

Our Vision

To be the centre of excellence in the Caribbean for the provision and application of research and development in agriculture and rural enhancement.

Our Mission

To contribute to the sustainable economic well being of Caribbean people by the generation and transfer of appropriate technology through research and development within the agricultural value chain.

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Fruits

EMBRAPA launches several new fruit varieties. FreshFruitPortal.com, 19 Dec 2012

<http://www.freshfruitportal.com/2012/12/19/brazil-embrapa-launches-several-new-fruit-varieties/>

Full Article

Hardier passionfruit, productive limes and adaptable acerola cherries are some of the latest releases to come out of the Brazilian Agricultural Research Corporation's (EMBRAPA) plant breeding program.

Passionfruit are native to Brazil but diseases like cowpea aphid-borne mosaic virus (CABMV) have evolved with them. However, the recently launched BRS Rubi do Cerrado variety has shown greater tolerance, along with higher Vitamin C content.

"The difference with the Cerrado Rubi BRS is that the levels of disease resistance are superior to the present crops available in the market," said Embrapa Cerrados researcher Fábio Faleiro.

"Achieving this result was possible with arduous breeding work, in which the first crosses were made in 1998."

The variety is recommended in the state of Mato Grosso and the Federal District (Brasilia), reaching productivity of up to 50 metric tons (MT) per hectare. It can be planted any time of year in different soils, but plantation is recommended during the dry period in regions with well-defined wet seasons.

This passionfruit cannot be adapted to regions that are subject to frosts or soaked soil.

EMBRAPA's new lime, the BRS Passos, has been developed from an acidic lime the group created in the 70s, noted for its high productivity at 60 metric tons (MT) per hectare, which is three times the national average.

The variety also has a low rate of floral abortion and a longer shelf life. The fruit is designed for the west-central part of Brazil, showing very responsive floral induction in the Federal District with ammonium sulfate or potassium chloride fertilization.

Around 89% of Brazil's limes go to the domestic market, 7% are destined for processing and 4% are sent overseas as exports.

The institute's new acerola cherry is also highly productive and was developed in conjunction with company Nutrilite. The plant, known as BRS 366 Jaburu, yields 100kg (220lbs) of cherries each year, representing around 57MT per hectare.

"The BRS Jaburu produces close to 20% more than the second most productive, the Mineira crop," said Embrapa Agroindustrial Tropical researcher Francisco Vidal Neto.

Like EMBRAPA's new passionfruit, the BRS 366 Jaburu also has high Vitamin C levels. The objective is to pick the fruit green when these vitamin levels are double that of the ripe cherry.

The institute highlighted the crop's versatility, adapting well to manual and mechanized harvesting which gives it a competitive advantage over other cultivars.

The Jaburu also has seven productive cycles over the course of the year.

Cassava

Nigeria releases improved cassava varieties to boost productivity by International Institute of Tropical Agriculture, 14 January 2013 http://www.iita.org/2013-press-releases/-/asset_publisher/CxA7/content/nigeria-releases-improved-cassava-varieties-to-boost-productivity?redirect=/2013-press-releases#.UPcB_PVvCZQ

Full Article

Nigeria has released two improved cassava varieties in an effort to maintain its lead as the world's largest producer of the root crop and improve incomes of farmers.

The varieties were developed through a collaborative effort between the International Institute of Tropical Agriculture (IITA) and the Nigerian Root Crops Research Institute (NRCRI), Umudike. The two varieties are originally recognized as IITA-developed genotypes: IITA-TMS-I982132 and IITA-TMS-I011206. But with the official release, they are now known as UMUCASS 42 and UMUCASS 43, respectively.

“Both varieties performed well in different cassava production regions of Nigeria with high yield, high dry matter, and good disease resistance. The roots of these varieties are yellow and contain moderate levels of pro-vitamin A,” says Dr Peter Kulakow, IITA Cassava Breeder.

The potential maximum yield of the two varieties is between 49 and 53 tons per hectare, according to pre-varietal release trials that were conducted between 2008 and 2010. Local varieties produce less than 10 tons per hectare. The varieties are also resistant to major pests and diseases that affect cassava in the country including cassava mosaic disease, cassava bacterial blight, cassava anthracnose, cassava mealybug, and cassava green mite.

Dr Chiedozi Egesi, NRCRI Cassava Breeder, who presented the varieties before the Nigeria Varietal Release committee—the body in charge of officially releasing varieties—said the varieties have the following distinct qualities:

1. Good for high quality cassava flour—a sought-after trait by researchers for the cassava transformation agenda in Nigeria.
2. High dry matter which is positively related to starch and crucial for cassava value chain development
3. High leaf retention which is positively related to drought tolerance and is crucial for cassava production in the drier regions and in mitigating the impact of climate change, and
4. Moderate levels of betacarotene for enhancing nutrition.

Over the years, cassava has been transformed from being a “poor man’s” crop to a cash and an industrial crop, as it is now processed to products such as starch, flour, glucose, and ethanol. This transition has increased the demand for this root crop.

Researchers say developing new improved varieties is one way of boosting the steady supply of cassava roots for value chain development and for industry.

According to Dr Egesi, continuous breeding of such improved new varieties will help in stabilizing production, processing, and marketing of cassava products.

“The impact of these efforts will be felt in areas such as rural employment and a vibrant cassava industrial sector,” he added.

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Livestock

The quest for the best of breed; improving animal genetic resources by Consultative Group on International Agricultural Research, 28 December 2012 <http://www.cgiar.org/consortium-news/the-quest-for-the-best-of-breed-improving-animal-genetic-resources/>

Full Article

Kenyan vet Bridgit Muasa has set her sights high. In a region where women dominate livestock farming, but only account for one in four agricultural scientists, she is pinning her hopes on developing a ‘super cow’, to improve productivity for local cattle rearers. A veterinary officer with the Kenya Ministry of Livestock Development, Muasa has been mentored in the African Women in Agricultural Research and Development (AWARD) program by Karen Marshall, an animal breeding scientist at the International Livestock Research Institute (ILRI – a member of the CGIAR Consortium).

Muasa is now on a 6-month research attachment with EMBRAPA in Brazil, working on the cryopreservation of cattle embryos. Using assisted reproductive technologies, she is focusing on improving animal genetic resources, “*building a sort of ‘super cow’ by breeding exotic cows with indigenous cows, and so getting the best attributes from each,*” as she explains. “*For this we use the technology of in vitro embryo production*”

The right mix

Initiatives to improve livestock genetic resources can have significant benefits for smallholder incomes, as well as spinoffs for health and nutrition in local communities. In Senegal, new genomic approaches are enabling scientists to identify the breed composition of individual animals and determine which breed mix would be best for farmers.

A rapidly developing peri-urban dairy sector outside Senegal’s main towns has led to cross breeding between traditional West African breeds, such as Maure, Zaouak and Zebu Peul with European dairy breeds such as Holstein-Freisian and Montbeliard. But the absence of pedigree records has made it hard to keep track of the mix. The ILRI-led initiative to target cross breeding for specific conditions includes training, to help livestock owners manage their animals in the most efficient way.

In Ethiopia, where poultry production is particularly important to women, another ILRI project is developing a poultry breeding program to improve resistance to infectious diseases and increase productivity. A key aim is to identify genes that can be used in cross breeding programs to produce more disease resistant chickens. Each year, epidemics of infectious diseases result in the death of large numbers of birds, causing serious losses to poor farmers.

Community-based breeding

Meanwhile, in several marginal dryland countries, community-based livestock breeding is improving yields of sheep and goats for poor herders, especially in remote communities. Since modern livestock breeding methods are often unsuitable for poor households with small flocks, the International Center for Agricultural Research in the Dry Areas (ICARDA*) and partners have developed a more sustainable alternative — community-based breeding programs focusing on indigenous breeds and suited to smallholder conditions.

