



## CASSAVA

**Launch of FAO Project for Cassava Industry Development in the Region... Research critical to the diversification and strengthening of the cassava industry in the Caribbean.** Trinidad and Tobago Ministry of Agriculture, Land and Fisheries, #MediaRelease, 29 August 2017 .  
[https://www.facebook.com/permalink.php?story\\_fbid=1153204858114404&id=280378942063671](https://www.facebook.com/permalink.php?story_fbid=1153204858114404&id=280378942063671)

### Full article

August 29, 2017:- The development of the cassava industry in the Caribbean can provide a huge import substitution market opportunity for food, flour, feed and even beer. This will however require an efficient value chain system so as to address current production, processing and market development challenges. Such was among the sentiments expressed by Plant Production and Protection Officer of FAO's Subregional Office (Barbados) - Ms. Vyjayanthi Lopez - during her presentation at the launch of the project - 'Cassava Industry Development Market Assessment and Technology Validation and Dissemination'. This was done at an FAO-hosted Inception Workshop which took place at Kapok Hotel on Tuesday 29th August, 2017. She made the comments as she identified with current import statistics within the region of which she quantified wheat (used for flour) at 900,000 metric tonnes; corn (used for feed) at 420,000 metric tonnes and beer industry imports (malt) at 100,000 tonnes per annum.

According to Ms. Lopez, while cassava has been prioritized by CARICOM countries for development as a food and commodity crop, the region's cassava industry at present, is fragmented and suffers from "low production and productivity". These and other deficiencies she attributed primarily to the absence of well co-ordinated value-added research, innovation and development. Such was the gap she said, the aforementioned development project sought to fill. "The three (3)-year project which is to be funded by the Caribbean Development Bank (CDB) to the tune of US\$1,200,000, will benefit Trinidad and Tobago as well as Dominica and Suriname, by providing support for cassava industry research on the ground," Ms. Lopez said.

She added: "While the duty falls on the FAO to implement the project, national implementation is the responsibility of the respective Governments to identify lands for demonstration plots in addition to designating the relevant Ministry personnel such as a National Project Co-ordinator and Extension Officers, to assist in the process."

Also speaking at the Workshop was the Director, Agricultural Planning Division in the Ministry of Agriculture, Land and Fisheries - Ms. Neela Maharaj - who lauded the project as "an integrated approach to the development of the cassava industry" which she said would redound to the benefit of Trinidad and Tobago via "increased cassava production and yields through the use of improved varieties; improved crop management techniques; and enhanced technology transfer." Similarly, she alluded to another project presented at the Workshop - 'Sustainable Approaches to Agribusiness and Value Chain Development of Root and Tuber Crops in the Caribbean - which she said will "strengthen synergies between value chain actors" and thus increase efficiencies throughout the value chain and the adoption of best practices in harvesting and processing. She said: "It is anticipated that the increase in the number of formalized value chains in the root and tuber sector will encourage greater investment into the agriculture sector; foster rural development and increase the contribution of agriculture to the Gross Domestic Product in the country."

The one (1)-day Workshop which sought the agreement of stakeholders on the various work plans and contractual arrangements involved in the implementation of the project activities was attended by FAO Project Co-ordinator, Ms. Vermaran Extavour; the Ministry's Chief Technical Officer, Dr. Simone Titus and Directors: Ms. Albada Beekham (Research Division); Mr. Kirk Armour (Regional Administration North Division) and Ms. Deokee Bholasingh-Hay (Extension, Training and Information Services Division); as well as representatives from the Tobago House of Assembly (THA) - Division of Food Production, Forestry and Fisheries and; the National Marketing Development Corporation (NAMDEVCO).

## **IRISH POTATO**

**\$50M Provided For National Irish Potato Programme.** By Tashion Hewitt Stennett, Jamaica Information Service (JIS), August 26 2017.

<http://jis.gov.jm/50m-provided-national-irish-potato-programme-montego-bay/>

### **Full article**

The Ministry of Industry, Commerce, Agriculture and Fisheries (MICAFA) has committed \$50 million to provide crop care and productivity support for this year's implementation of the National Irish Potato Programme, which will cost \$1.6 billion.

This was disclosed by Minister without Portfolio in MICAFA, Hon. J.C. Hutchinson, who said the inputs will include pesticides and fertilizers, among other key provisions, adding that "we are going to be increasing productivity by 11 per cent (equating to 17 tonnes per hectare.)"

He was speaking at a national Irish potato stakeholders' seminar at the National Irrigation Commission research station in Hounslow, St. Elizabeth on August 24.

Mr. Hutchinson said the programme's outturn for the 2016/17 crop year, which ended in June, saw the sector recording a 99 per cent self-sufficiency rate in local table potato production.

This, he contended, has set the tone for the 2017/18 crop year, which will focus on further boosting productivity.

In this regard, the Minister advised that nine validation plots will be established on which participatory training for farmers will be conducted. Additionally, he said 20 farm tours will be conducted for farmers not benefitting from the training exercise.

The activities, he further stated, will also include the strengthening of marketing agreements or contracts between farmers and buyers.

Mr. Hutchinson said based on its outcomes, the programme has become a model for other crops.

"The National Irish Potato Programme has earned its reputation as a success story for Jamaican agriculture and in addition to that, it has become a model for our import substitution strategy, which we are also now applying to other crops such as onion," he pointed out.

Meanwhile, Mr. Hutchinson announced that the Ministry's Plant Quarantine Division has finalized negotiations with authorities in the Cayman Islands to facilitate the exportation of local Irish potatoes to that country under a pre-clearance arrangement.

In this regard, he urged farmers to adapt to the changing requirements of the sector while making every effort to practice climate-smart agriculture.

Mr. Hutchinson also commended stakeholders supporting the Irish potato programme for their efforts in assisting farmers to increase productivity thereby repositioning Jamaica to attain self-sufficiency in the crop.

