

March 2011 newsletter

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New lead article

Synthetic biology and ethics: Building public trust

Julian Kinderlerer, President, European Group on Ethics, Professor, Intellectual Property Law, University of Cape Town, South Africa, Professor, Biotechnology & Society, Delft University of Technology, Netherlands



The science of synthetic biology has become of great interest in the last few years, with major studies being commissioned to examine the implications of this new technology.

In 2009, President Barosso, President of the European Commission, requested an Opinion of the European Group on Ethics in Science and New Technologies (EGE) on the ethics of synthetic biology (EGE, 2009). In this

request he indicated that "the debate about the legitimacy of engineering new life forms has mainly focused on safety issues and a work on the ethical, legal and social implications that may derive from this specific use of biotechnology is still missing."

In US President Obama's letter to the Presidential Commission for the Study of Bioethical Issues (2010), he asked for a consideration of "the potential medical, environmental, security and other benefits of this field of research as well as any potential health, security and other risks." The issues had been highlighted in May 2010 "by the announcement that scientists at the J. Craig Venter Institute had created the world's first self-replicating synthetic genome (human-made from chemical parts) in a bacterial cell of a different species" (Gibson et al., 2010).

The European Academies Science Advisory Council (EASAC, 2010) considered the scientific and governance implications of synthetic biology and reported on 'Realising European Potential in Synthetic Biology: Scientific Opportunities and Good Governance.' It is therefore clear that the technologies and science involved in what is termed 'synthetic biology' are raising major issues, at least within international political circles. Building public confidence in the governance of synthetic biology by following ethical principles and standards is critical. But what are the issues, and why is there concern?

Read the article: knowledge.cta.int/en/content/view/full/13570.

International Conference

"Innovations in Extension and Advisory Services"

Nairobi, Kenya, 15-18 November 2011

Linking Knowledge to Policy and Action for Food and Livelihoods



The Technical Centre for Agricultural and Rural Cooperation ACP-EU (CTA) and its partners (FARA, GFRAS, IFAD, AFAAS, NEPAD Agency, ICRA, ICRAF, ANAFE, KARI, EIARD, UWI, USP) will organise an international conference to take stock of current policies, thinking and practice, successes and failures of ongoing and past reforms in extension and advisory services and build a coalition moving forward to specifically address meeting the future needs of small-holder farmers, marginalized

communities, women and youth in a sustainable and cost effective manner.

This conference integrates the GFRAS 2nd annual conference, and will take place in Nairobi (Kenya) on the 15th to 18th November 2011.

The expected results are:

- * Shared understanding and enhanced profile of the vital role of extension and advisory services in agricultural value chain and wider innovation system within the context of the present environment for agricultural and rural development.
- * Good practice and policy options for improving the future delivery and effectiveness of extension and advisory services clearly defined, endorsed and widely disseminated.
- * Mechanisms for monitoring and evaluating extension and advisory services to provide lessons for policy and practice and contribute to enhanced knowledge sharing, learning, innovation and accountability identified, endorsed and widely disseminated.
- * Priorities for research, capacity development and investments that enhance the impact of extension and advisory services on agricultural productivity, food security, sustainable livelihoods and natural resource management identified and strategies for addressing these priorities elaborated, endorsed and widely disseminated.
- * Coalition of stakeholders committed to advancing extension and advisory services to contribute to developing resilience of small-holder farmers and redefining the global food system.

Find more information (call for abstract & paper, call for case studies/videos/photo collage/posters, registration forms, flyer and the concept note) on our website :

knowledge.cta.int/en/content/view/full/13469.

CTA S&T Young professionals discuss Value Chain on K4D's facebook page



Atenchong Nkobou, Student Trainee to the CTA S&T Strategies programme under the supervision of Judith Ann Francis, has initiated a debate on **value chains on the K4D facebook page**. We invite you to follow and contribute to that insightful discussion. Also, please read the World Bank's *Guide to value chain concepts and applications* which reviews and illustrates a range of concepts, analytical tools, and methodologies centered on the value chain that can be used to design, implement, and evaluate agricultural and

agribusiness development initiatives that strive to enhance productivity and competitiveness.

Get the World Bank's guide : <http://goo.gl/k38I2>.

Follow the young professionals' discussion on facebook and contribute : <http://goo.gl/OILRn>.

New additions to our featured dossiers

Does research reduce poverty? Assessing the welfare impacts of policy-oriented research in agriculture

<http://knowledge.cta.int/en/content/view/full/13500>



This paper surveys the literature and identifies different ways of assessing the impact of 'policy-oriented' research. It then takes the available literature on agriculture as a specific focus of study. The paper examines the different types of 'policy-oriented' research; the literature on the 'theories of change' for policy research in international development; methodologies for analysing the impact of policy-oriented research; the relevant agriculture literature and outlines the types of indicators that can be used for impact assessment of research with examples.

More than ever before, every dollar spent on development research will have to count towards sustainable poverty reduction. However, the understanding of the impacts of development research on policy change and on poverty is weak at best, with agriculture being no different. The area of research impact is not a new area of enquiry but an emergent one. (Reference: Edoardo Masset, Rajendra Mulmi and Andy Sumner; IDS Working Papers 360; 2011)

Universities and economic development in Africa: Pact, academic core and coordination (Synthesis report)

<http://knowledge.cta.int/en/content/view/full/13505>



The Centre for Higher Education Transformation (CHET, South Africa) has published a synthesis report drawing together evidence from eight African case studies that formed part of the Higher Education Research and Advocacy Network in Africa project (HERANA, <http://chet.org.za/programmes/herana/>).