Community-based breeding increases the productivity and profitability of indigenous breeds without undermining their resilience and genetic integrity. Farmers are trained in better selection methods, for example, retaining fast-growing ram lambs for breeding, rather than selling them young. Help in setting up record

systems enables livestock keepers to monitor the performance of individual animals, leading to continuous genetic improvement.

Bigger profits, more nutrition

Fish are not being left out of the drive for better breeding programs. Two improved breeds of Nile Tilapia (*Oreochromis niloticus*) developed by WorldFish* and partners are achieving growth rates that are up to 30% faster.

In Egypt, a selective breeding program has produced the ‘Abbassa’ strain of Nile Tilapia which has a faster growth rate and superior harvest weight than the most commonly used commercial strain. This will help to provide affordable protein for many Egyptians, including almost 20% of the population that the CGIAR Research Program on Livestock and Fish reports is living on less than \$1USD per day.

In Ghana, the ‘Akosombo’ strain developed by the Water Research Institute (WRI), in partnership with WorldFish, matures in as little as five months, compared with eight months for unimproved Nile Tilapia. The move is not just benefiting producers. It is helping to boost the country’s booming aquaculture sector. Ghana’s tilapia production is projected to increase tenfold by 2015. Said WRI fisheries expert Dr. Felix Attipoe “*Most of the hatcheries have adopted the new strain as their brood stock, and are producing fingerlings for the whole industry.*”

Fixing fodder shortages for DAIRY in East Africa & South Asia, BEEF in West Africa, GOAT/SHEEP MEAT in West & southern Africa by International Livestock Research Institute, January 2013

<http://www.ilri.org/aggregator/sources/244>

Full Article

Fodder cut and ready for transporting in northern India (photo credit: ILRI/Susan MacMillan).

In 2012, a group of researchers at the International Livestock Research Institute (ILRI) worked with partners at the World Bank, under the direction of Jimmy Smith, then a senior livestock advisor at the Bank and now director general of ILRI, in identifying investment opportunities for ruminant livestock feeding in developing countries.

Excerpts from the executive summary follow.

‘Driven by population growth, increasing demand, stricter quality and safety standards for animal source food and increasing competition for land and water resources, the livestock sector is changing rapidly. Within this changing landscape, smallholders with crops and livestock will remain the mainstay of the sector in developing countries for some decades to come.

For example, the projections in this report foresee an increase in cattle, sheep and goat populations in the mixed crop-livestock systems in the developing world from 467 million to 648 million adult cattle equivalents. However, also here, the abovementioned mega-trends and the resulting competition for feed resources imply that these systems will have to intensify to ensure an acceptable livelihood for its producers.

‘Enhancing the quality and quantity of feed, as one of the most important factors of animal production will play a critical role in this process of intensification. However, feed improvement should not be seen in isolation, but rather be assessed as part of the greater value chain, including all stakeholders. For example, investing in feed improvement without markets to sell the increased production from this investment or without an adequate feed quality control regulatory framework, would yield negative returns.

This report follows a step-by-step analytical framework that will provide the priority investments and actions in technologies, policies, and institutions.

‘As the first step in this framework, the most promising value chains, where feed-related strategies and investments are most likely to have significant impacts, have to be identified. On the basis of the key characteristics of (a) growth and market opportunities, (b) number of poor and pro-poor potential and (c) the supply constraints, in particular disease risk and feed resources availability, this report identifies first Sub-Saharan Africa and South Asia as priority areas, and then, within these areas, it identifies three commodity value chains in five regions of particularly great potential to benefit poor producers and consumers. They are:

- Dairy in East Africa and South Asia because of the expected growth in demand (including export potential), the number of poor involved (135 million), and the moderately adequate situation resource situation
- Beef in West Africa because of its potential for import substitution and potential for improvement, in spite of the resource constraints
- Small ruminant meat in West Africa and Southern Africa because of the number of poor involved (110 million) and new domestic market opportunities.

‘The framework was then used to analyze the diversity of feed types, the availability of feed sources both from within and from outside of local systems, based on informant interviews and quantitative modeling of the current situation and with projections to 2030. Detailed data for each feed type and source are available in the main text, but the general trends show:

(a) A reduction in the use of crop residue such as straws and stovers, although at a projected between 20 and 50 percent these remain a substantial part of the daily ration of the livestock of those systems.

(b) An increase in the use of crop-by-products (such as oil cakes and by-products of the milling industry) and concentrates, although staying in 2030 mostly below ten percent, with the exception of the South Asian dairy systems, where they would amount to 25 percent of the total diet. With such a low share of the diet, and with most products not edible for humans, these systems would not endanger global food security.

(c) An increase in the area planted for forages, in particular in dairy systems; and (d) a sharp increase in feed procurement from the market instead of supply from the own farm.

‘Based on these projections to 2030, opportunities for feed-related investments with major positive impacts on the poor are then identified. A number of strategies, policies, technologies, and services come to light as especially promising areas for such investment in a variety of scenarios. Applying the assessment framework to each of the three value chains yielded similar results for all chains. First of all, they stress that addressing feed related issues in the context of evolving value chains requires combinations of public and private investments: policies, strategies that facilitate adoption and market engagement with reduced transactions costs such as improved access to knowledge and services for smallholder producers and other market agents together with adoption of improved feed technologies.

‘The more specific areas of improvement that warrant priority in targeting investments are:

- Technological feed improving solutions include in all value chains studied
 - (a) more attention to research and development for feed/food crops, i.e., crops that provide both food (mostly grain) for humans and feed (mostly straws) for livestock;
 - (b) better ration formulation, through the introduction of feed processing and storage technologies (including micro-sizing, ensiling, etc.) and
 - (c) forage seed production. . .
- Institutional issues include access to land and water for all smallholders, as a primary concern and as the main incentive to improve crop-residues. Effective governance on feed quality is also a common institutional issue raised. Similarly, reduction on transaction costs (both to access the feeds and to participate in product markets) is another key area for institutional investment support. In all value chains, the report strongly advocates support to Business Development Services – interpreted in the broadest sense as a key to facilitating access to feeds, markets and for reducing transaction costs. . . .
- The policy concerns are more value chain specific, and include the protection against dumping of meat and milk from the OECD countries, reduction of regional tariff barriers (in particular in Sub-Saharan Africa) and lack of investment in infrastructure.

‘While for many households increasing animal numbers is perceived as attractive, there are severe environmental limitations of the extent this is possible. Policies and investment that increase per animal productivity, such as adequate ration formulation and emphasis on mineral supplementation in the feed and nutrition domain, as well as genetic and health improvement related investment will be important. However, in some areas, increased efficiency (producing the same with fewer animals, or more with the same number of animals) can also be achieved through incentive systems such as payment for environmental services.

‘Ranking those investments regarding their economic return constitutes the final step in the analytical framework, underpinning this study. The analysis shows that for an individual household, the increase in animal numbers is the most attractive option, as has also been proven in the past.

Indeed, according to FAOSTAT (2010) data, most (57 percent over the period 1990–2010) of the increased production in Sub-Saharan Africa comes from an increase in animals, and not from increased productivity per animals. This is obviously not sustainable.

‘The key challenge therefore is to increase the profitability of raising productivity per animal. As better feed utilization will be a critical factor in enhancing the profitability and hence in ensuring the long term sustainability of these system, it is therefore encouraging that in most evaluations feed improvements (and in particular the use of crop-residues) rank from the third to the fifth place. The analytical framework also provides a ranking of the importance of timing over the 2010–2030 period in which investments are made. The results show that in general a fast trajectory (i.e. transformation early in the 20-year interval) is associated with relatively higher returns accruing to investments in selected feed types, compared to a “slow” trajectory. Fast action is therefore recommended.

‘The results of this study demonstrate that the assessment framework developed could be applied readily in other systems, and at the same time provides a basis that can be further built upon.