Among the stakeholders are: the Promotion of Regional Opportunities for Produce through Enterprises and Linkages (PROPEL); Newport-Fersan; H & L Agro; the Potato and Onion Producers Association (POPA); and the Rural Agricultural Development Authority (RADA).

**Jamaican Irish potatoes for Cayman Islands.** Jamaica Ministry of Industry, Commerce, Agriculture and Fisheries, August 25, 2017

[http://www.moa.gov.jm/News/2017/2017-08-25\\_Jamaican\\_Irish\\_potatoes\\_for\\_Cayman\\_Islands.php](http://www.moa.gov.jm/News/2017/2017-08-25_Jamaican_Irish_potatoes_for_Cayman_Islands.php)

#### **Full article**

The way has been made clear for the export of Jamaican grown Irish potatoes into the Cayman Islands.

This was announced by Hon J.C. Hutchinson, Minister without Portfolio in the Ministry of Industry, Commercial Agriculture and Fisheries while addressing farmers at an Irish Potato and Onion Production Seminar held Thursday, August 24 at Hounslow in St Elizabeth to kick start the 2017-2018 planting season.

Minister Hutchinson said that the Plant Quarantine and Plant Inspection Division of the Ministry had secured an agreement with the Cayman Islands for export of the tuber, among a range of other agricultural items, under the pre-clearance facility between the two countries.

The inclusion of Irish potato on the export list is as a result of an expansion of the current protocol for exporting agricultural produce to Cayman and it is expected that the trade of these additional items will commence immediately.

The export arrangement with the Cayman Islands is expected to enhance Government's overall thrust for the expansion and development of the Irish potato industry in Jamaica.

Under the National Irish Potato Programme, local production of the tuber has moved from 39 per cent of demand in 2008 to a projected 99 per cent in 2017.

With the achievement of an almost 100 per cent self-sufficiency rate for local demand of Irish potato, Jamaica is now in a position to enter the export market for the tuber.

Minister Hutchinson, in his further remarks, thanked and encouraged the farmers, in-put suppliers and marketers for their collaborative effort and support in achieving almost full self-sufficiency in Irish potato production and announced that the successful Irish potato model would be used for the production of other crops.

The production seminar also included discussions and plans for a similar production drive to increase local onion production from some 12.5 per cent of demand to at least 70 per cent over the next few years

## ONION

**Onion trials prove large scale production feasible – despite challenges** by Delicia Haynes, Guyana Department of Public Information (DPI), August 26 2017.

<http://gina.gov.gy/onion-trials-prove-large-scale-production-feasible-despite-challenges/>

### Full article

Following several trials of onion cultivation by small farmers, large-scale production of the commodity in Guyana has been deemed feasible. This would result in a significant reduction of the import bill for onions into the country.

This information was disclosed after partnering agencies, National Agricultural Research and Extension Institute (NAREI) and World University Service of Canada WUSC, had conducted pilot projects in several parts of Guyana.

The project was rolled out in Regions Two, Three, Four, Five, Six and Ten.

Presentations highlighting the findings of the trial, lessons learnt as well as recommendations going forward were made on Friday, August 26, 2017, by NAREI's Chief Executive Officer, Dr, Oudho Homenauth, Research Scientist, Tracy Persaud and PROPEL Agronomist, Joanna Robertson.

The trials were conducted in areas of Mahaica River, Kara-Kara, Amelia's Ward, Affiance, Parika, Hopetown and Benab to name a few. Indicative research showed that monitoring should be focused on protected cultivation, nutritional and irrigation facts.

The objectives of the trials were to demonstrate that onions can be grown locally, to determine the producer's perception of cultivating onions through participatory research and evaluation, garner consumers perception of taste and preference of the locally grown commodity.

In her review of the project, PROPEL Agronomist, Joanna Robertson noted that, "It is our hope to increase onion production in Guyana over a period of years...The long-term effect would be for us to gradually reduce the amounts of imports of onions in due time as production increases."

According to statistics presented, Guyana's annual consumption of onions is recorded at approximately 3,987 metric tonnes, costing the country a fresh market expenditure of US\$ 1,459,765.

The varieties used for the trials were the Red Creole, Mercedes and Texas Early Grano. The Mercedes was identified as being most suitable for large scale cultivation in Guyana. This variety along with the others was cultivated during three seasons of the year. The Mercedes variety yielded 56,444 kilogram per hectare (kg/ha) when its actual yield potential is 57,500 kg/ha.

Other facts determined during trials were that onions which were cultivated have a longer (unrefrigerated) shelf-life of 80 – 100 days. The seedlings which were grown under shaded conditions required special attention. Details are that heavy rainfall after transplanting could lead to more than 90 percent mortality, pests and diseases were almost non-existent under shaded conditions, fertilizers should be applied at or near the surface because of the shallow root system and in most cases, frequent irrigation can increase bulb size of the onion.

One farmer, Dexter Sultan, shared that he has seen the results of the onion cultivation in other fields. However, in his trial plot at Sandvoort, West Canje, Berbice, Region Six, some of his seedlings died while others plants were spoilt.

“When I went there to clear the area a few weeks ago I actually saw some of them, they bulb very well but not fit for human consumption due to not having consistent amounts of water,” Sultan explained

NAREI has been working with the World University Service of Canada through a Canadian Funded project to conduct a number of onion and potato cultivation trials in several areas throughout the country.

The Promotion of Regional Opportunities for Produce through Enterprises and Linkages (PROPEL) project is a sustainable economic growth project which aims to increase the value of Caribbean fresh produce. By doing this, producers will be able to access high-value markets in the Caribbean and internationally.

The Canadian government has invested CAN \$100 million for the project’s implementation over a six-year period.