The HERANA research surveyed higher education stakeholders in eight African countries: Botswana, Ghana, Nairobi (Kenya), Mauritius, Eduardo Mondlane (Mozambique),

Dar es Salaam (Tanzania), Makerere (Uganda), Nelson Mandela Metropolitan University and the University of Cape Town, both in South Africa).

The study (<http://chet.org.za/books/universities-and-economic-development-africa>) revealed that flagship universities in these eight African countries are more similar to institutions elsewhere than is generally perceived, with well-qualified staff, positive student-to-staff ratios, and rising enrolments including in science, engineering and technology. The three key findings presented in this report are:

1. There is a lack of clarity and agreement (pact) about a development model and the role of higher education in development, at both national and institutional levels. There is, however, an increasing awareness, particularly at government level, of the importance of universities in the global context of the knowledge economy.

2. Research production at the eight African universities is not strong enough to enable them to build on their traditional undergraduate teaching roles and make a sustained contribution to development via new knowledge production. A number of universities have manageable student-staff ratios and adequately qualified staff, but inadequate funds for staff to engage in research. In addition, the incentive regimes do not support knowledge production.

3. In none of the countries in the sample is there a coordinated effort between government, external stakeholders and the university to systematically strengthen the contribution that the university can make to development. While at each of the universities there are exemplary development projects that connect strongly to external stakeholders and strengthen the academic core, the challenge is how to increase the number of these projects.

This is the first major academic comparative study of higher education in Africa, but it is also linked to what happens outside Africa. Case studies were conducted of Finland, South Korea and North Carolina in the US, and the research used an analytical framework that can be applied to other countries and institutions.

An analysis of the report was provided by University World News on 20 March 2011.

Construction of an agricultural research centre at the University of Kinshasa, DRC

<http://knowledge.cta.int/en/content/view/full/13507>

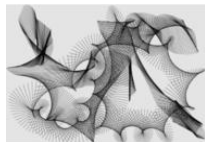


The Minister of Higher education and University, Léonard Mashako Mamba laid the first stone at the University of Kinshasa, DRC (UNIKIN) for the construction of an agricultural research center, financed by Korean project KOPIA/DRC. This center has to reinforce the research that contributes to the modernisation and promotion of agriculture in DRC. Once built, the research centre will provide farmers with seeds and machinery, to help them improve the quality and quantity of their products. The action also aims at the promotion of scientific research at UNIKIN.

The Korean Rural Development Administration set up KOPIA (Korea Project on International Agriculture) centres in countries including Vietnam, Kenya, DRC, Brazil, Uzbekistan and Myanmar to spread Korea's customized agricultural technology. For example, the KOPIA centre in Kenya built and operates vinyl greenhouses, poultry farms and distributed agricultural machines such as bicycle-turned thrashers and rice planting machines in order to help the region's farming activities. (Source: digitalcongo.net, 14 Mar. 2011)

International comparison of goal-oriented public governance in research policy

<http://knowledge.cta.int/en/content/view/full/13510>



Norway is reviewing its research system through the "Fagerberg Committee". One study commissioned by the committee compares the research system in seven countries, with an emphasis on publically financed research. The comparison of the countries uses seven criteria to assess what instruments offer most value for money. Relevant data suggest a declining role of basic research in the sense of 'blue skies'

(curiosity-driven) research. Looking at who decides the research topics reveals that any drift away from basic research is the choice of the research community itself: the share of researcher-initiated project funding is clearly rising.

The first publication volume of the research, *Research Support to the Fagerberg Committee - International comparison of goal-oriented public governance in research policy*, can be downloaded at <http://goo.gl/uR7Hp>.

Public funding allocation to the main research sectors is described and allocation patterns mapped over time. It also gives information on research spending versus research administration, examines research recruitment, identifies mechanisms and criteria for public research allocation, and in particular how targets are operationalised. It also covers a review of bibliometric systems developed for cataloguing research production (number and level of publications, quotations indexes) and gives some best cases examples. Comparative data for the seven countries studied appears in a second volume, which can be downloaded at <http://goo.gl/qm8cM>.

Such a review exercise should help other countries assess their research system, relevant in the current context of research policy reviews taking place in several regions of the world.

African agricultural R&D in the new millennium

<http://knowledge.cta.int/en/content/view/full/13511>

IFPRI has published a new policy report (<http://goo.gl/1FIKK>). Building on the strategic recommendations of various highly influential reports and meetings, and taking into account the various investment and capacity challenges outlined in the *African agricultural R&D in the new millennium report*, the authors suggest that four key areas with strong implications for policy must be addressed by



governments, donors, and other stakeholders:

1. decades of underinvestment in agricultural R&D;
2. excessive volatility in yearly investment levels;
3. existing and imminent challenges in human resource capacity; and
4. the need to maximize regional and subregional cooperation in agricultural R&D.

Notwithstanding the challenges facing many countries, renewed commitment to agricultural R&D by governments and donors indicates improved prospects for agricultural R&D for a number of African countries. The report states that regional initiatives are also a key factor in increasing research coordination and collaboration and ensuring the prioritization and efficiency of research. [Nature's](http://goo.gl/emBqX) in-depth analyses of the report: <http://goo.gl/emBqX>.

Visit the '[Differentiated S&T Strategies](#)', the '[Financing ARD](#)' and the '[S&T Policy dialogue](#)' dossiers on CTA's S&T Knowledge website

EU Research network to tackle plant nutrition

<http://knowledge.cta.int/en/content/view/full/13514>



The Marie Curie Initial Training Network (ITN) project, "Biochemical and Genetic Dissection of Control of Plant Nutrition" (also known as "Bionut"), brings together eight of Europe's top plant research institutes, lead by scientists from the John Innes Centre (UK).

