Feed The Future, USAID, features ICRISAT’s Digital Agriculture work as a case study

As part of a series on the integration of digital technologies into agricultural programs, ICRISAT’s work on digital agriculture was featured as a case study in a USAID publication. The case study examines different approaches to adoption and how digital tools impact organizational culture, operations, and programs.

The study on ICRISAT traces the organization’s journey in use of digital tools which began in 2009 and went on to become a critical component of the organization’s mission in 2014 with the launch of Digital Agriculture research theme. This theme is now weaving digital tools across the organization’s research and implementation work which include the following initiatives.

The Sowing app and the Intelligent Agricultural Systems Advisory Tool (ISAT) deliver targeted and timely SMS messages to farmers about sowing and other farm management practices. The Sowing app is a partnership between ICRISAT, Microsoft India, and the Government of Andhra Pradesh. It is currently being scaled up in 13 districts. The ISAT pilot is in its second year and focuses on 700 groundnut farmers practicing rainfed agriculture in sandy soils with low rainfall.

The iHub is an incubator program at ICRISAT for agricultural technology start-ups. There are currently twelve of them including Plantix – a free mobile crop advisory app that successfully identifies common plant diseases in India and Kalgudi – a free online platform which creates feedback loops between farmers and researchers.

The LeasyScan is a phenotyping platform that automatically measures important characteristics related to leaf surface area and water stress of plants. It uses eight laser triangulation scanners and scales to create a database of 3D plant images and weights for up to 4,800 plants multiple times a day. The HarvestMaster records highly accurate measurements of grain weight and moisture characteristics for development of new varieties.

Besides the case study publication, do take a look at ICRISAT’s work on digital agriculture.

Plantix identifies plant damage and provides diagnosis in either English, Hindi and Telugu or five other languages.
China’s crop scientists keen on greater genomic research collaboration with ICRISAT

Accelerating the development of improved varieties of select crops using genomic technologies was one of the key topics discussed by China’s leading crop scientists during a recent trip made by ICRISAT’s Genetic Gains team to the country.

Great interest was expressed in deploying modern genomics-based breeding and low-cost marker technology developed by ICRISAT in their crop breeding programs by Prof Shubo Wan, President of Shandong Academy of Agricultural Sciences (SAAS) and Shandong Peanut Research Institute (SPRI). A detailed project-planning meeting was also conducted for the recently sanctioned project (on peanut genomics and molecular breeding) between the Biotechnology Research Centre (BRC) of SAAS, Jinan and ICRISAT, funded by the Natural Science Fund (NSF), China.

The visit was mainly to review and strengthen collaborations with the Shandong Academy of Agricultural Sciences (SAAS) and is a follow-up to the visit of the Chinese team to ICRISAT in 2015. Past successful collaborations include the setting up of ICRISAT-SAAS joint Laboratory for Peanut Research in 2014 at SPRI, Qingdao.

The ICRISAT team led by Dr Rajeev K Varshney, Research Program Director-Genetic Gains, comprised of scientists Dr Manish Pandey, Arun K Pandey and Rakesh Kumar. The team visited research institutes such as National Centre for Gene Research, Shanghai (led by Prof Bin Han); Biotechnology Research Centre, Jinan (led by Dr Xingjun Wang); SAAS, Jinan (led by Prof Wan Shubo); SPRI, Qingdao (led by Dr Hongjun Zhao, Dr Xiaoyuan Chi and Dr Mei Yuan); and BGI- Qingdao (led by Mr Liu Xin). The team visited several field trials of these institutes to gain insights on high-quality research and its applications in the development of new products for the benefit of the farming community. The team also participated in a one-day international workshop.

**Project:** Genes/QTLs identification for late leaf spot resistance from wild Arachis species and development of marker-assisted selection techniques  
**Funder:** Natural Science Fund (NSF), China  
**Partners:** Shandong Academy of Agricultural Sciences and ICRISAT  
**CRP:** Grain Legumes and Dryland Cereals

This work contributes to UN Sustainable Development Goal 17: Partnerships for the Goals
Enhancing potential of African partners in the food processing sector

As part of an initiative of the Government of India under India Africa Forum Summit III, ICRISAT’s Agribusiness and Innovation Platform organized three training programs to enhance the potential of African partners in the food processing sector. The trainings were for senior and middle level technical staff and management personnel from the food and agricultural sector from government departments, ministries and food processing industries.