‘This peer-reviewed World Bank report was prepared under the guidance of Jimmy Smith, formerly of the World Bank and (since Nov 2011) now serving as director general of the International Livestock Research Institute (ILRI), in Nairobi, Kenya, and Francois le Gall of the World Bank by an ILRI team consisting of William Thorpe, Derek Baker and Shirley Tarawali with Rainer Asse, Augustine Ayantunde, Michael Blummel, Oumar Diall, Alan Duncan, Abdou Fall, Bruno Gerard, Elaine Grings, Mario Herrero, Chedly Kayouli, Ben Lukuyu, Siboniso Moyo, An Notenbaert, Tom Randolph, Steve Staal, Nils Teufel, Francis

Wanyoike and Iain Wright. Further inputs were provided by Cees de Haan and Gunnar Larson from the World Bank.’

Read the report: [Identifying investment opportunities for ruminant livestock feeding in developing countries](#), World Bank, 2012.

Livestock livelihoods for the poor: beyond milk, meat and eggs by International Livestock Research Institute, 8 January 2013 <http://www.ilri.org/ilrinews/index.php/archives/10305>

Full Article

The science journal *Animal Frontiers* this month (Jan 2013) focuses on the links between livestock production and food security.

Maggie Gill edited the issue. Gill is an animal nutritionist by training who has spent years as a senior member of research institutions in the the UK (Natural Resources Institute, Natural Resources International, Macaulay Land Use Research Institute, Scottish Government) and presently divides her time between work for the UK Department for International Development and the University of Aberdeen while also serving on the CGIAR’s Independent Science and Partnership Council. She is a former board member of the International Livestock Research Institute (ILRI).

In her introductory editorial to this issue, which focuses on livelihoods for poor owners and food for rich consumers, Gill reminds readers of the vast differences in livestock systems between the world’s poor and rich people and nations.

‘The relationship between livestock and food security is often portrayed by the media in emotional terms such as “Go vegetarian to save the planet”. Yet the relationship is not so simple. There are positive impacts of livestock on “the planet,” not the least in terms of the economy, with trade in live animals and animal products contributing 40% of the global value of agricultural output (FAO, 2009), but also in terms of the 1 billion poor people in Africa and Asia who depend on livestock for their livelihoods. The challenge is that there are also negative impacts of livestock, and they tend to be good headline grabbers!

‘I was pleased, therefore, to be invited to serve as guest editor of this issue of *Animal Frontiers* . . . [and] to have the opportunity to include papers about some of the lesser publicized facts about livestock and food security. . . . [A second issue on this topic will be published in Jul 2013.]

‘This issue takes a high-level perspective, exploring the relationship between people and animals (including fish) in developing countries, through trade and particularly in terms of nutrition. It then looks ahead to the challenge of climate change and considers how one traditional system (pastoralism) has evolved to cope with environmental instability. It ends with a paper on breeding strategies as an illustration of how scientific advances can help the livestock sector to make the best use of resources in a dynamic world. . . .’

One of the seven papers featured in this issue is by Jimmy Smith, ILRI director general, and his ILRI colleagues. The article focuses mainly on the impacts and implications of livestock on food and nutrition security in poor countries, which go well beyond being a source of milk, meat, and eggs.

‘The paper by Smith et al. (2013)’, Gill says, ‘highlights, for example, the indirect benefits of livestock to the food security of poor livestock owners through income from the sale of their livestock products, enabling the purchase of (cheaper) staple foods and thus improving the nutritional status of members of the household, albeit not in the way many researchers expect! . . .’

Below are a few of the facts noted in Smith's paper, 'Beyond meat, milk and eggs: Role of livestock in food and nutrition security'.

Farm animals both increase (smallholder systems) and decrease (industrial systems) food suppliers

'Livestock contribute to food supply by converting low-value materials, inedible or unpalatable for people, into milk, meat, and eggs; livestock also decrease food supply by competing with people for food, especially grains fed to pigs and poultry. Currently, livestock supply 13% of energy to the world's diet but consume one-half the world's production of grains to do so.'

Livestock directly enhance the nutrition security of the poor

'However, livestock directly contribute to nutrition security. Milk, meat, and eggs, the "animal-source foods," though expensive sources of energy, are one of the best sources of high quality protein and micronutrients that are essential for normal development and good health. But poor people tend to sell rather than consume the animal-source foods that they produce.'

Livestock enhance food security mostly indirectly

'The contribution of livestock to food, distinguished from nutrition security among the poor, is mostly indirect: sales of animals or produce, demand for which is rapidly growing, can provide cash for the purchase of staple foods, and provision of manure, draft power, and income for purchase of farm inputs can boost sustainable crop production in mixed crop-livestock systems.'

Smallholder livestock production and marketing can be 'transformational' for the world's poor

'Livestock have the potential to be transformative: by enhancing food and nutrition security, and providing income to pay for education and other needs, livestock can enable poor children to develop into healthy, well-educated, productive adults.'

The complex trade-offs inherent in livestock systems must be managed to increase the benefits and reduce the costs

'The challenge is how to manage complex trade-offs to enable livestock's positive impacts to be realized while minimizing and mitigating negative ones, including threats to the health of people and the environment.'

Read the whole illustrated article at Animal Frontiers: Beyond milk, meat, and eggs: Role of livestock in food and nutrition security, by Jimmy Smith, Keith Sones, Delia Grace, Susan MacMillan, Shirley Tarawali and Mario Herrero, Jan 2013, Vol. 3, No. 1, p 6–13, doi: 10.2527/af.2013-0002

Women are invisible guardians of livestock diversity by CTA, <http://www.cta.int/en/About-us/In-the-spotlight/Women-are-invisible-guardians-of-livestock-diversity>

Full Article

Traditional and indigenous livestock breeds, often managed by women, are well adapted to local environmental conditions, typically being tolerant of extreme weather, disease resistant and able to thrive on poor forage. But while the value of indigenous breeds has been long known, breed population figures are often unreported or out of date, making livestock diversity difficult to estimate. According to latest figures released by the United Nations Food and Agriculture Organisation (FAO) however, over one-fifth (22%) of all the world's livestock breeds are now classified as being at risk of extinction.

Such breeds may not produce a lot of meat, milk or eggs but they are low maintenance, which is particularly of value to women, who often cannot afford the inputs for more exotic livestock or cross-breeds. Of the 600 million poor livestock keepers in the world, around two-thirds are women, yet according to a new FAO study, women's contribution to indigenous livestock breeding and conservation is poorly documented and undervalued.

The study, *Invisible Guardians: Women manage livestock diversity*, highlights the role of women in safeguarding indigenous breeds and improving their genetics through careful breeding. Women, for example, make many deliberate breeding decisions, generally preferring disease resistant animals that are easy to manage and do not increase their workload. Study author, Ilse Köhler Rollefson, emphasises that women livestock keepers must, therefore, be key stakeholders in any future efforts to arrest the decline of indigenous breeds.

The study also highlights the development of niche markets for high-value livestock products from local breeds, which is emerging as an important rural employment opportunity for women, and which could be further expanded by means of appropriate public and private investments. Case studies from around the world show that there is a market, especially for natural coloured fibre, but also for specialized meats and dairy products.

A fine ‘balancing act’ will be needed to guide smallholder livestock development in a changing world by International Livestock Research, December 2012 <http://www.ilri.org/ilrinews/index.php/archives/10126>

Full Article

Livestock and global change: Towards a sustainable and equitable livestock sector from ILRI

With about 17 billion domestic animals in the world, with most of them raised on small mixed crop-and-livestock farms in developing countries, livestock production is a major part of global agricultural production. But the sector requires large amounts of feed and water and domestic animals generate significant amounts of greenhouse gases such as methane, which are causing global warming.

One way to make livestock production more efficient is through ‘sustainable intensification’ brought about by farm activities that help close yield gaps while also reducing the level of greenhouse gas emissions per unit of milk or meat produced.