Each institute will host one PhD student, and the studentships will be linked to ensure that a fully integrated approach is taken to get the whole picture of plant nutrition. This integration is a key feature of the network, as it advances the

science beyond focussing on one mineral nutrient, such as nitrogen or sulphur, to look at the combined nutritional needs of the plant.

The results will be brought together to produce the most complete mathematical model of plant nutrition to date. This European research initiative will take steps to understand how crop plants use available nutrients, and address the need for crop varieties that produce higher yields with lower inputs and reduced environmental impact.

The integrated approach adopted by the initiative will draw on the complementary skills and specialties of the research groups. Geneticists will screen for undiscovered genes involved in controlling plant nutrition, and systems biologists, biochemists and plant physiologists will combine to work out the functions of these genes. Other partners will focus on the translation of this research into crop plants in the field, ensuring the pipeline from the laboratory to the field is fully covered by this project. (Source: John Innes Centre, 5 April 2011)

Visit the '[EU and S&T](#)' dossier on CTA's S&T Knowledge website

Jute Mallow: A plant with many names and many uses

<http://knowledge.cta.int/en/content/view/full/13516>



Researchers at Kenya University Botanic Garden are trying to reestablish jute mallow and similar vegetables as staples in the African diet. Jute mallow is a nutritious leafy vegetable with a long history and a variety of names (originating from Egypt, it is also called 'Egyptian spinach'). The leaves are very nutritious, rich in iron, protein, calcium, thiamin, riboflavin, niacin, folate, and dietary fiber. When cooked, the leaves exude a slimy jelly which many liken to the texture of okra, prompting the name 'Bush okra'. The vegetable has almost as many varieties as it does names (more than 15 in total).

The most widely cultivated species is *Corchorus olitorius*, but all of the varieties are edible and widely cultivated.

The jute mallow is harvestable three to four weeks after planting, can be re-harvested three or four times a season, and doesn't require artificial fertilizer. Farmers can harvest six to ten tons per hectare and jute mallow can be planted in rotation with other crops, resulting in healthier plants that are more resistant to damage by pests. Unfortunately, despite these benefits, jute mallow has largely gone ignored by researchers, leading to a lack of quality seed, as well as indigenous knowledge about cultivation practices.

(Source: Worldwatch Institute blog, 12 Mar. 2011)

Madagascar's 'Dista' rice

<http://knowledge.cta.int/en/content/view/full/13518>



Rice is Madagascar's main staple crop and 'Dista' rice, which is cultivated in the Toamasina province near Lake Alaotra (in the northern central plateau of Madagascar), is named after the farmer who discovered it.

The rice, a pale pink color, smells like cinnamon, cloves and nutmeg, is very nutritious and yields are double that of other varieties. Dista rice also shatters less when milled, helping reduce post harvest losses and increasing farmers' income.

Dista yields are also high for another reason: farmers are using the "Système de Riziculture Intensive" to cultivate it (see <http://sri.ciifad.cornell.edu/index.html> for "System of Rice Intensification", SRI). SRI practices include transplanting seedlings when they are very young and growing them widely apart, adding compost from organic matter to the soil, weeding regularly, and using a minimum amount of water instead of flooding fields. This helps create deep root systems that are better able to resist drought, while also increasing yields, strengthening the plant, and enhancing its flavour. (Source: Worldwatch Institute's Nourishing the Planet, 28 March 2011)

Women's Knowledge: Traditional Medicine and Nature (Mauritius, Reunion and Rodrigues)

<http://knowledge.cta.int/en/content/view/full/13519>



The book *Women's Knowledge: Traditional Medicine and Nature* was launched at the International Workshop on Bioprocessing, Policy and Practice: Conservation and use of Medicinal plants of the Small Island Developing States (SIDS) of the Indian Ocean and Madagascar (20-22

April, 2011 - Ebène, Mauritius).

The Islands of Reunion, Mauritius and Rodrigues (Indian Ocean) have their own unique medical traditions. These medical traditions have emerged from multiple origins through a process of creolisation, but they are also closely tied to the natural world in which they have adapted and evolved. They thus provide a key to understanding the wider societies, which are engaged in a constant dialectic between tradition and modernity. Beginning at the end of the Seventeenth Century, these islands were gradually populated by populations originating from Europe, Madagascar, Africa, India, China, even Polynesia and Australia. The interchange between the medical traditions originating from each of these places has given rise to a common knowledge, transmitted largely by women.

This book brings to our attention the knowledge of medicinal plants and medical practices of these women, with special focus on childbirth. It also considers the place of medicinal knowledge within these evolving societies who are actively confronting the threats and opportunities that globalization poses to local identities.

Visit the '*Indigenous Knowledge*' and the '*Horticulture*' dossiers on CTA's S&T Knowledge website

CABI Special focus on the Plantwise Initiative

<http://knowledge.cta.int/en/content/view/full/13521>



"Plantwise" is a collaborative project, led by the Centre for Agricultural Bioscience International (CABI, UK), that will combine self-sustaining networks of free, community-based 'plant clinics' with a central Plantwise Knowledge Bank, creating a global vigilance system that will help prepare farmers to fight the pests and diseases that can ravage their crops.

The project received funding from the Swiss Agency for Development and Cooperation (SDC) to support the training of plant doctors and establishing hundreds of clinics in 40 countries over the next five years: the programme is to deliver a wide range of agricultural advice and services, and strengthen local and regional plant health networks.

The plant clinics will follow the model already established by CABI in fifteen countries in Asia, Africa and Latin America. The clinics advise farmers on all aspects of plant health in the way a doctor does for humans. They are run by local technical people, known as plant doctors, who set up the clinics in rural marketplaces or other places where farmers congregate. Farmers drop by with samples of their plants to get the problem identified and to learn what to do about it.

