

Second Ministerial Forum on Science, Technology and Innovation

Dates: 14-17 October 2014
Venue: Rabat, Morocco

International Conference of Education, Research and Innovation (ICERI)

Dates: 17-19 November 2014
Venue: Seville, Spain

Conference on policies for competitive smallholder livestock production

Dates: 26-28 November 2014
Venue: Gaborone, Botswana

Agriculture and Climate Change: Adapting Crops to Increased Uncertainty

Dates: 15-17 February 2015
Venue: Amsterdam, The Netherlands
Send abstracts by 17 October 2014

3rd UNCCD international scientific conference

Dates: 9-12 march 2015
Venue: Cancun, Mexico

Calls

Call for abstracts: Agriculture and Climate Change: Adapting Crops to Increased Uncertainty

Send abstracts by 17 October 2014

Kwame Kruma 2014 Scientific Awards

Deadlines: Regional Award for Women – 30 October 2014. Continental Award – 15 November 2014.

PhD Training Opportunities under the RUFORUM - Graduate Teaching Assistantship Program

The RUFORUM Secretariat announces the availability of 63 PhD training opportunities under the GTA for the academic year beginning September, 2014. Potential applicants who are teaching staff at RUFORUM Member Universities are invited to submit applications to the RUFORUM Secretariat through a two-step process

Jobs

Director of Science

Deadline: 25/09/2014

The Director of Science will provide strategic guidance and monitor the performance of the CGIAR Research Programs (CRPs) portfolio to ensure that pertinent outcomes are defined, and the quality and relevance of research are enhanced, to contribute to the overall mission and organisational objectives of the CGIAR.

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