That was the topic of a recent ‘livestock live talk’ at the Nairobi headquarters of the International Livestock Research Institute (ILRI) given by agricultural systems analyst Mario Herrero.

‘When it comes to production efficiencies’, said Herrero, ‘the livestock sector lags behind crop farming. We’re going to have to find ways of reducing these inefficiencies if we plan on livestock helping to feed a world population reaching some 9 billion people by 2050.’

In rich countries and communities, Herrero added, reducing the amount of meat consumed could help lower demand for animal products while also reducing obesity and health problems associated with overconsumption of meat.

‘But in the developing world’, he said, ‘the major health problems are associated with eating too little of nourishing foods such as milk, meat and eggs, which provide the protein and micronutrients needed for a healthy and productive life.’

Although a global reduction in meat consumption might benefit the environment, Herrero said, the social and nutritional impacts of meat reduction in the developing world, where most poor people subsist on diets of cheap starchy grains and tubers, are unknown and could be severely harmful.’

Herrero said the ‘best options’ for making livestock production more efficient will vary considerably depending on the world’s vastly different livestock production systems and regions. What will work in dryland agro-pastoral systems of West Africa, for example, will differ vastly from what will increase efficiencies in pig rearing in southwestern China.

One way of moving forward, Herrero suggested, is by viewing the current inefficiencies and yield gaps in the livestock sector in developing countries not as problems but as opportunities. ‘We can, and need to, encourage researchers to come up with promising new ways of reducing these livestock production inefficiencies.’

What this will take, Herrero said, is ‘a balancing act’ to deal with both the opportunities and challenges in livestock production systems.

‘Livestock systems are not the same everywhere; we need to understand the benefits and costs of the different systems and how these relate to the pressures of climate change and rising global food demand,’ he said.

Herrero recommended taking a nuanced approach to smallholder livestock development, which might include:

- Investing not only in high-potential agricultural areas but also in the more extensive mixed crop-and-livestock systems of poor countries, which have been neglected till now and where production levels could be greatly increased.
- Increasing milk production by finding ways for poor dairy producers to obtain higher-quality year-round livestock feeds.
- Providing ways for small-scale farmers to ‘intensify’ their mixed farming and become more market oriented.

In future, Herrero said, research needs to help resolve issues such as how best to use rangelands, where and when to invest in commercial large-scale livestock production systems and in smallholder systems, and how to harness biotechnology to help make small-scale livestock production more efficient.

View Mario Herrero’s presentation

Herrero is a senior agro-ecological systems analyst with more than 15 years experience working on livestock, livelihoods and the environment interactions in Africa, Latin America and Asia. At this seminar, which also marked his farewell presentation at ILRI, Herrero looked back at his 13 years work at ILRI and reflected on ways of making the global livestock sector sustainable in the face of global change.

‘Livestock live talks’ is a seminar series at ILRI that aims to address livestock-related issues, mobilize external as well as in-house expertise and audiences and engage the livestock community around interdisciplinary conversations that ask hard questions and seek to refine current research concepts and practices.

All ILRI staff, partners and donors, and interested outsiders are invited. Those non-staff who would want to come, please contact Angeline Nekesa at [a.nekesa\[at\]cgiar.org](mailto:a.nekesa[at]cgiar.org) (or via ILRI switchboard 020 422 3000) to let her know. If you would like to give one of these seminars, or have someone you would like to recommend, please contact Silvia Silvestri at [s.silvestri\[at\]cgiar.org](mailto:s.silvestri[at]cgiar.org) (or via ILRI switchboard 020 422 3000).

Climate Change

COP18, forests, agriculture, landscapes and livelihoods by Consultative Group on International Agricultural Research, 3 December 2012 <http://www.cgiar.org/consortium-news/where-agriculture-and-climate-change-must-meet-the-big-facts-you-need-to-know/>

Full Article

It’s impossible to address climate issues without including agriculture—and vice versa. Our global food supply and the livelihoods of millions of farmers depend on a sustainable agriculture system, yet changing climate is gravely threatening both. Specific actions on how agriculture can adapt to our changed climate are needed.

Thousands of government representatives, international organizations and civil society members are currently gathered in Doha for the United Nations Climate Change Conference (COP18). This has created an opportunity for CGIAR Consortium to urge policy makers to focus their discussions on a combined consideration of agriculture, forestry and land use, and their impacts on society. With many partners, CGIAR Consortium members organized two events during COP18. Experts who took part in Forest Day called for a broadened approach to tackle climate change and deforestation – challenging the ongoing debate that forests have to be sacrificed for the sake of rural development and food security. Agriculture, Landscapes and Livelihoods Day aimed to identify scalable solutions, gaps and trade-offs in addressing climate change impacts for agriculture, the environment and farmers.

But what are the key facts about agriculture and climate change?

To help define the big issues the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) has scoured the vast body of literature for the latest research and identified the best and most current scientific knowledge at the intersection of agriculture, climate change and food security.

The result is “Big Facts”, a set of need-to-know facts that represents the latest and most authoritative research on topics ranging from undernourishment and dietary changes to agricultural mitigation practices and climate finance. Here are some:

“870 million people are chronically undernourished; almost two billion suffer from negative health consequences of micronutrient deficiencies”

“To meet global food demand in 2050, agricultural production must be 60 percent higher by weight than in 2005.”

“Agriculture makes the greatest contribution to total food system emissions. It contributes 7,300 to 12,700 million metric tonnes of carbon dioxide equivalent (MtCO₂e) per year—about 80 to 86 percent of food systems emissions and 14 to 24 percent of total global emissions.”

“Maintaining a stable water supply for agriculture requires both demand-side strategies, such as recycling and conserving water, and supply-side strategies, such as water storage”

“Integrated climate change adaptation and mitigation strategies ensure food security and reduce agriculture’s ecological footprint. Adaptation is a priority for smallholder farmers, who will pursue mitigation when it brings benefits without increasing cost and risk.”

For more information

Forest Day

Agriculture Day

Updates from COP18 (the CCAFS blog)

COP18, forests, agriculture, landscapes and livelihoods (cgiar.org)

The United Nations Framework Convention on Climate Change (UNFCCC)

Agro-Energy

Full Article

In the Australian state of Queensland a fruit growers' group is looking for funding to advance a bio-digester technology that converts banana waste into electricity or fuel. The Growcom project has already developed a working prototype it aims to take to the next level. CEO Alex Livingstone tells [freshfruitportal.com](http://www.freshfruitportal.com) if widely commercialized, the product could reduce costs for Australian growers and potentially benefit underdeveloped banana-growing countries.

Around 20% of the Australian banana crop gets wasted every year, whether through harvesting or transport to the packing sheds, adding up to about 60,000 metric tons (MT).

In the face of this untapped resource and the challenge of rising fuel and energy costs, in 2005 the Australian Banana Growers Council (ABGC) – in collaboration with Ergon Energy – investigated whether bananas could be used as a feedstock to generate energy, through a process called anaerobic digestion.

The process works by taking damaged bananas or their stalks and breaking down carbohydrates in the absence of air, producing a mixture of methane and carbon dioxide.

With the help of funding from Queensland Sustainable Energy Innovation Fund (QSEIF), tests at the University of Queensland showed bananas were very suitable, yielding about 240 liters per kilogram of dry banana. The resulting biogas was found to be an appropriate substitute for diesel fuel in combustion engines, with 40% methane and insignificant amounts of hydrogen sulphide and other contaminants.

Growcom came in for the next task, which was to apply these results on-farm in a practical way. “That means building the digester from fairly readily available materials, and when it’s running it can’t have a tribe of men in white coats to keep it running,” says Livingstone.

“It needs to be able to keep running in an agricultural environment, so we built a digester, we ran feedstock into it, we did produce methane, and we used that methane to power a fairly sizable generator and also to power some vehicles; we proved it works.”