Studies of clinics in Bangladesh and Bolivia have shown that, as a result of the clinics, farmers have increased crop yields and spent less money on inappropriate or excessive use of pesticides, increasing their average household income and improving livelihoods. The plant clinics will operate in conjunction with the Plantwise Knowledge Bank, a prototype of which is due to launch in mid- 2011. (Source: CABI, April 2011)

The Suwon Agrobiodiversity Framework 2011: Managing agrobiodiversity for sustainable agriculture in the Asia-Pacific region

<http://knowledge.cta.int/en/content/view/full/13523>



The Suwon Agrobiodiversity Framework (<http://goo.gl/8OKgp>) is the result of discussions held in Korea at the "Sustainable Agriculture Development and Use of Agrobiodiversity in the Asia-Pacific Region" International Symposium in October 2010.

The symposium provided an opportunity to review, identify, and redefine the role and directions of agricultural R&D, especially in the context of conservation through use of valuable agrobiodiversity for sustainable agricultural development. It also set a vision for the access and the benefit sharing of valuable genetic resources.

To address the questions at hand, the organizations thought best to adopt an integrated systems approach while defining the framework: research and S&T developments are to focus on genetic resources, conservation techniques, traditional knowledge, ecosystem services, and rely on information and communication systems to enhance regional collaboration. (Produced by the Asia-Pacific Association of Agricultural Research Institutions (APAARI), Rural Development Agency of Korea, Bioversity International, GFAR, 2010.)

Ecosystem services from agriculture and agroforestry: Measurement and payment

<http://knowledge.cta.int/en/content/view/full/13524>



A book about payments for the ecosystem services rendered by farming systems, presenting the methodological difficulties associated with the quantification and marketing of such services, and practical case studies. Farming systems are no longer assessed solely based on the food they supply, but also on their capacity to limit environmental impact, and their contribution to the attenuation of and adaptation to climate change. They have to internalize the costs and advantages of their impact on the environment. Payments for ecosystem services have to

encourage and promote sustainable practices through financial incentives.

The authors demonstrate that while this is simple in principle, it is much more complex in practice. The first two chapters present the methodological problems associated with the quantification and marketing of the ecosystem services rendered by agriculture, including agroforestry. The third and last part presents case studies of the implementation of payments for ecosystem services and trials in central Europe and South America. It draws some lessons from the sustainable, effective development of compensation mechanisms for environmental services rendered. (By: Bruno Rapidel, Fabrice DeClerck, Jean-François Le Coq and John Beer; Earthscan Editions, 2011)

The Agroecological Knowledge Toolkit

<http://knowledge.cta.int/en/content/view/full/13526>



The Agroecological Knowledge toolkit (AKT5) software was developed by the Bangor University (Wales, UK) in conjunction with the Department of Artificial Intelligence at Edinburgh University. It was designed to provide an environment for knowledge acquisition in order to create knowledge bases from a range of sources. It allows representation of knowledge elicited from farmers and scientists or knowledge abstracted from written material. The use of formal knowledge representation procedures offers researchers the ability to evaluate and utilise the often complex, qualitative information relevant stakeholders have on agroecological practices.

The methodology associated with knowledge elicitation for the AKT5 system allows for formalized flexible knowledge bases to be created. The Bangor University of Wales is a leading institution in the development of a knowledge-based systems methodology to acquire and use local knowledge in research and development. The AKT5 system is primarily concerned with gathering local ecological knowledge (LEK). Local ecological knowledge refers to what people know about their natural environment, based primarily on their own experience and observation.

Low fertilizer use drives deforestation in West Africa, imperils REDD implementation: Study

<http://knowledge.cta.int/en/content/view/full/13528>

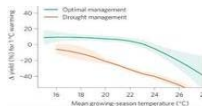


Low-input farming for cocoa, cassava and oil palm has resulted in widespread deforestation and degradation of West Africa's tropical forest area, according to a new study by researchers at the International Institute for Tropical Agriculture (IITA) and the Center for International Forestry Research (CIFOR). Researchers found that increasing fertilizer use on cocoa-timber farms would have spared roughly 2 million hectares of tropical forest from being cleared or severely degraded. The study suggests that farmers could have achieved the same outputs without rampant deforestation through the intensified use of fertilizer and agrochemicals coupled with improved crop husbandry.

According to IITA, by doing so farmers would have doubled their incomes and helped to avoid deforestation and degradation on 2.1 million hectares and in the process, this would have generated a value of over 1,600 million dollars on 1.3 billion tons of CO₂ emissions that would not have come from deforestation. To the authors, funding support for reducing carbon emissions due to deforestation and degradation (REDD) to mitigate climate change offers the potential of significant new public resources for needed investments in agricultural research and extension and market infrastructure to support the transformation of traditional agriculture in West Africa. They suggest a significant proportion of REDD+ funding should be used to increase the adoption level of fertilizer use in a 'Fertilizers for forest' mitigation programme. (Source : IITA, 8 April 2011)

Untapped crop data from Africa predicts corn peril if temperatures rise

<http://knowledge.cta.int/en/content/view/full/13530>



Stanford agricultural scientist David Lobell and researchers at CIMMYT report in the inaugural issue of Nature Climate Change (<http://www.nature.com/nclimate/index.html>) that a clear negative effect of warming on maize production was evident in experimental crop trial data conducted in Africa by the organization and its partners from 1999 to 2007.

Led by Lobell, the researchers combined data from 20,000 trials in sub-Saharan Africa with weather data recorded at stations scattered across the region. They found that a temperature rise of a single degree Celsius would cause yield losses for 65 percent of the present maize-growing region in Africa - provided the crops received the optimal amount of rainfall. The data recorded at the yield testing sites did not include weather information. Instead, the researchers used data gathered from weather stations all over sub-Saharan Africa.