## **COCONUTS: Lethal Yellowing Disease**

**The battle against lethal yellowing disease.** By Javene Skyers, Jamaica Observer, August 29 2017. [http://www.jamaicaobserver.com/agriculture/the-battle-against-lethal-yellowing-disease-coconut-industry-board-testing-resistance-of-special-malayan-dwarf-tree\\_109028?profile=1373](http://www.jamaicaobserver.com/agriculture/the-battle-against-lethal-yellowing-disease-coconut-industry-board-testing-resistance-of-special-malayan-dwarf-tree_109028?profile=1373)

### **Full article**

It may take another five years to determine if the Coconut Industry Board's (CIB) Special Malayan Dwarf tree can be classified as resistant to the widespread lethal yellowing disease, but until then, efforts to prevent the spreading of the malady will continue in high gear.

Lethal yellowing is a phytoplasma disease that attacks many species of palms, including commercially important species such as the coconut and the date palm. It results in yellowing of the leaves, wilting and death.

The disease has been in the island since 1884, but started crippling the coconut industry in 1961 and caused further damage in 1971 when it destroyed around 10 million “Jamaica Tall”, which were the dominant variety at the time.

Since then, lethal yellowing has been a constant hindrance to coconut farmers, but research conducted by the CIB has seen the fruition of several initiatives to deal with the disease to include a multi-variety approach and the black approach.

Under the black approach, farmers are encouraged to closely monitor their trees for the disease and follow up with removal of affected trees, replanting, fertilization, and weed control.

The CIB has also identified hardier varieties to include the Malayan Dwarf tree.

“The Malayan Dwarf... although they are dying from the disease, are considered to be far more resistant than any variety or hybrids we currently have and it was the Malayan Dwarf in the 1960s and 70s that formed the basis for the resuscitation of the coconut industry,” plant pathologist at the CIB, Dr Wayne Myrie, told the **Jamaica Observer** in a recent interview.

He added that around 13 years ago, the CIB developed its own variety in the form of the Special Malayan Dwarf, which has showed promise so far in terms of resistance, although there may be “one or two cases” of the lethal yellowing disease. He noted, however, that testing is ongoing to determine if this is the case.

“For farmers to be qualified to get the Malayan Dwarf they must have a property that is in the lethal yellowing zone because what we are doing now is testing those special plants... putting them in the lethal yellowing zone to ensure they are fully exposed to the disease, so when we say they are resisting or resistant, we know that they are truly resistant,” Dr Myrie explained.

He noted that they make a distinction between resisting the disease and being resistant, highlighting that so far the special Malayan Dwarves have been resisting the disease. As such, they want to ensure that the plants are exposed for a longer period of time as the generational life for coconuts is not short. The tall variety is said to have a common life span of 60 to 80 years, while the dwarf variety spans 20 to 25 years.

“So we want to expose them over a longer period of time to make sure that they are actually standing up to the disease. I would say in another five years, if they are still behaving the same way, I would consider them to be resistant to the disease,” Myrie said.

He stated that for coconuts the critical period for showing resistance is during the flowering stages and once the tree is past that stage they will usually resist the disease.

But while there is still some time left to determine whether the Special Malayan Dwarf can be classified as a resistant variety, Myrie said the CIB continues to work with farmers to ensure productivity is maintained.

He spoke to the cutting down teams in place in heavily affected areas such as Portland, whose primary role is to remove diseased trees. Myrie added that they give farmers Special Malayan Dwarves as replacements and provide technical support as well as fertilisers.

He explained that as of next month, construction will start on a shade house and nursery on the grounds of Knockalva Agricultural School in Hanover to provide for farmers in the western end of the island who, if the CIB is unable to deliver to them, have to go to St Elizabeth for seedlings. He added that this will also serve as a training opportunity for the school's students.

“We went and selected the site. We know about area. the Knockalva stakeholders have agreed they will host a shade house and nursery there, so installation of the shade house will take maybe two weeks and then, six months after, seedlings will be ready,” Myrie said.

## **BREADFRUIT**

**Increasing breadfruit consumption through innovation!** Trinidad and Tobago Ministry of Agriculture, Land and Fisheries #MediaRelease 28 August 2017

[https://www.facebook.com/permalink.php?story\\_fbid=1152412354860321&id=280378942063671](https://www.facebook.com/permalink.php?story_fbid=1152412354860321&id=280378942063671)

### **Full article**

August 28, 2017: There is quite a lucrative and open market out there for those creative and willing enough to diversify the range of processed products which can be yielded from the breadfruit orchard! Such was the opinion of Agricultural Officer I in the Ministry of Agriculture, Land and Fisheries, Mr. Frankie Solomon Jr., as he delivered a free training course in Breadfruit Production at the Ministry's Farmers Training Centre in Centeno on Friday 25th August, 2017. The two (2)-day training course which commenced on Thursday 24th August, 2017, was facilitated by the Extension, Training and Information Services (ETIS) Division.

Mr. Solomon said that breadfruit had the potential to contribute to food security initiatives, mainly because of its nutritive value and high productive potential. He said: "Breadfruit is an excellent dietary staple and compares favourably with dasheen, plantain, cassava and sweet potato. It is a nutritious, high energy food with moderate glycemic index, rich in fiber and a good source of vitamins and minerals."

During his presentation, the Agricultural Officer I introduced a classroom of twenty (20) participants, to the: origin and distribution; maintenance and management (pruning, fertilizing and pest / disease control); market trends and varieties of the breadfruit orchard. They were also exposed to the commercial potential of the crop as they were encouraged to think beyond the "primary product". In emphasizing his point, he alluded to the \$52 cost of approximately one pound of breadfruit flour, currently being traded at a local supermarket. "People should stop looking at breadfruit simply as a primary product and look more towards the processing for example noodles, jams, jellies, breakfast flakes and granola which may appeal to the taste patterns of the younger generation and further extend the shelf life whilst diversifying breadfruit consumption," Mr. Solomon said.