The product was a 460,000-liter anaerobic digester with the capacity to process 2,500MT of bananas per year, producing 85,000 cubic meters of methane.

Growcom estimates that with this level of output the biogas could continuously generate 35kW of power or meet the fuel requirements of 100 gas-converted vehicles.

Growcom contributed AUD\$76,530 (US\$79,661) to the project, while QSEIF gave AUD\$187,370 (US\$195,034). However, over three years it ended up costing a lot more than anticipated and Livingstone says Growcom has contributed to about half the total costs.

Rough weather events that followed such as cyclones, meant the project was put on hold for several years.

Looking to the future

Growcom is now ready to pick up where it left off, but Livingstone says the next stage will cost “hundreds of thousands of dollars”.

“One of the things you identify in building a prototype is everything that needs to be done better. We have designed for a new feed system including some different pumps and bits and pieces, so they’ve all got to be retrofitted to the unit.

“That doesn’t mean we’re starting again, just that we’d designed for a new feed system including some different pumps and bits and pieces.

“If we got investment tomorrow and we could find the right project manager, you could probably have it up and running in a few months, because it has been running. It’s now just a question of making a few changes.” He says once the final working model is complete, the commercialization process will need more engineering expertise for tweaking the technology.

“Essentially at the moment what we use is a large bladder in the ground. That’s got some bonuses as it’s big, black and absorbs heat which is what you want, and it doesn’t stick up out of the ground so when you have cyclones they don’t destroy the facility.

“Being down in the ground has its drawbacks as it’s harder to get in to the bottom of the digester if you need to clean anything out. So there would be some engineering smarts that could be applied to that.” Livingstone adds there is also potential build a product that could be packed up into containers. “You could take them around to places like Papua New Guinea where they’ve got plenty of heat, plenty of feedstock and not a lot of electricity; you could start supplying energy to underdeveloped nations on a village-by-village basis.”

He says the benefits are high for develop nations too as the technology reduces greenhouse gases. “Normally the feedstock is just thrown back on the fields and is allowed to rot there, so this would reduce greenhouse gases, save on power, and therefore you don’t have to generate as much out of your power stations. “You can also use the water out of the digester for fertigation so you get the nutrients back in the soil but in a very controlled way, so there are a bunch of positives with it.”

Agricultural Development

Greenhouse Farm Flourishes in Trench Town by Jamaica Information Service, 12 January 2013

<http://www.jis.gov.jm/news/leads/32714>

Full Article

The South St. Andrew community of Trench Town, known as the cradle of reggae music, having produced some of the island's top musicians including reggae icon Bob Marley, is now yielding bounty of a different sort.

In the heart of the community, lies a flourishing greenhouse, where residents are engaged in cultivating vegetables to feed their families, while earning an income.

At first, the residents saw the farming activity as a means of food security for their families. But as tangible benefits are reaped, and persons are earning money to offset their living expenses, greenhouse farming is growing on the residents.

"Right around the community, the people love the farming," says Project Manager of the Trench Town Greenhouse, Donovan English.

The Trench Town Greenhouse farming project started in 2011 through the initiative of the Agency for Inner City Renewal, headed by Richard Lambie, a Canadian of Jamaican parentage. The agency helped the residents to craft a project proposal for financing, which was sent out for funding and financial institution, CITIBANK and not-for profit organization, United Way of Jamaica, sponsored the initiative.

The project is fully community-owned, with the residents building and planting the greenhouse, and are now reaping and selling the produce. They benefited from training in greenhouse agronomics, construction, entrepreneurship and financial literacy.

Up to 20 pounds of tomatoes are reaped daily from the Trench Town greenhouse farm.

So far, they have produced some of the best crops of pak choi, callaloo and tomatoes. Up to 20 pounds of tomatoes are reaped daily from inside the 30 by 40 square feet greenhouse.

Housewives, schools, and businesses purchase crops from the greenhouse farm and vendors at the nearby Coronation Market also source produce from the farm.

"From they hear that the thing is here, they come give us support," Mr. English states.

Six young men are employed full time on the farm, planting and replanting vegetables, and tending to their care, including uprooting weeds and watering.

Among them is Mark Ffrench, who sees the project as a blessing. "It's playing a great role because I was not working; and if I can do something and get a little stipend then I have to give thanks. Since the greenhouse come in, I see a lot of people I didn't even know. I never really know seh them people would be in farming and take it serious," he says.

Though the greenhouse project is still in its infancy, stakeholders working in the community are amazed at its success.

"The greening of Trench Town, that's what I call it. I think food security, the ability of people to feed themselves, must take priority over everything else, except salvation," says Christian Social Entrepreneur, Dr. Henley Morgan.

Mr. Lambie says the project has the potential to transform Trench Town, which has faced a lot of adversity due to tribalism and violence.

Project Manager of the Trench Town greenhouse project, Donovan English, tends to tomato plants in the 30 by 40 square feet greenhouse farm located in the heart of the South St. Andrew community.

He notes, however, that the community is now "out of that system and they needed to see something to give them a sense of hope."

"This greenhouse is a major symbol of that. Every day I come here, I see persons coming in just to look at the greenhouse, whether things are selling or not. They come, they see it, they are inspired, they want to move on," Mr. Lambie says.

Greenhouses have also been established at Charlie Smith High, Trench Town High, and St. Andrew Technical High, and students of these institutions are taught the rudiments of greenhouse farming.

"We are trying to promote financial literacy and entrepreneurship using agriculture," Mr. Lambie says.

The community is adamant that the project must be ongoing and entities such as the Rural Agricultural Development Authority (RADA) have been brought on board to help with training in greenhouse production, with some 12 persons received training.

These persons are expected to branch out and build more greenhouse farms that will help to minimize unemployment in Trench Town as well as generate income.

Don't compromise agricultural sector by Barbados Advocate, 14 January 2013

<http://www.barbadosadvocate.com/newsitem.asp?more=local&NewsID=28675>

Full Article

Chief Executive Officer of the Barbados Agricultural Society, James Paul, says that while there is obviously a need to look at land use policies for this country, such efforts cannot be made at the expense of the agricultural sector.

“We are looking to develop a sustainable agricultural development bill, cognisant of the fact that we also need to preserve some measure of food security for Barbados. That in itself cannot be achieved if, for instance, the planning permissions that are given for tourism development for example compromise agricultural land in any way. So when we talk about the land use policies needing to be dealt with I agree, but from the point of view that we cannot compromise the agricultural sector in the long term,” he contended during a recent interview with The Barbados Advocate.

With that in mind, he suggested that the policies should be geared towards trying to link the agricultural and tourism sectors, with the latter providing an avenue for produce to be sold. He maintained that this is the route Barbados has to take rather than a situation where we encourage the current model, which basically relies largely on imported products and there is no attempt, he lamented, to promote locally produced products.

“Perhaps we need actors within the agricultural and tourism sectors in terms of facilitating that kind of approach towards our development, and the fact of the matter is that the spend per visitor is down largely because ... they have less disposable incomes due to the recession. So, if that is the case, what we should be aiming to get is an even higher percentage of local spend and trying to retain as much of the US dollar that we can get that the visitors spend down here through locally produced goods,” he said.

The BAS head said that there should be a system that works with the hotels and restaurants to promote locally produced goods, even if it requires that greater focus is placed on product development, or product research in terms of trying to make the product appealing to tourists.

“That is the area I think we should pursue rather than have a situation where we do tourism development, but it is at the expense of locally produced agricultural commodities,” he said.

Poor farm families in the humid tropics to boost their income from improved agricultural production systems

by International Potato Center, November 2012 <http://cipotato.org/press-room/press-releases/poor-farm-families-in-the-humid-tropics-to-boost-their-income-from-improved-agricultural-production-systems>

Full Article

CIP will be participating in a major new research-for-development program launched today to tackle development challenges in the humid tropics.