Although the stations were operated by different organizations, all data collection was organized by the World Meteorological Organization, so the methods used were consistent. Lobell then took the available weather data and interpolated between recording stations to infer what the weather would have been like at the test sites. By merging the weather and crop data, the researchers could examine climate impacts. (Source: Sciencedaily, 14 Mar. 2011, see <http://goo.gl/d5v39>) and The Economist, 17 Mar. 2011, see <http://www.economist.com/node/18386161>)

EDES, or how to boost food safety in ACP countries

<http://knowledge.cta.int/en/content/view/full/13532>



EDES is an ACP-EU programme funded by the 9th European Development Fund. It involves nine partners from France, the United Kingdom, Belgium and Denmark, and is working within a global framework of support of poverty alleviation through economic development. CIRAD is coordinating the programme's training component.

"Starting in 2011, we will be training 6000 people in the concept of food safety, in more than 35 countries" says Didier Montet, coordinator of the team of twelve CIRAD researchers working on the project. "We will be beginning in April with a course for ACP training staff. Some 20% of the work will be done in the private sector".

The aim is to improve the food safety of ACP foodstuffs exported to Europe. Such goods must comply with regulation 882/2004, which means bringing all these food products into line with European regulatory systems. The aim is to alleviate poverty in ACP countries by maintaining their access to the European, and also the local and regional, market.

Specific modules have been developed for the following training sessions :

- food safety governance
- official controls
- good practice in international trade
- launch and monitoring of official control laboratories
- risk analysis and management
- communication on risks.

Visit the 'Food safety' dossier on CTA's S&T Knowledge website

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The Soils, Food and Healthy communities (SFHC) Project

<http://knowledge.cta.int/en/content/view/full/13534>



The Soils, Food and Healthy Communities (SFHC, soilandfood.org) project in Ekwendeni, northern Malawi, began in 2000 with thirty farmers, and is now working with over 4000 farmers. It is a participatory project, in which farmers try to improve soil fertility, food security and nutrition through the use of grain or perennial legumes (e.g. peanut or soyabean). Subsequently it is hoped that

this will lead to an increased food productivity which will in turn enhance food availability within households of resource-poor farmers. The end goal is to improve food security, soil fertility, and child nutritional status.

The research done by SFHC project has taken an 'Ecohealth' approach. An ecosystem approach takes a holistic approach to understanding how humans interact with their environment, and the implications for human health. The SFHC research project attempts to improve child nutritional status, household food security and soil fertility through use of different legume options which can improve the quality and quantity of food available within the household as well as provide organic inputs to improve soil fertility.

The project's approach sits on the three following concepts of :

- *Transdisciplinarity* (involve people from multiple disciplines in carrying out research and in analysis and dialogue about research findings and development activities);
- *Participation* (use a participatory approach, rely on input from the Farmer Research Team and villages committees, assuming resource-poor farmers have valuable knowledge to contribute to the assessment of organic matter technologies for improving food security and health);
- *Equity and gender* (integrating equity concerns into programming and research activities).

A recent paper has been published using data from the project, see Rachel Bezner Kerr, Peter R Berti and Lizzie Shumba. *Effects of a participatory agriculture and nutrition education project on child growth in northern Malawi*. [Public Health Nutrition](#), 09 Nov 2010, pp. 1-7. Available on <http://goo.gl/h18fk>.

Visit the 'Soil health' dossier on CTA's S&T Knowledge website

Mapping permeability over the surface of the Earth

<http://knowledge.cta.int/en/content/view/full/13537>



University of British Columbia researchers have produced the first map of the world outlining the ease of fluid flow through the planet's porous surface rocks and sediments. The maps and data, published in [Geophysical Research Letters](#) (January 2011), could help improve water resource management and climate modelling, and eventually lead to new insights into a range of geological processes.

Using recent world-wide lithology (rock type) results from researchers at the University of Hamburg (Germany) and Utrecht University (The Netherlands). The authors were able to map permeability across the globe to depths of approximately 100 metres. Typical permeability maps have only dealt with the top one to two metres of soil, and only across smaller areas.

A better understanding of large scale permeability of rock and sediment is critical for water resource management--groundwater represents approximately 99 % of the fresh,

unfrozen water on earth. Groundwater also feeds surface water bodies and moistens the root zone of terrestrial plants. (Source: Science Daily, 25 Jan. 2011)

Visit the **'Water resources'** dossier on CTA's S&T Knowledge website

Successful African alternatives to corporate 'green revolutions'

<http://knowledge.cta.int/en/content/view/full/13539>



This article is part of the Journal *Development's* issue on the future of agriculture (<http://goo.gl/JjAr4>). This article proposes African alternatives that honour farmers' rights and agricultural biodiversity and still permit sustainable food production.

Andrew Mushita and Carol Thompson argue that while the 'green revolution for Africa' promotes private foreign ownership of genetically modified seeds and focuses on increased yields of a few crops, African alternatives honour farmers' rights and agricultural biodiversity, through innovative legislation and protocols, in order to increase sustainable food production.

The authors explain how the global agricultural crises have affected the African continent. Starting with exploring the dud that are agrofuels and the profound multi-faceted market failures of agricultural corporate policy, the authors then move to examine impacts of the piracy of African biodiversity wealth. At a later point, they carry their analysis to the African alternatives "that are working on the ground", and focus on the Farmers' rights international principle and the African Union Model Law for the protection of rights of local communities, farmers and breeders.