In her assessment at the end of the course, one of the participants, Ms. Jacqueline Gomes, delivered a sterling report: "Mr. Solomon was very interactive in the conduct of this course and that made it quite interesting. He actively engaged the involvement of all participants in the learning process and it was by far one of the more lively training sessions I have ever been a part of."

Persons interested in this and other free training courses offered by the Ministry of Agriculture, Land and Fisheries are invited to contact the Farmers Training Centre at 642-0167 or 646-1966.

## ORGANICS

**Reducing chemical use.** Saint Lucia Ministry of Agriculture, Fisheries, Physical Planning, Natural Resources and Co-operatives, August 30 2017.

<http://agriculture.govt.lc/news/reducing-chemical-use>

### Full article

AN ORGANIC FARMING PROJECT AIMS TO ELIMINATE THE USE OF TOXIC AGRO-CHEMICALS.

The first in a series of toxicology workshops, held as part of an organic farming project by the Belle Vue Farmers Cooperative, discussed the effect of toxins on the environment and human health.

The Environmental Hygiene Specialist connected to the project, Lesmond Magloire, said the workshop targeted various stakeholder groups, including farmers.

“We were able to train about 134 persons,” he said. “They were from different groups, skills sets and knowledge bases. For instance, there were government extension agencies, businesses, the commercial sector, farmers, housewives, some utility companies—basically, they were from all over the island.”

The workshop, held at the Sir Arthur Lewis Community College, stressed the importance of reducing chemical use.

“We had a series of lectures about chemicals that discussed, for example, the difference between poisons and remedies, environmental toxicology, how the body responds to toxins, and the target organs that chemicals can affect. We were also able to make people a little more aware of what is being done by governments to reduce chemicals in the environment at the national level, at the regional level, and at an international level.”

The organic farming project also aims to make disease-related toxicology data more readily available.

“This GEF project is about data collection, data management, and information management that will lead assessors to make the determination as to how certain chemicals affect human health, so that our people will have information and with knowledge and information they can make informed decisions,” said Anthony Herman, Project Coordinator at the Belle Vue Farmers Cooperative.

The project will also educate housewives on the care of organic backyard gardens, and aims to eliminate the use of toxic chemicals in school gardens.

## CLIMATE CHANGE

**CCCCC Holds Inaugural Project Advisory Meeting in St Lucia.** Caribbean Climate, Caribbean Community Climate Change Centre (CCCCC), August 31 2017.

<https://caribbeanclimateblog.com/2017/08/31/cccc-holds-inaugural-project-advisory-meeting-in-st-lucia/>

### Full article

The Caribbean Community Climate Change Centre (CCCCC), implementing organization for the United States Agency for International Development Climate Change Adaptation Programme ((USAID CCAP), is hosting the inaugural Project Advisory Committee (PAC) meeting at the Coco Palm Hotel in St Lucia, August 31 to Sept 1.

The PAC was set up to provide policy guidance on the implementation of the four-year US\$25.6-million-dollar project which aims to reduce risks to human and the natural assets of the Eastern and Southern Caribbean resulting from Climate Change.

USAID CCAP was designed to establish and strengthen a system for the implementation and financing of sustainable adaptation approaches in the Eastern and Southern Caribbean. The program targets the ten (10) countries included in USAID/ESC's coverage area.

It comprises representatives from the CCCCC, USAID-Eastern and Southern Caribbean Office, the Organization of Eastern Caribbean States (OECS), the Caribbean Community (CARICOM) Secretariat, Caribbean Institute of Meteorology and Hydrology (CIMH), the Caribbean Development Bank (CDB), the University of the West Indies and the Caribbean Regional Fisheries Mechanism (CRFM) as well as representatives of regional participating governments.

USAID CCAP is investing activities that build capacities at the regional, national, and local levels to generate and use climate data and information to influence decision-making; strengthen the regional capacity to assess the economic, social, and technical feasibility of climate change adaptation techniques and support the implementation of suitable projects. It also aims to build capacities within regional and national institutions to access funding from established global funding mechanisms that will aid the region in up scaling and replicating proven climate change adaptation strategies.

USAID CCAP is being implemented in ten countries of the Eastern and Southern Caribbean namely Antigua and Barbuda, The Commonwealth of Dominica, Grenada, Guyana, St. Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

## SOIL AND WATER MANAGEMENT

**Leaf sensors can tell farmers when crops need to be watered** by Jeff Mulhollem. Penn State, August 30, 2017

<http://news.psu.edu/story/480105/2017/08/30/research/leaf-sensors-can-tell-farmers-when-crops-need-be-watered>

### Full article

UNIVERSITY PARK, Pa. — Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers in Penn State's [College of Agricultural Sciences](#).

Continuously monitoring plant "water stress" is particularly critical in arid regions and traditionally has been done by measuring soil moisture content or developing evapotranspiration models that calculate the sum of ground surface evaporation and plant transpiration. But potential exists to increase water-use efficiency with new technology that more accurately detects when plants need to be watered.

For this study, recently published in Transactions of the American Society of Agricultural and Biological Engineers, lead researcher Amin Afzal, a doctoral degree candidate in [plant science](#), integrated into a leaf sensor the capability to simultaneously measure leaf thickness and leaf electrical capacitance, which has never been done before.

The work was done on a tomato plant in a growth chamber with a constant temperature and 12-hour on/off photoperiod for 11 days. The growth medium was a peat potting mixture, with water content measured by a soil-moisture sensor. The soil water content was maintained at a relatively high level for the first three days and allowed to dehydrate thereafter, over a period of eight days.

The researchers randomly chose six leaves that were exposed directly to light sources and mounted leaf sensors on them, avoiding the main veins and the edges. They recorded measurements at five-minute intervals.