Ibadan, 21 November 2012 - Humidtropics, a major new research-for-development program launched today, aims at increasing average farm income by 50% with 25% of poor households lifted above the poverty line in the humid tropics in the next 15 years. Research leading to production system intensification will boost yields of staple crops and help to reduce the number of malnourished children by 30%.

“Humidtropics helps farm families to make better decisions about making their living and living their lives while caring for the environment they cultivate,” says Dr Ylva Hillbur, Deputy Director General Research with the International Institute of Tropical Agriculture (IITA)—the Lead Center for the program.

The humid tropics are the vast hot and wet areas around the equator that are home to about 2.9 billion people living on 3 billion hectares of land. Agricultural systems span the humid tropics from the integrated tree crops-based systems such as cocoa plantations in West Africa, banana-based systems in East and Central Africa to intensive-mixed systems in Asia and vulnerable integrated crop-livestock systems in Central America and the Caribbean. Intensifying agriculture in these areas offers the best potential to reduce poverty, especially among women and other vulnerable groups. The bulk of the rural poor reside in the humid tropics, which are also associated with poor household nutrition and soil fertility depletion. Even so, the humid tropics are critical to global food supplies and meeting world food demand, central to the maintenance of global biodiversity, and vital to the mitigation of greenhouse gases. “Humid Tropics provide the opportunity to assess the role of potato and sweetpotato for the sustainable intensification of production systems where these crops are a key component of farmer livelihood strategies”, says Dr Oscar Ortiz, CIP’s focal point for Humidtropics. This is the case of East and West Africa and the Greater Mekong Region of Asia.

The 15-year innovative CGIAR research program will help poor farm families, mostly led by women, to boost their agricultural productivity while conserving the land for future generations. The program will also serve as a model to other agencies seeking to link agricultural systems research to developmental impact.

The initial program participants include the International Center for Tropical Agriculture (CIAT), International Livestock Research Institute (ILRI), World Agroforestry Centre (ICRAF), International Potato Center (CIP), Bioversity International, International Water Management Institute (IWMI), International Centre of Insect Physiology and Ecology (icipe), Forum for Agricultural Research in Africa (FARA), AVRDC – The World Vegetable Center (AVRDC), and Wageningen University. Partnerships are key to the success of this program and Humidtropics invites people to register their interest at <http://humidtropics.org/contact>.

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Youth and Agriculture

Planning for greater youth involvement in agriculture and rural development by CTA, November 2012
<http://www.cta.int/en/About-us/CTA-news/Planning-for-greater-youth-involvement-in-agriculture-and-rural-development>

Full Article

CTA welcomes some 25 youth champions and experts from around the ACP region to a Strategic Youth Stakeholder Workshop held in the Netherlands.

Youth has been an important area of focus for CTA. Aware of the key role young people should play, CTA has undertaken many activities over the years to ensure that youth are more involved in agriculture. In its 2011-2015

Strategic Plan, CTA reaffirmed its commitment to young people once more by ensuring that they are fully included in programmes, partnership agreements, agriculture value chain, rural development and policy decisions.

The objective of the Strategic Youth Stakeholder Workshop is to review major issues and initiatives related to youth in agriculture and rural development in ACP countries, in order to provide guidelines for the finalisation and implementation of the CTA Youth Strategy.

The workshop will provide the opportunity to consult key organisations from the EU, ACP and international arenas working to support youth in ARD activities, as well as youth champions involved in these areas. This includes organisations covering ICT for Development and Knowledge Management with interests in ARD activities.

Some of the organisations who will be represented during the workshop include: Yam-Pukri, CARICOM, Caribbean Regional Agricultural Policy Network (CARPAN), Biosecurity Authority of Fiji, Savannah Young Farmers Network, Secretariat of the Pacific Community (SPC), Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN), Ndola Youth Resource Center, University of Nairobi, FAO, IFAD, Young Professionals' Platform for Agricultural Research for Development (YPARD), African Youth Forum (AFY), Forum for Agricultural Research in Africa (FARA), SangoNet, International Labor Organization (ILO), and Caribbean Farmers Network (CaFAN).

During the 3-day workshop, participants will be invited to share their experiences allowing for an improved understanding on key issues and initiatives undertaken in ACP countries. With this information, recommendations on the strategic focus areas targeted by CTA youth activities will be validated and potential project ideas, collaborative initiatives and partnerships for future actions will also be identified.

Opportunity to contribute remotely

News from the workshop will be *tweeted live on 14th and 16th November 2012*, and your opinions on the different presentations and sessions would be greatly appreciated.

Food Security

CTA/CCST/NCST/CARDI/UWI Caribbean workshop: 'Adding value to local foods for food and nutrition security: myth or strategic option' 26-28 November 2012, Wyndham Hotel, Kingston, Jamaica

Report: Adding value to local foods for food and nutrition security: the role and impact of state marketing boards and agencies (CTA/CCST/ NCST/CARDI/UWI workshop), Knowledge for Development, 07/12/2012
http://knowledge.cta.int/en/content/view/full/17376?utm_source=nLEN&utm_medium=ENLinkOct2012&utm_campaign=nLENOct2012

Adding Value to Local Foods: The Role & Impact of Marketing, presentation by Ian Ivey (NEXT Corporation) on the [role and impact of state marketing board and agencies](http://knowledge.cta.int/en/Media/Multimedia/Presentation-by-Ian-Ivey-NEXT-Corporation-on-the-role-and-impact-of-state-marketing-board-and-agencies).), Knowledge for Development, 07/12/2012
<http://knowledge.cta.int/en/Media/Multimedia/Presentation-by-Ian-Ivey-NEXT-Corporation-on-the-role-and-impact-of-state-marketing-board-and-agencies>

An alternative model for a successful cassava industry, Download the presentation by Ian Thompson (UWI Mona Campus) on [cassava transformation and alternative products](http://knowledge.cta.int/en/Media/Multimedia/Presentation-by-Ian-Thompson-UWI-Mona-Campus-on-cassava-transformation-and-alternative-products) .), Knowledge for Development, 07/12/2012
<http://knowledge.cta.int/en/Media/Multimedia/Presentation-by-Ian-Thompson-UWI-Mona-Campus-on-cassava-transformation-and-alternative-products-An-alternative-model-for-a-successful-cassava-industry>

St. Vincent to benefit from EU funds by Jamaica Observer, 27 December 2012
<http://www.jamaicaobserver.com/latestnews/St-Vincent-to-benefit-from-EU-funds>

Full Article

KINGSTOWN, St. Vincent (CMC) – The St Vincent and the Grenadines government says it will use the EC\$34 million being made available to the island by the European Union for continued development of the agricultural sector.

Agriculture Minister Saboto Caesar in a message to farmers and other stakeholders said that the funds are being provided under the Banana Accompanying Measures (BAM) that is supporting African Caribbean and Pacific (ACP) countries adjust to new global trade realities.

“We have continued the stabilisation of the banana industry through Operations Cutback, Operations Flag back and control of the Black Stigatoka disease.”

He said that while there may have been several setbacks, “my request is that we look forward towards 2013 and beyond with optimism since the \$34 million under the Banana Accompanying Measures will become available to start assisting crops and livestock farmers, fishermen and women of St Vincent and the Grenadines, agro processors, marketers and farming institutions and organisations.”

He said the funds would also be used to upgrade feeder roads and other infrastructure “together with a new initiative from WINFRESH to market non-banana commodities to Europe”.

Read more: <http://www.jamaicaobserver.com/latestnews/St-Vincent-to-benefit-from-EU-funds#ixzz2HydpKKPJ>

10 Things You Need To Know About Hunger In 2013 by World Food Programme, 2 January 2013
<http://www.wfp.org/stories/10-things-you-need-know-about-hunger-2013>

Full Article

How many hungry people are there in the world and is the number going down? What effect does hunger have on children and what can we do to help them? Here is a list of 10 facts that go some way to explaining why hunger is the single biggest solvable problem facing the world today.