East African Community Vision 2050: Is it water-proof?

At a recent project planning meeting with the Lake Victoria Basin Commission at the East African Community, participating members agreed to quantify water security in the Victoria Basin until 2050, given dramatic changes in demography, food demand and climate. The Lake Victoria and its rivers are the lifeline for 35 million people but water resources degrade, with reasons also in agriculture. While the International Institute for Applied Systems Analysis (IIASA) will deploy their macro models to the lake basin across five countries, ICRISAT explores the nexus between future water availability, rain-fed agriculture and fragility/resilience at meso and micro-level. Such foresight provides critical inputs to trans-border innovation and scaling of water-proof food production in future. Important lever: Direct links with policy and governance through the Council of Ministers. Picture shows Dr Ali Said Matano, Commission Executive Secretary (third from left) with IIASA and ICRISAT staff. The meeting was attended by Dr Michael Hauser (extreme right), Theme Leader, Markets, Institutions, Nutrition and Diversity.

CSIRO and ICRISAT to team up for nutrition via better agricultural value chains

A team of scientists from the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia, visited ICRISAT to develop a joint work plan for collaborating on ‘Nutrition-oriented value chain interventions in developing countries’ on 20 August. Dr Brad Ridoutt, Principal Research Scientist; Dr Lilly Lim-Camacho, Senior Research Scientist; and Dr Jessica Bogard, Nutrition Systems Scientist from CSIRO met with the Markets, Institutions, Nutrition and Diversity team.
Takeaways from the 2018 Crawford Fund conference

CANBERRA — Since World War II, the primary goal for agriculture production and research has been in securing food and reducing hunger. But with obesity growing globally at a rapid rate and inadequate nutrition holding back even those who can fill their bellies, agricultural research is increasingly looking at improving the quality and nutritional value of food. For more.

Ancient grain millet has potential to tackle drought, obesity and malnutrition, researcher says

It is the ancient grain that researchers hope could help farmers battling dry conditions, while also helping to tackle global obesity and malnourishment.

Millets are a cereal crop that have largely been forgotten by the developed world, where in recent decades the crop has been grown more for animal feed than human consumption. For more, ABC.net, ABC Radio.

Growing the list of cropping staples to fuel the world

ICRISAT assistant director general Joanna Kane-Potaka with a collection of Smart Foods made of sorghum and millet at the Crawford Fund annual conference in Parliament House, Canberra. For more.

Microsoft investing $25 million to bring AI into the lives of people with Disabilities

Analytics India Magazine caught up with Moushmi Kamat who is the principal solution specialist, Data and AI at Microsoft Corporation India. She advises India’s premier organisations and conglomerates on how to leverage artificial intelligence, big data, internet of things and other disruptive technologies to help their growth and transformation agenda. For more.

Are forgotten crops the future of food

Just four crops - wheat, maize, rice and soybean - provide two-thirds of the world’s food supply. But scientists in Malaysia are trying to change that by reviving crops that have been relegated to the sidelines. For more.

Water project offers hope to farmers in Myanmar’s central dry zone

When Colombo, Sri Lanka-founded IWMI in partnership with the German NGO Welthungerhilfe (WHH), India-based International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and Myanmar’s National Engineering and Planning Services arrived in December 2016 with funding of approximately $1.1 million, giving farmers an incentive to work together where none had existed before presented a huge challenge. For more.