The daily leaf-thickness variations were minor, with no significant day-to-day changes when soil moisture contents ranged from high to wilting point. Leaf-thickness changes were, however, more noticeable at soil-moisture levels below the wilting point, until leaf thickness stabilized during the final two days of the experiment, when moisture content reached 5 percent.

The electrical capacitance, which shows the ability of a leaf to store a charge, stayed roughly constant at a minimum value during dark periods and increased rapidly during light periods, implying that electrical capacitance was a reflection of photosynthetic activity. The daily electrical-capacitance variations decreased when soil moisture was below the wilting point and completely ceased below the soil volumetric water content of 11 percent, suggesting that the effect of water stress on electrical capacitance was observed through its impact on photosynthesis.

"Leaf thickness is like a balloon — it swells by hydration and shrinks by water stress, or dehydration," Afzal said. "The mechanism behind the relationship between leaf electrical capacitance and water status is complex. Simply put, the leaf electrical capacitance changes in

response to variation in plant water status and ambient light. So, the analysis of leaf thickness and capacitance variations indicate plant water status — well-watered versus stressed."

The study is the latest in a line of research Afzal hopes will end in the development of a system in which leaf clip sensors will send precise information about plant moisture to a central unit in a field, which then communicates in real time with an irrigation system to water the crop. He envisions an arrangement in which the sensors, central unit and irrigation system all will communicate without wires, and the sensors can be powered wirelessly with batteries or solar cells.

"Ultimately, all of the details can be managed by a smart phone app," said Afzal, who studied electronics and computer programming at Isfahan University of Technology in Iran, where he earned a bachelor's degree in agricultural machinery engineering. He is testing his working concept in the field at Penn State.

Two years ago, he led a team that won first place in the College of Agricultural Sciences' Ag Springboard contest, an entrepreneurial business-plan competition, and was awarded \$7,500 to help develop the concept.

Growing up in Iran, Afzal knows water availability determines the fate of agriculture. In the last decade, the Zayandeh River in his home city of Isfahani has dried up, and many farmers no longer can plant their usual crops. "Water is a big issue in our country," said Afzal. "That is a big motivation for my research."

Afzal's technology is very promising, noted Sjoerd Duiker, associate professor of soil management, Afzal's adviser and a member of the research team. Current methods to determine irrigation are crude, while Afzal's sensors work directly with the plant tissue.

"I believe these sensors could improve water-use efficiency considerably," Duiker added. "Water scarcity is already a huge geopolitical issue, with agriculture responsible for about 70 percent of world freshwater use. Improvements in water use efficiency will be essential."

In a follow-up study, Afzal has just finished evaluating leaf sensors on tomato plants in a greenhouse. The results confirmed the outcomes of the just-published study. In his new research, he is developing an algorithm to translate the leaf thickness and capacitance variations to meaningful information about plant water status.

Also participating in the research were [Jack Watson](#), professor of crop and soil science, and [Dawn Luthé](#), professor of plant stress biology.

The U.S. Department of Agriculture's National Institute of Food and Agriculture supported this work.

**Effective solutions for tackling dangers of untreated wastewater use in agriculture.** ICRISAT, August 28, 2017

<http://www.icrisat.org/effective-solutions-for-tackling-dangers-of-untreated-wastewater-use-in-agriculture/>

### **Full article**

ICRISAT's [implementation of wastewater treatment](#) through constructed wetlands has proved highly effective given the severity of untreated wastewater use in agriculture.

The global scale of this problem is highlighted by a [recent study](#) from the [International Water Management Institute](#), according to which 65% of irrigated croplands worldwide are dependent on wastewater and 86% of these are located in China, India, Pakistan, Mexico and Iran.

With a high concentration of nutrients in wastewater, many farmers use it to reduce expenditure on fertilizers. However, [untreated wastewater carries pathogens and bacteria posing serious health risks](#) to consumers, especially when vegetables are eaten raw.

Lack of access to clean water sources and unpredictable weather conditions are making things worse, especially for smallholder farmers. Many are forced to use and even depend on wastewater for irrigation, [to a much larger extent than previously thought](#).

Serigudam Sailu is a farmer from Telangana, India, with a mere half acre (0.2 ha) of fragmented land and without any irrigation facility. He depends entirely on rain to cultivate sorghum and pigeonpea to sustain himself and his wife. Without access to alternate water sources, conditions become more difficult during low rainfall and long summer months. Water insecurity to Serigudam means low yields and food insecurity. When his crops fail, he falls back on government support schemes for survival.

In this context, we must look at wastewater not as waste but as an asset and source of value. Complementing large and modern wastewater treatment plants, it is relevant to target domestic wastewater use at the village level.

As the population grows the amount of domestic wastewater continues to increase. If adequately treated, domestic wastewater offers a sustainable solution to everyone in the food production and consumption chain.

Several decentralized wastewater treatment units have been established by ICRISAT in partnership with local governments and private companies to supply quality water for irrigation. With 87% removal efficiency for pathogens, decentralized wastewater treatment units reduce health risks and provide water security to smallholder farmers.

Wastewater treatment units consist of constructed wetlands with a filter bed of locally available sand/gravel and vegetated with specific wetland plants.

The constructed wetlands technology is an outcome of [Water4Crops](#), a large [Euro-India collaborative research project](#) co-funded by the Government of India and the European Commission.

At Serigudam's village in Kothapally, ICRISAT worked with the local NGO READ to establish the first domestic wastewater treatment unit in 2014.

The treated wastewater is available free of cost without limitations. Until then, Serigudam had no choice but to accept erratic yields and at times, total crop failure caused by inadequate water supply in summer and during delayed rains.

“Three years ago, before using the treated wastewater, I was totally dependent on rain. If there was no proper rain, without enough water, we suffered. As my wife and I eat what I grow, water availability means a lot to us,” he says.