1. Approximately 870 million people in the world do not eat enough to be healthy. That means that one in every eight people on Earth goes to bed hungry each night. (Source: [FAO](#), 2012)
2. The number of people living with chronic hunger has declined by 130 million people over the past 20 years. For developing countries, the prevalence of undernourishment has fallen from 23.2 to 14.9 percent over the period 1990–2010 (Source: [FAO](#), 2012)

3. Most of the progress against hunger was achieved before 2007/08. Since then, global progress in reducing hunger has slowed and levelled off. (Source: [FAO](#), 2012)
4. Hunger is number one on the list of the world's top 10 health risks. It kills more people every year than AIDS, malaria and tuberculosis combined. (Source: [UNAIDS](#), 2010; [WHO](#), 2011).
5. A third of all deaths in children under the age of five in developing countries are linked to undernutrition. (Source: [IGME](#), 2011)
6. The first 1,000 days of a child's life, from pregnancy through age two, are the critical window in which to tackle undernutrition. A proper diet in this period can protect children from the mental and physical stunting that can result from malnutrition. (Source: [IGME](#), 2011)
7. It costs just US \$0.25 per day to provide a child with all of the vitamins and nutrients he or she needs to grow up healthy. (Source: [WFP](#), 2011)
8. If women in rural areas had the same access to land, technology, financial services, education and markets as men, the number of hungry people could be reduced by 100-150 million. (Source: [FAO](#), 2011)
9. By 2050, climate change and erratic weather patterns will have pushed another 24 million children into hunger. Almost half of these children will live in sub-Saharan Africa. (Source: [WFP](#), 2009)
10. Hunger is the single biggest solvable problem facing the world today. Here are eight effective strategies for fighting hunger. [Learn More](#)

How can we avoid an era of permanent food crisis? By Consultative Group on International Agricultural Research, 7 December 2012 <http://www.cgiar.org/consortium-news/how-can-we-avoid-an-era-of-permanent-food-crisis/>

Full Article

According to Josette Sheeran, Vice-Chair of the [World Economic Forum](#) (WEF) and former Executive Director of the [World Food Programme](#) (WFP), we are entering an “era of permanent food crisis,” and cites the need for “game changers” for ensuring global food and nutrition security for all.

Sheeran delivered her remarks during the [Annual Martin J. Forman Lecture](#) this past Tuesday at [IFPRI](#)'s Washington, DC office (IFPRI is a member of the CGIAR Consortium). The lecture series, now in its 22nd year, honors the former Head of [USAID](#)'s Office of Nutrition for his lasting contribution to international nutrition research and advocacy.

The latest data on global food production, supply, hunger, and malnutrition paint a complicated picture for the future of food and nutrition security, said Sheeran. On one hand, if we add up the total number of available food calories produced by the people living on our planet, here is more than enough food to meet the caloric requirements of every man, woman, and child. Even after crop loss, waste, and using food as animal fodder, there is still more than enough to meet basic dietary needs, she said.

Yet, clearly, not everyone's needs are being met: almost 1 billion people are undernourished, and this number will only rise, as global population figures are predicted to balloon to 9.1 billion by 2050. Said Sheeran, “Over the next 40 years, we need to produce more food than the last 8,000 years combined!”

According to Sheeran, recent developments indicate that the “food cliff” may be even closer than we previously thought. In six of the past 11 years, global food consumption has exceeded production, and food reserves are now “dangerously low,” particularly for staple grains such as wheat and maize. US wheat production, for example, has dropped 20 percent this season due to drought, and wheat harvests in the EU, Russia, and Ukraine are also low. The Food and Agriculture Organization of the United Nations ([FAO](#)) [predicts](#) global wheat production will fall below demand in 2012-2013, and maize prices could rise by as much as 180 percent by 2030, partially due to the impacts of global climate change. We are entering, in Sheeran’s words, “an era of permanent food crisis.”

So what can we do?

Sheeran proposes a “21st century paradigm” for food and nutrition, based on four important “game changers”. First, enhance partnerships to produce and expand access to affordable, nutrient-dense, fortified foods, such as biofortified crops and emergency food packets for the severely malnourished.

Second, invest in smallholder farmers— particularly women—and in whole agricultural value chains. Such investments have led to major payoffs not only toward increasing production but also raising incomes and reducing poverty.

Sheeran challenged the audience to change the way we view the entire food and nutrition system and form a sustainable “circular food economy,” as the third game changer.

The “food cliff”, indeed, poses a serious challenge, but Sheeran imparted hope: the power of working together, breaking down barriers, and forming innovative partnerships that can shift us away from the edge and move millions out of hunger and malnutrition. The private sector she said, can drive innovation down the supply chain – not just through project collaboration but by “*re-thinking the way we do business*”.

In fact, this is the philosophy of the recent CGIAR reform. [CGIAR Research Programs](#) now focus on sustainable agricultural development –requiring research across agricultural science, natural resource management, and policy. The [CGIAR Strategy and Results Framework](#) is our road map to sustainable agricultural development. The “food cliff”, indeed, poses a serious challenge, and we share Sheeran’s hope that: the power of working together, breaking down barriers, and forming innovative partnerships ...can shift us away from the edge and move millions out of hunger and malnutrition.

ICTs and Agriculture

Database on Caribbean R&TD. CTA Brussels Newsletter Friday, 11 January 2013

http://brussels.cta.int/index.php?option=com_acajoom&act=mailing&task=view&listid=2&mailingid=265#7387

Full Article

A Database offered by the [EUCARINET project](#) provides with up-to date information on Caribbean Research and Technological Development (R&TD) institutions, as well as a search engine helping Caribbean Science and Technology capacities build new research partnerships with European institutions. The EUCARINET database addresses mainly Caribbean researchers or a research institutes interested in participating to EU Research and Technological Development programmes, by facilitating the matching process between skills/ organization and other EU or non-EU institutions and research communities (in the context of the EU & Caribbean Research Programs), and helping in identifying potential partners for collaborative projects funded by the current EU Seventh Framework Programme or the future Horizon2020 programme. EUCARINET is a four-year [INCONET Coordination Action](#), supported by the European Commission whose

main goal is to strengthen bi-regional sustainable dialogue on Science and Technology between Europe and the Caribbean. EUCARINET targets the whole of the Caribbean region: the ACP group of states, Cuba, the Dominican Republic, Haiti, the overseas Departments and Collectivities, the Overseas Countries and Territories.

Cows in the cloud: Kenyans are registering their cows, and increasing their milk yields, on their mobile phones by International Livestock Research Institute, December 2012 <http://www.ilri.org/ilrinews/index.php/archives/10173>

Full Article

On Tue, 11 Dec 2012, Kenyan social entrepreneur Su Kahumbu gave ILRI's fourth 'livestock live talk' seminar, titled 'Livestock and mobile technology', at the International Livestock Research Institute (ILRI), in Nairobi, Kenya.

Kahumbu founded Green Dreams Ltd and Green Dreams Tech Ltd companies, which are focused on creating solutions for small-scale organic farmers in Africa. She has 14 years experience across the whole of the organic value chains in Kenya, from production to consumption and policy to advocacy. Kahumbu is a TED Fellow and is spreading her passion through the TED network; her ambition is to help 'Build a better Africa from the ground up'.

Kahumbu is also the creator of an Apps4Africa Award-winning app known as iCow, a mobile application officially launched in June 2011 that she developed to help small-scale dairy farmers track their cow's fertility cycle. It prompts farmers on vital days of cow gestation period, helps farmers find the nearest vet and all service providers, collects and stores farmer milk and breeding records, and sends farmers best dairy practices.

A mother of three, Kahumbu started her presentation by confessing to her largely scientific audience that she knew little cows when she started and know little about technology. "What I feel I do know about is what smallholder farmers need to help them mitigate the big risks of farming. My presentation will take you through the development of iCow.