Pambazuka republished recently the article at <http://goo.gl/SZPPd>. (Source: Pambazuka, 24 Mar. 2011)

Visit the the **'Biodiversity'** and the **'Intellectual Property'** dossiers on CTA's S&T Knowledge website

Light roasted coffee found to contain higher amount of antioxidants

<http://knowledge.cta.int/en/content/view/full/13541>



In his research titled *Influence of Roasting on the Phenolic Content and Antioxidant Activity of the Philippine Coffee*, Dr Ruel M. Mojica (of Cavite State University, Philippines) found that degrees of roasting have significant effects on the antioxidant activity of both *Coffea robusta* and *C. liberica* samples. Findings here show that

light roasted coffee gives the highest phenolic content and antioxidant activity among coffee samples roasted to varying degrees.

In his report, roasted beans generally contain less polyphenols than green beans (as chlorogenic acid present in green coffee is degraded upon roasting). The research found that "considerable increase" in phenolic content occurred in light roast samples and began to decrease in medium roast to very dark roast samples (as was the antioxidant activities with an increase in the degree of roast).

In a time of changing eating habits, food products containing antioxidants are popular as their health benefits are scientifically proven.

This research by Dr Mojica is featured in the *BAR Chronicle* (<http://www.bar.gov.ph/barchronicle/>), the official monthly publication of the Bureau of Agricultural Research (BAR) of the Department of Agriculture of the Philippines.

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African regional integration: Implications for food security

Van Dijk, Michiel; Wageningen University, LEI paper series.

<http://knowledge.cta.int/en/content/view/full/13543>

This report from the Wageningen University looks at the African regional trade, regional integration agreements (RIAs) and the implications for food security. An overview is presented on the present state of African regional integration and the determinants of regional trade in agriculture and food commodities. In particular the study focuses on eight target countries (Ethiopia, Ghana, Kenya, Mozambique, Rwanda, Tanzania, Uganda and Sudan), related RIAs and a set of strategic food commodities.

The evidence presented in this study shows that African countries have made progress in opening up agriculture and food trade with partner countries. With the exception of Ghana, Tanzania and Mozambique, the effective applied tariff rates for regional trade partners are substantially lower than the rates applied to world trade partners. Nonetheless, regional trade in agriculture and food only increased marginally between 1990 and 2009, and is relatively low in comparison with other developing regions. The weak state of soft and hard infrastructure, rather than high trade tariffs, seem to be the cause of this.

New avenues for pastoral development in sub-Saharan Africa

A special issue of the European journal of development research (Volume 22, Issue 5, Dec. 2010)

<http://knowledge.cta.int/en/content/view/full/13544>

This special issue of the European journal of development research highlights current avenues for the analysis of pastoral development in sub-Saharan Africa from multiple empirical perspectives. Among the key questions it addresses are:

- What development challenges are pastoral societies currently confronted with and how do they address these challenges?
- What are the impacts of the multiple social, ecological, economic and political transformations of the past two decades on development problems and interventions in pastoral areas?
- What are the contemporary practices and discourses of 'pastoral development' of various actors including development agencies and state actors?
- What are the roles of indigenous knowledge and scientific knowledge systems in pastoral development?
- What are the development implications of the major research findings of different bodies of literature focussing on African drylands and their inhabitants?
- What are the continuities and ruptures in terms of pastoral development trajectories that are observable in contemporary sub-Saharan Africa?

By addressing these and other questions, this special issue provides a timely update of earlier attempts at taking stock of the development challenges faced by African pastoralists.

Training manual on spatial analysis of plant diversity and distribution

Scheldeman, Xavier and van Zonneveld, Maarten. Bioersivity International. 2010.

<http://knowledge.cta.int/en/content/view/full/13545>

This training manual is intended for scientists and students who work with biodiversity data and are interested in developing skills to effectively carry out spatial analysis based on (free) GIS applications with a focus on diversity and ecological analyses. These analyses offer a better understanding of spatial patterns of plant diversity and distribution, helping to improve conservation efforts. The training manual focuses on plants of interest for improving livelihoods (e.g. crops, trees and crop wild relatives) and/or those which are endangered.

Spatial analyses of interspecific and intraspecific diversity are explained using different types of data:

- species presence
- morphological characterization data
- molecular data.

Although this training focuses on plant diversity, many of the types of analyses described can also be applied for other organisms such as animals and fungi.

The use of participatory processes in wide-scale dissemination of micro dosing and conservation agriculture in Zimbabwe

T. Pedzisa; I. Minde; S. Twomlow. Joint 3rd AAAE and 48th AEASA Conference, Cape Town, South Africa, September 19-23, 2010.

<http://knowledge.cta.int/en/content/view/full/13546>

Participatory technology development has been used for quite some time. However, little is known about how farmers perceive participatory methods and processes. Understanding farmers' concerns about the participatory process can be an important starting point and can further the ultimate aim of encouraging sustained technology adoption. An ex-post participatory technology development and transfer evaluation was carried out in Zimbabwe in 2006-2007 involving 231 farmers. It was revealed that use of demonstration trials encouraged the most participation and subsequent adoption and adaptation of the technologies to suit specific needs. The participatory nature of the process encouraged greater knowledge sharing among farmers and gave them more confidence in the technology. In order to increase the gains of the participatory process, feedback loops should be built in to allow improvements and modifications to be made to the techniques being promoted.

SPAN Newsletter March 2011 - IRETA, University of the South Pacific

South Pacific Agricultural News – IRETA, Univ. of the South Pacific

<http://knowledge.cta.int/en/content/view/full/13547>

This is the SPAN (South Pacific Agricultural News) March 2011 Newsletter of the Institute for Research, Extension and Training in Agriculture (IRETA) at the Univ. of the South Pacific.