Since the establishment of the wastewater treatment unit, he has access to a constant water source. He uses treated and quality enhanced wastewater from the unit using pipes, but only when essential.

“During summer, I use treated wastewater but not in the rainy season when there is sufficient water from the rain. I only substitute with the treated village water when I do not have enough,” he adds.

With access to treated wastewater throughout the year, Serigudam has steady yields and is able to undertake crop rotation instead of keeping his field fallow. This has opened avenues for income diversification.

“In summer, I grow sorghum on a quarter acre (0.1 ha) using treated wastewater and this gives me 6 bags (600 kg) that I set aside for my own consumption. In the next season, I grow coriander for sale as it fetches a good price.”

#### *Social stigma of wastewater*

Even in dire situations, farmers might not resort to treated wastewater due to local cultural perceptions of its impurity. This is why it is crucial for farmers like Serigudam to set examples so successes can be scaled-up.

“Many villagers warned me against consuming sorghum grown with village wastewater, but I use this treated water as I can see the benefits. Now after three years, others see I am healthy and improving my yields, so they have stopped their warnings,” explains Serigudam.

The Kothapally wastewater unit has the capacity to regenerate 20,000 liters of wastewater every day to grow crops on a one hectare farm land throughout the year. Following Kothapally's success, another treatment unit was established in the nearby village of Bhanur, thanks to CSR support from Asian Paints.

Here, Sri Ramulu has also started using treated wastewater for his family farm.

“Since the last two years of using treated wastewater, I am better off. I use this water whenever my bore-wells don't have enough water or when there is no rain. As I have water for continuous irrigation I now harvest 6,400 kg of rice from 0.8 ha of land. Earlier with untreated wastewater the yield was about 500 kg less.”

Continuous source of clean water has provided fodder for his six buffaloes and has diversified income and his family's nutrition as well.

“Now that there is water throughout the year, I rented 1.21 ha of land near this village wastewater source to help me with irrigation. On half an acre I grow grass for my cattle. On the remaining land I grow two varieties of rice, one for my own consumption and the other for sale.”

This decentralized wastewater treatment system is now scaled out in 28 villages in Andhra Pradesh, Karnataka, Maharashtra, Telangana and Uttar Pradesh, with total treatment capacity of 863 m<sup>3</sup> per day. On average, this amount of treated water can irrigate one hectare of land at each village or provide water to nearly 3,000 rural households for domestic consumption<sup>1</sup>.

Witnessing the success of this solution the Government of Telangana is looking to scale this across the state.

Decentralized wastewater treatment should be encouraged to tackle the growing untreated wastewater use in agriculture. It provides an additional reliable water source for irrigation, enhances crop yields for farmers and ensures a safer food supply.

Watch [how constructed wetlands](#) are positively impacting rural communities. This video is part of ‘[New Partnerships for Sustainability](#)’ produced by [WLE series on sustainable intensification](#).

<sup>1</sup> Average domestic water consumption in rural India = 50l and 5 members per household.

**Spectroscopy: Simple solution for soil sample.** By Penelope Hillemann, Crop Science Society of America, August 30 2017.

<https://www.crops.org/science-news/spectroscopy-simple-solution-soil-sample>

### Full article

Farmers and gardeners know their soil texture can make a big difference in their success. Different plants have different needs for water, nutrients, and air. When they grow in soil that has the right texture, it is easier to deliver the right amount of water, fertilizer, or pesticide to the plants. Then they grow better.

Traditional ways of analyzing soil texture are slow. Danish researchers have shown a new, high-tech method that is fast, cost-effective, and portable. This technique could make it much easier to understand the soil texture of a particular area—or even large areas across the globe.

Soil texture is one of the most basic soil properties we can measure. Soil is made up of a combination of very small pieces, or particles, of minerals. It can also contain particles of organic matter from plants and animals. Mineral particles are grouped into three categories according to their size:

- The smallest particles are classified as clay. These microscopically tiny particles look like fine powder. They have a reactive surface area that can hold water, nutrients, and salts.
- The particles in the next group, called silt, are not quite as small. They still look like powder but are not nearly as reactive as clay.

- The largest particles are sand. You can see individual sand particles with the naked eye. Sand has no reactive surface area, so it absorbs no water or nutrients.

How much of the soil is clay, silt, and sand defines the soil texture. The texture determines how loosely or densely the soil is packed. It also affects how fast water will drain from the soil after it rains. Some crops might prefer a soil mainly made of sand. Some crops might prefer a higher content of clay.

The research group included scientists who specialized in different areas of soil science. Soil physics and geology have different ways of defining the limiting sizes for the clay and silt fractions—that is, what size ranges of particles are considered clay or silt. “This can lead to confusion when those sciences try to work together,” said soil scientist Cecilie Hermansen of Aarhus University. So the researchers came up with a way to overcome this issue. They tried using a technology that was already being used to study other properties of soil.

Visible near-infrared diffuse reflectance spectroscopy (vis-NIRS, for short) is a way of measuring activity in the visible range and just beyond. The vis-NIRS sensors can reveal differences in particle sizes due to the way they scatter light. The research team found that vis-NIRS can provide detailed soil texture measurements that do not depend on the definitions different scientists use to describe clay, silt, and sand.

Let’s go back to how this can help a farmer or gardener. The relative amounts of clay, silt, and sand in the soil can vary a lot on a single plot of land. With portable vis-NIRS sensors, Hermansen said, multiple soil samples can be taken and analyzed quickly, right in the field. “A landscape manager might want to grow a wide variety of plant species across a public park,” she noted. “A map illustrating the different soil types can help the gardener choose the best plant species for different locations in the park.”

The scale of this technology is still growing. One day, airborne and space borne sensors may be able to generate data to map detailed soil properties, including soil texture, across the globe.