What keeps her up at night

'There are a few things that keep me up at night. One billion people on the planet suffering from malnutrition. And climbing. Largely due to unsustainable agriculture and ecological practices. . . . We do produce enough food for the planet, but we only consume half of what we produce. Millions of tonnes are lost in post-harvest, transport, processing and retail.

'That's worrying. More worrying is that more than one in four Africans—218 million people—on this continent are suffering from undernourishment.

'The current solutions I feel that we've been delivering to small-scale farmers and to farmers in general have been at the expense of our ecosystem and is resulting in dependence on very heavy, expensive inputs: fertilizers, adapted and modified seeds that generally the farmers cannot afford.

'In working with farmers over the last few years, I've seen this continual vicious cycle, with farmers being pushed to adopt new technologies, and to spend more, and to get money from banks. And I don't see this as sustainable, especially when the core problem is that we're not focusing on the fertility of our soils.

‘On top of that, who is it that we call a farmer? Farmers in industrialized countries are mechanized, industrialized, subsidized, compared to farmers here who are, literally, unsupported, yet, in our case in Kenya, supply 80% of the national food. It’s quite shocking.

‘Farmers risks [here] are enormous. If I were to say to you, “Let’s all of us get out there and go get a job where we’re going to have weather on our doorsteps, poor storage, poor infrastructure, high inputs”, how many of us would actually say “That’s great, let’s go do it”? Yet we depend on these same smallholder farmers to feed us.

Going forward, one of the things I think we really need to focus on is what I’m largely doing with iCow, and that is focusing on reducing the risks of the smallholder farmer. . . .

It became quite evident that what farmers needed was knowledge, markets and finance. . . .

Mobiles in Kenya: A ‘huge, huge, huge opportunity’

‘We have today 80% mobile phone penetration across the country, with 100% penetration among 20 to 29 year olds. On the African continent, we have 700 million mobile phones. That is a huge, huge, huge opportunity to get information out to farmers.

‘And that leads me to iCow. iCow is an agricultural information platform accessed primarily via mobile phones, although we do do some stuff on the web. You don’t have to have a smart phone. We started out using sms [short message service]. The objectives were to increase farmer productivity through increased knowledge.

The iCow ‘pipe’

‘I describe iCow as a pipe, with one end the farmers. . . . Farmers register their cow on the date the animal is served and we start to push sms’s to them along the gestation period of that animal, reminding the farmer when she’ll come into heat again. We continue to drip-feed information on best practices right up until the animal gives birth. If it’s a lactating animal, when tell them when and how to dry the cow off without it getting mastitis, etc.

‘To get a vet or AI, farmers simply send the word “vet” or “AI” plus the short code—the short code is 50-24—over one of the three largest networks in the country. When they send the word “vet”; they get a response asking them where they’re located, and they receive the telephone numbers and the names of the vets in their locality. Same with AI. This service is offered 24/7. The system is automated so they can receive the information whenever they like. Both these features are quite popular.

‘As we took the product to market, we had to build in a customer care centre We found that many farmers knowing that there is a voice at the end of the system helps them adopt new technologies.

‘As we started to roll out the platform, on 3 June 2011, . . . we had to build another feature quite quickly, and that is what we call Mashauri. That is where farmers register to receive three sms messages a week, at this point in time across the value proposition of the cow. And so they get information on feeding, on vaccinations, on calf care, etc. But they don’t have to have registered their cow.

‘Soon after that, farmers started saying “I want to buy a cow”, “Where do I get a heifer calf”. Or “I want to buy a dairy goat”. So we built a marketplace [called Soko]. Very, very easy. Just like Craig’sList [an online classified ad service in many cities and countries throughout the world], but on a mobile phone [rather than the internet]. Through a series of steps, a farmer posts what it is he wants to sell, and through a series a steps whoever is looking for that will simply get his telephone number. So if you’re selling a Toggenburg goat, you will put in “Toggenburg goat” and farmers looking for Toggenburg goats will get your number. . . .

‘As our database started to grow—today our database is 42,000 farmers—we put on a feature called Sauti. Again, farmers register for it, and if anything critical comes up, we can send them that information on their authority. . . .

‘And then Videos. An sms is only 160 characters long; you cannot put too much information in an sms. So we’ve put up 2-3-minute videos on our website and we’ve shown farmers who are registered what to do when they get to the nearest cybercafe; we send them short links where they’ll find short videos about the information they’re looking for. . . .

Both ends of the iCow pipe are working

‘What we found was that as we were dealing with farmers, other people started getting interested—the other end of the pipe—the NGOs, government, practitioners on the ground, etc. We started getting requests from them to help reach farmers, in some cases just to do surveys, so that they could see very quickly how their programs were impacting on the ground. So both ends of the pipe are now actually working.

Virtual vets

‘We also found that sometimes farmers were requesting things from us that we couldn’t answer. And they weren’t very happy about the vets on the ground. So we thought, “What can we do about that?”. So we started looking at using vets in the virtual sense.

‘We formed a very simple system using Google Docs. We upload any question that we can’t deal with or that the farmer didn’t get an answer to on the ground to a few vets, and the vets send the messages among themselves and come up with the best answer that they send to us, that we then forward to the farmer.

‘It’s really interesting because we have vets in Uganda answering questions from farmers in Kenya. And we’ve had requests from Senegal, where they had only four vets on the ground, asking whether they can use the same system.

‘Long-term, it makes it very interesting how expertise and skills using the cloud can actually network and reach out across borders quite easily, if it is planned right and there is political support.

iCow snapshot

- 42,000 farmers in the iCow database.
- iCow is becoming an educational tool.
- Profile of iCow farmer: 1–2 acres land, 2–3 cows, 20% women.
- After 7 months, iCow farmers are getting 2–3 extra litres of milk per cow per day.
- Other gains:

Reduced calf mortality

Fee conservation

Fodder production

Reduced veterinary costs

Healthier animals

Amazing maize story

‘An interesting thing happened on April 10th, when the first information started coming out about maize disease in the country. Farmers were up in arms—they weren’t getting any responses from government. They wanted to know “What is the solution? What can we do?” Government was being quite, everybody was being quiet, because nobody knew what to do.

‘But we heard from some farmers on Facebook that one of the seed multiplication centres of KARI [the Kenya Agricultural Research Institute] had some good-quality disease-free seed. So we took that information, put it on our system and sent it to 11,000 farmers, using iCow. And literally, within minutes, the phone in that centre was ringing off the hook and farmers started to buy the seed using MPESA [Kenyan mobile phone financial service] and having it sent by matatu [Kenyan taxi]. Within three days, there was no seed left in that centre.

‘We called KARI and asked “What was the reaction?”. They said, “How did that happen? We now have to bulk up three times as much seed as we thought we needed. They expected to sell the seed over a six-month period and they sold it, literally, within days. So again, using technology to make those links, make those connections work. It was 6 weeks later that the seed problem hit the headlines in Kenya. I was so happy that at least we could do something that much earlier for farmers.

East Coast fever vaccine: 99% of Kenyan farmers want it

‘Many of you know, especially here in ILRI, that the ECF [East Coast fever] vaccination has just been launched in Kitale. We worked with GALVmed to do a survey using iCow to find out what farmers felt about the vaccination. And 99% of those surveyed said they want the vaccination and said “When can we have it? Let us know straight away.”

‘We were invited to the launch and I’m happy to say that this is going to be a huge thing for the farmers in Africa. This is an awful disease killing up to 1.1. million livestock a year on the continent.

‘That brings me to the end of my presentation.

What iCow is doing, I believe, is turning our farmers, our survivors, our people on the land, whatever you want to call them, into knowledgeable farmers. We currently have farmers in 42 different counties; we have 42,000 farmers in our database using different features of the platform.