The March 2011 issue of the SPAN Newsletter headlines are:

- Sweet potato in the Pacific (a rationale for growing more sweet potato in the Pacific)
- Studying agriculture at USP (Presenting the School of Agriculture and Food Technology, USP, Samoa)
- Breeding taro leaf blight (TLB)-resistant taros (Samoa's effort to counter the spread of *Phytophthora colocasiae*) via taro variety selection)
- Student life on USP's Alafua Campus (the everyday life of Alafua's 50 students)
- Altitudinal limits of economical crops in PNG (Study covering 230 economic crop species)
- Giant african snails at New Zealand ports (Biosafety measures to counter invasive species)
- Planting and selling taro for a living (everyday life for vendors at the fresh produce market)
- NARI (PNG) introduces technologies to community (a collaborative project introducing improved crop and livestock varieties to diversify food production).
- Where water is used well (on urban vegetable farmers innovations in Hanoi, Vietnam)
- Model coffee extension group in PNG (the successes and challenges of a local coffee cooperative group)

Ruforum Newsletter – April 2011

Regional Universities Forum for Capacity Building in Agriculture (RUFORUM)

<http://knowledge.cta.int/en/content/view/full/13548>

Below are some of the Ruforum April 2011 highlights:

- Africa: Coordination and Connectedness of Universities
- Ruforum Member Universities participate in the PAEPARD call for proposals
- Innovations Project Holds Annual Review Meeting
- Ruforum Alumni - Review of the status of the RUFORUM investment
- Community Based Education Programs at University of Gezira
- Ruforum Competitive Grants System, Graduate Research Grant - Call ID RU/CGS/GRG/15/10/10 Awarded
- Announcements, Events, Opportunities and more.

Visit Ruforum's website to view all newsletters published to date <http://goo.gl/srIrY>

African Journal of Food, Agriculture, Nutrition and Development (AJFAND)

AJFAND, Vol. 11, No 2.

<http://knowledge.cta.int/en/content/view/full/13549>

The articles in this issue of AJFAND include, among others:

- Evaluating post harvest opportunities and constraints to utilization and marketing of African Leafy Vegetables in Cameroon (by Berinyuy JE and DA Fontem)
- Farming for balances nutrition: An agricultural approach to addressing micronutrient deficiency among the vulnerable poor in Africa (by Hillocks RJ)
- Effect of groundnut flour substitution on yield, quality and storage stability of kilishi - A Nigerian indigenous dried meat product (by Mgbemere VN et al.)

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Fellowships and Grants | Follow the latest RSS feeds for this section

University of Manchester's one-year MSc ICTs for Development degree and 2011 Development Leaders Bursary

<http://knowledge.cta.int/en/content/view/full/13479>

The University of Manchester's one-year MSc ICTs for Development degree aims to create "ICT4D champions" who combine technical competencies in information systems and project management with an understanding of development context and practice:

<http://www.sed.manchester.ac.uk/postgraduate/taught/courses/06237/?code=06237&pg=2>

The 2011 Development Leaders Bursary - worth £6,150 - is available for developing country applicants to the MSc ICT4D programme, with a May 27th deadline. Application and eligibility details can be found at:

<http://www.sed.manchester.ac.uk/idpm/postgraduate/taught/funding/>

This page also contains details on other funding sources and on part-time employment opportunities while studying in Manchester. **Registration deadline is 27 May 2011.**

Call for application: 5 fully-funded MSc fellowships in GM crop risk assessment

<http://knowledge.cta.int/en/content/view/full/13474>

The International Centre for Genetic Engineering and Biotechnology (ICGEB) is an international, intergovernmental organisation conceived as a centre of excellence for research and training in genetic engineering and biotechnology with special regard to the needs of the developing world, and implements a comprehensive programme on biosafety centred on capacity building and dissemination of scientific information. The ICGEB is currently offering five biosafety fellowships in the framework of a capacity building initiative focused on sub-Saharan Africa. **The deadline is 27 May 2011.**

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Events | Follow the latest RSS feeds for this section

2nd International Symposium on Underutilised Plant Species entitled "Crops for the Future - Beyond Food Security"

<http://knowledge.cta.int/en/content/view/full/13550>

The organising committee of the 2nd International Symposium on Underutilised Plant Species entitled "Crops for the Future - Beyond Food Security" is pleased to invite you to the symposium to be held in **Kuala Lumpur, Malaysia 27th June - 1st July 2011**. The Symposium is organised under the auspices of the International Society for Horticultural Science (ISHS) with support from the ISHS Working Group on Underutilised Plant Genetic Resources, the ISHS Commission on Plant Genetic Resources and the ISHS Section on Tropical and Sub-Tropical Fruits. The main organiser of the meeting is the University of Nottingham, Malaysia Campus which, together with the Asia Pacific Oceania Office of Bioversity International, hosts the global Crops for the Future Centre in Malaysia.

Venue: Kuala Lumpur, Malaysia.

Dates: 27th June - 1st July 2011.

International Knowledge Brokering Conference on Food Security, Health and Impact

<http://knowledge.cta.int/en/content/view/full/13484>

The goal of this conference is to demonstrate and share lessons on how to translate research results into impact on food security and human health in sub-Saharan Africa. It has two objectives:

- To determine how the results of basic science and inter-disciplinary research lead to impact on food security and human health.
- To explore how partnerships between research and development organisations deliver innovation and impact.

To accompany the conference, Africa College is holding a competition to help identify best practice on translating the results of research into impact on food security and human health in sub-Saharan Africa, and to recognise individuals from research and development organisations, civil society and farmer organisations, and the private sector who have helped deliver these impacts. Get more information :

<http://www.africacollege.leeds.ac.uk/conf2011/index.php> .

Venue: Devonshire Hall, University of Leeds, UK

Dates: 22nd to 24th June 2011.