Hermansen collaborated with a team of scientists from Aarhus University and Aalborg University. Their work is [published](#) in the *Soil Science Society of America Journal*.

*Hermansen, C., M. Knadel, P. Moldrup, M. H. Greve, D. Karup, and L. W. de Jonge. 2017. Complete Soil Texture is Accurately Predicted by Visible Near-Infrared Spectroscopy. Soil Sci. Soc. Am. J. 81:758-769. doi:10.2136/sssaj2017.02.0066*  
<https://dl.sciencesocieties.org/publications/sssaj/abstracts/81/4/758>

**Water Pollution from Agriculture: A Global Review** . International Water Management Institute (IWMI), 27 August 2017

<http://www.iwmi.cgiar.org/2017/08/water-pollution-from-agriculture-a-global-review/>

## Full article

Executive summary of a forthcoming book launched at World Water Week 2017

Participants in [World Water Week 2017](#) received a useful and eye-opening overview of the major role that agriculture plays in the steady deterioration of water quality in many countries. This was the focus of the launch – on the event’s opening day, August 27 – of the executive summary of a forthcoming book titled *[Water Pollution from Agriculture: A Global Review](#)*.

The summary was published jointly by the [Food and Agriculture Organization of the United Nations](#) (FAO) and the [CGIAR Research Program on Water, Land and Ecosystems](#) (WLE), led by the International Water Management Institute (IWMI). The book’s first author, [Javier Mateo-Sagasta](#), leads IWMI’s [research group on water and health](#).

Agricultural pressures on water quality – from crop and livestock production as well as aquaculture – have greatly intensified in recent decades, with significant negative impacts on human health and the environment. Aquaculture alone has expanded 20-fold since the 1980s. This and other changes derive from rapid population growth, dietary change and rising food demand.

The executive summary briefly reviews the “unsustainable trajectory followed by agri-food systems” and draws attention to “hotspots where crop production, livestock and aquaculture may be the key contributors to the degradation of water quality.” Next, the authors examines the main agricultural contributors to water pollution: nutrients, pesticides, salts, sediments, organic matter, pathogens and emerging pollutants that include substances such as antibiotics and growth hormones.

Turning to the issue of how to manage water quality more effectively, the summary underlines the value of modelling, supported by monitoring, to achieve a better understanding of current conditions and their impacts, and to ensure that “policies, strategies and actions are on the right track.”

The document then describe a “comprehensive package of responses,” some of which (reducing food waste, for example) are designed to influence the key drivers of unsustainable intensification of agriculture, while others (particularly policies) aim to creative incentives for the adoption of on- and off-farm practices that prevent pollution at its source. Research and data are key requirements for ensuring that such measures are effective.

**New study shows micro-nutrients can boost African crop yields by 25 percent.** By Georgina Smith, International Centre for Tropical Agriculture (CIAT), August 29 2017. <http://blog.ciat.cgiar.org/new-study-shows-micro-nutrients-can-boost-african-crop-yields-by-25-percent/>

### Full article

A new study shows that adding tiny, ‘micro’ amounts of certain nutrients to the soil, could boost crop yields in Africa by up to 25 percent. Usually, plants need macronutrients to grow properly. These nutrients – nitrogen, potassium and phosphorous – are needed in large amounts, usually added to soil in the form of fertilizer.

Macronutrients can already almost double maize yields in Africa, from the 1.5 tons per hectare achieved on unfertilized fields, according to the literature studied. But what this research shows is that, by adding micronutrients as well – nutrients needed in micro-quantities like iron or zinc – yields could go up an extra 25 percent on top of that.

“That’s a big deal: an extra seven or eight bags of maize, translating into extra food on the table, or money in the pocket,” said Job Kihara, a soil fertility expert in CIAT’s Nairobi office and lead author of the paper published in *Agronomy for Sustainable Development*.

“Our results show plainly that the lack of micronutrients in Africa’s soils is indeed holding crop productivity back. Farmers are getting a raw deal because their soils are not delivering what they could if they were managed better, by applying the right blend of nutrients.”

#### *Degraded soils producing less food*

The findings suggest that micronutrients are more critical for boosting yields in Africa than previously realized. The authors, who mined data from 40 peer-reviewed papers, say evidence that some soils in Africa barely respond to fertilizers has mounted in the last decade.

Crops are becoming less able to absorb vital nutrients to grow, due to soil erosion or degradation – so adding blends of micro and macro nutrients is one way to restore the balance. But more research is needed to find out how, and where, the right nutrients can be applied to increase yields.

“Africa has vast ecological, landscape and climatic variation,” continued Kihara. “Making up a comprehensive picture of soil health is a massive task that hasn’t yet been undertaken in Africa.” He noted that more research is needed to find out how crops respond to different fertilizer blends in different areas.

According to Dr. Generose Nziguheba a senior scientist at the International Institute for Tropical Agriculture who contributed to the publication, adding small quantities of micronutrients to current macronutrient fertilizers should have minimal cost implications, yet big yield benefits.

#### *Just add micronutrients... or not*

But further research is needed to test fertilizer blends, so farmers can buy tailored nutrients to boost deficiencies in a given area. This is especially important because, if a nutrient is already

present in sufficient quantities, adding more could have a negative effect on the environment and sometimes even on yields.

Co-author and independent consultant, Dr. Gudeta Sileshi, said data gathered from trials was collected from sites with pre-identified nutrient deficiencies common across many parts of Africa.”

Dr. Shamie Zingore, director at the International Plant Nutrition Institute, said: “It’s important for countries to embrace the recommendation from this meta-analysis and blend appropriate fertilizers to realize yield increases over wider areas.”

He added that although some countries like Ethiopia and Mali have already started blending based on the scattered data available to them, the results of this study should encourage others to follow suit urgently, and create a unified response to need for tailored fertilizers.