Berlin start-up helps Indian farmers

Inforadio RBB
New publications

Incidence and within field dispersion pattern of pod borer, *Helicoverpa armigera* (*Lepidoptera: Noctuidae*) in chickpea in Ethiopia

**Authors:** Damte T and Ojiewo CO  
**Published:** 2018, Archives of Phytopathology and Plant Protection, 50 (17-18). pp. 868-884. ISSN 0323-5408  

Assessing impacts of projected climate on pigeonpea crop at Gulbarga

**Authors:** Rao AVR K, Wani SP, Srinivas K, Singh P, Baireagi SD and Ramadevi O  
**Published:** 2018, Journal of Agrometeorology, 15. pp. 32-37. ISSN 0972-1665  

Impacts of 1.5 versus 2.0 °C on cereal yields in the West African Sudan Savanna

**Published:** 2018, Environmental Research Letters (TSI), 13 (3). pp. 1-13. ISSN 1748-9326  

Bedding additives reduce ammonia emission and improve crop N uptake after soil application of solid cattle manure

**Authors:** Shah GA, Shah GM, Rashid MI, Groot JCJ, Traore B and Lantinga EA  
**Published:** 2018, Journal of Environmental Management (TSI), 209. pp. 195-204. ISSN 03014797  
[http://oar.icrisat.org/10562/](http://oar.icrisat.org/10562/)

Analysis of multi-location data of hybrid rice trials reveals complex genotype by environment interaction

**Authors:** Ponnuswamy R, Rathore A, Vemula A, Das RR, Singh AK, Balakrishnan D, Arremsetty HS, Vemuri RB and Ram T  
**Published:** 2018, Cereal Research Communications (TSI), 46 (1). pp. 146-157. ISSN 0133-3720  
[http://oar.icrisat.org/10563/](http://oar.icrisat.org/10563/)

Can scenario planning catalyse transformational change? Evaluating a climate change policy case study in Mali

**Authors:** Totin E, Butler JR, Sidibé A, Partey ST, Thornton PK and Tabo R  
**Published:** 2018, Futures (TSI), 96. pp. 44-56. ISSN 00163287  
New projects

Utilization of introgression lines derived from wild Cajanus species for pigeonpea (Cajanus cajan) improvement

**Funder:** Norwegian Development Cooperation (NORAD) through Global Crop Diversity Trust (GCDT)

**Grant Period:** 1 July 2018 - 30 September 2020

**Principal Investigator:** Dr Shivali Sharma

Quest for Resilience of (Agro) pastoral Communities in the AFAR through Water Spreading Weir-based Farming and Land use

**Funder:** Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)

**Grant Period:** 1 July 2018 - 27 February 2021

**Principal Investigator:** Dr Tilahun Amede

**Grant Period:** 1 July 2018 - 30 June 2020

**Principal Investigator:** Dr Tilahun Amede

**Funder:** Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)

Arabinda Kumar Padhee: And even if poisonous, these mushrooms must be serving a purpose for few other live species. For few uninitiated humans, they are even white flowers? #Nature

Rakesh K Srivastava: ....they say, everything exists for a purpose! Yes, these “poisonous” mushrooms are a vital part of a vibrant ecosystem. These help in recycling of the nutrients and thus allow ecosystems to function, and enable the survival of plant and animal species through symbiotic relationships. Besides, some of these are being explored for extraction of valuable drugs (anti-cancerous, etc.), antibiotics, and for bioremediation, waste disposal and biofuels! #biome

Rakesh K Srivastava: ...beauty with a booby trap! These may belong to the Death Cap mushrooms from Amanita genus. Some of these may contain “amanitin”, a lethal toxin that kills humans by shutting down the liver and kidneys. Better safe than sorry...lest we might sync with Hemant Kumar’s famous number ...हमने तो जब कलियाँ मांगी काँटों का हार मिला...

Murli M Sharma: These are poisonous beauties.

Among Fungus, an order called Agricales has about 30 families and 350 genus and about 1000 species including edible mushrooms. These are poisonous. Be careful with them. I have used spores of these to make a biomass decomposing culture. I think oldest record (that I know) of these, is 125 million years back from Brazil.

Jayashree B: Life is not always a bed of roses. Let it mushroom as it will!

ICRISAT @Workplace – our work, our place

Do you have something to share? Share @Workplace or write to us at icrisathaps@cgiar.org

Photo: Rajani K, ICRISAT

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