International Student conference on Climate change and Indigenous knowledge systems (IKS)

<http://knowledge.cta.int/en/content/view/full/13463>

The New Partnership for Africa's Development (NEPAD) Agency, in collaboration with the IKS Centre of Excellence at the North-West University (South Africa), the National Indigenous Knowledge Systems Office in the Department of Science and Technology, the University of Hohenheim (Germany), the University of Kwazulu-Natal (South Africa), University of Namibia (Namibia) and Hanseo University (South Korea) are organizing an International Student Conference on Climate Change and Indigenous Knowledge Systems . The conference will be held in Johannesburg, 15-17 August 2011.

The objectives of the conference are :

- to create an international platform for students and youth to exchange ideas and experiences in the field of climate change research and the role of indigenous knowledge systems in climate change adaptation and mitigation
- to facilitate the building of a sustainable young African Scientists network on climate change research
- to inform the formulation of the African Young Scientists Initiative on Climate Change (AYSICC) based on indigenous knowledge systems.

More information is available here:

<http://knowledge.cta.int/en/content/view/full/13463> and

<http://www.cees.uio.no/news/2011/climate-change-conference-sa.html>

and send your abstract of no more than 300 words by 31 May 2011.

Venue: Johannesburg, South Africa.

Dates: 15-17 August 2011.

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Organisations | Find more organisations on our website

Livestock Data Innovation in Africa

<http://knowledge.cta.int/en/content/view/full/13552>



The Livestock in Africa: Improving Data for Better Policies Project, or Livestock Data Innovation Project, is a three-year (2010-2012) project which works with national governments and institutes to pilot and develop methodologies for identifying, collecting and analyzing livestock data in three pilot countries : Uganda, Tanzania and Niger. The Project supports the identification of key livestock indicators and underlining data which fosters pro-poor investment

and policy formulation through the institutionalization of this data into national frameworks of agricultural statistics.

The project consists of three components:

1. Collection and analysis of household survey data to improve our understanding of the role of livestock in the household economy;
2. Collection and analysis of data measuring current and projected consumption of livestock products to identify market opportunities for small livestock producers, and smallholder accessible supply chains;
3. Identification and analysis of data / indicators representing constraints that prevents small livestock producers from being efficient and participating in potentially remunerative value chains and markets.

These data-related activities in three sub-Saharan countries will help produce two major outputs that could benefit all sub-Saharan countries:

1. A Sourcebook on Livestock Data in Africa, as a guide on collecting and analyzing livestock and poverty data that can serve the better understanding of key developmental questions facing livestock sectors.

2. An advocacy document Making the Case for Investing in Livestock in Africa which will provide empirical evidence on the role of livestock in the lives and livelihoods of the poor and recommendations on strategic opportunities of livestock-based poverty reduction and economic growth.

The Livestock Data Innovation Project is sponsored by the Bill & Melinda Gates Foundation and jointly implemented by the World Bank, ILRI and FAO, in collaboration with AU-IBAR.

Specialty Crops for Pacific Island Agroforestry

<http://knowledge.cta.int/en/content/view/full/13554>



This project promotes high quality food, fiber, and healthcare crops grown in diverse agroforestry systems to provide family farms both subsistence and commercial opportunities. Specialty crops provide a rapidly growing economic opportunity for farmers and gardeners who are interested in diversifying their crops and who are willing to innovate their production methods, post-harvest processing, and marketing.

Farm and Forest Production and Marketing (FFPM) profiles for 32 crops detail essential information for crop development: horticulture and botany; the roles for each crop in mixed-species agroforestry; nutrition and food security; commercial products, product quality standards; location and size of markets; post-harvest processing; opportunities for local value-added processing; and the potential for genetic improvement.

The project supports:

- integrating trees and crops (agroforestry)
- commercial and non-commercial plantings of all sizes, including homegardens
- small-scale commercial operations suitable for small lots
- local food production for happier and healthier communities
- traditional crops
- community food self-reliance.

Project outcomes include increased adoption of specialty crops, micro-enterprise development, local food production, and sustainable multi-crop agroforestry systems, thereby supporting economic and ecological viability of our communities.

Global Phosphorus Research Initiative

<http://knowledge.cta.int/en/content/view/full/13556>



The Global Phosphorus Research Initiative (GPRI) is a collaboration between independent research institutes in Europe, Australia and North America. The main objective of the GPRI is to facilitate quality interdisciplinary research on global phosphorus security for future food production. In addition to research, the GPRI also facilitates networking, dialogue and awareness raising among policy makers, industry, scientists and the community on the implications of global phosphorus scarcity and

possible solutions.

The GPRI was co-founded in early 2008 by researchers at the Institute for Sustainable Futures at the University of Technology, Sydney (UTS), and the Department of Water and Environmental Studies at Linköping University, Sweden. Today, GPRI members also include the Stockholm Environment Institute (SEI) in Sweden, the University of British Columbia (UBC) in Canada and Wageningen University in The Netherlands.

Pl@ntNet

<http://knowledge.cta.int/en/content/view/full/13558>



If agricultural development is to be successful and biodiversity is to be conserved, then accurate knowledge of the identity, geographic distribution and uses of plants is essential. Unfortunately, such basic information is often only partially available for professional stakeholders, teachers, scientists and citizens, and often incomplete

for ecosystems that possess the highest plant diversity, i.e. Mediterranean and tropical regions.

Pl@ntNet will contribute to filling this void by:

- Developing cutting-edge transdisciplinary research at the frontier between integrative botany and computational sciences, based on the use of large datasets, knowledge of and expertise in plant morphology, anatomy, agronomy, genetics, taxonomy, ecology, biogeography and practical uses.
- Providing free, web-based and easy-access software tools and methods for plant identification and the aggregation, management, sharing and utilization of potentially all kinds of plant-related data.
- Promoting citizen science as a powerful means to enrich databases with new information on plants and to meet the need for capacity building in agronomy, botany and ecology.

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