Effective private sector partnerships to make blended fertilizers available to more farmers will also be key, he said, together with an awareness drive to educate farmers about the importance of choosing the correct fertilizer blend to replace lost nutrients in their soil.

This work was supported by the USAID Feed the Future’s Africa RISING Program under the project: “Transforming key production systems: maize mixed east and southern Africa” and: “Sustainable Intensification of Maize-Legume cropping systems for food security in Eastern and Southern Africa—Phase II (SIMLESA-2).”

## **AGRICULTURAL DEVELOPMENT**

**Protecting Saint Lucia’s agriculture.** Saint Lucia Ministry of Agriculture, Fisheries, Physical Planning, Natural Resources and Co-operatives, August 28 2017.

<http://agriculture.govt.lc/news/protecting-saint-lucia-s-agriculture>

### **Full article**

THE NATIONAL LAND BANK PROJECT IS DESERVING OF NATIONAL EFFORTS, OFFICIALS SAY.

Kwesi Goddard, the Agricultural Engineer connected to the National Land Bank Project has stressed the importance of investing in agriculture.

The land bank project aims to preserve Saint Lucia’s agricultural lands for future use. Mr Goddard said ensuring food security and encouraging sustainable livelihoods can have positive repercussions for the future.

“This project, this initiative, could not have come at a more opportune time” he said. “It is deserving of our national focus and our national efforts because it is not only for us, it is also for our future generations.”

The pilot project, funded by the Food and Agriculture Organization (FAO), has a brief 18-month duration, which will thereafter continue with support from the local government.

“The first stage of the project stops from the establishment of the pilot sites. We want the pilot sites that we selected to be up and running, in the sense that we have a lease and payment system established, a farmer comes in with his own investment, and you have the Ministry of Agriculture supporting his production.”

Mr. Goddard noted that agricultural land acquisition is vital for national development.

“A people, a country, and a nation that can become self-sufficient by the development of agriculture can look to the future with confidence,” he explained. “Agriculture is one of the fundamental prerequisites for industrial and other development, and at the root of the expansion of agricultural development is land and the access to land.”

The Ministry of Agriculture endeavors to ensure that Saint Lucia’s agricultural lands are protected.

**Ministry of Agriculture welcomes new minister** by Office of the Prime Minister, Saint Lucia Ministry of Agriculture, Fisheries, Physical Planning, Natural Resources and Co-operatives, August 28, 2017  
<http://agriculture.govt.lc/news/ministry-of-agriculture-welcomes-new-minister>

#### **Full article**

HON. HEROD STANISLAS SAYS HE LOOKS FORWARD TO HIS NEW ASSIGNMENT WITH ANTICIPATION.

Member of Parliament for Soufriere/Fond St Jacques, the Hon. Herod Stanislas, has been appointed to serve as minister in the Ministry of Agriculture, Fisheries, Physical Planning, Natural Resources and Co-operatives, with effect from Aug. 21.

Minister Stanislas had previously served as a minister in the Ministry of Economic Development, Housing, Urban Renewal, Transport and Civil Aviation. Following his recent appointment, Minister Stanislas thanked all the staff at his previous ministry for their support.

Said the minister: “I want to thank the Hon. Prime Minister for his confidence in my abilities to serve in both these esteemed positions. I thank the staff who have supported my work over the past year and I look forward now to this new assignment with anticipation. I will continue to work closely with all my Cabinet colleagues to ensure that our mandate is fulfilled.”

Prime Minister Hon. Allen Chastanet, in explaining the decision to reassign the minister, noted: “Minister Stanislas has proven himself to be a dedicated and hard worker on the part of the people of Saint Lucia; and this particular ministry he has been assigned to is essential to the ambitious economic agenda we have set forth. We know that he will be successful in this new role.”

## UPCOMING EVENTS

September

### **Caribbean Wellness Day**

**Date:** 9 September 2017

**Description:** Theme: "A Brighter Future for our Youth". Focus is on youth ages 15-29

**Website:** <http://carpha.org/>

### **Agribusiness Expo 2017**

**Date:** 28 September- 1 October 2017

**Location:** Grenada

**Description:** Hosted by Ministry of Agriculture, Grenada. Theme: "Agribusiness generating wealth, wellness and employment"

**Website:** <http://www.gov.gd/>

October

### **World Food Day**

**Date:** 16 October 2017

**Description:** Theme is "Change the future of migration. Invest in food security and rural development".

**Website:** <http://www.fao.org/world-food-day/2017/home/en/>

November

### **Third Conference of the World Banana Forum**

**Date:** 8 - 9 November 2017

**Location:** Geneva, Switzerland

**Description:** Will focus on global collaboration, gender, business and technical issues in banana production and trade. The conference will benefit everyone who has an interest in the banana sector - from producer and consumer organizations to governments, retailers, traders, NGOs and research institutions.

**Website:** <http://www.fao.org/world-banana-forum/wbf3/wbf3/en/>

### **Organic World Congress (OWC)**

**Date:** 9-11 November, 2017

**Location:** India

**Description:** Theme of the 19th OWC is '*An Organic World through an Organic India.*'

**Website:** <https://owc.ifoam.bio/2017>

### **TropAg2017**

**Date:** 20-22 November, 2017

**Location:** Brisbane, Australia

**Description:** Theme is "high impact science to nourish the world", reflecting the critical role of science, technology and innovation to the many challenges facing tropical and sub-tropical agriculture and food production globally.

**Website:** <http://tropagconference.org/>

December

### **CARDI Day**

**Date:** 5 December 2017

**2018**

October 2018

**18th International Triennial Symposium of the ISTRC (International Society for Tropical Root Crops)** will be in Cali, Colombia from 22nd to 26th October 2018.

<http://www.istrc.org/194-18th-international-triennial-symposium-of-the-international-society-for-tropical-root-crops-istrc-cali-colombia-from-22nd-to-26th-october-2018>