Range of activities at the Parasai-Sindh watershed, Jhansi, India. This project is supported by Coca-Cola India Foundation as part of its CSR activity.

ICRISAT wins two CSR awards for work on climate change and community development

At the recent World Corporate Social Responsibility (CSR) Congress, ICRISAT’s science-backed development work with the corporate sector on climate change adaptation and community development was recognized.

ICRISAT’s work on climate-smart agriculture has shown how to achieve short-and-long-term sustainability in agricultural development while contributing to climate change mitigation.

To this end ICRISAT adapted climate resilient crop cultivars such as short-duration chickpea, wilt resistant pigeonpea hybrids and short-duration groundnut to survive drought conditions.

“ICRISAT has developed a pool of climate-smart agricultural practices that has been scaled up and shared with the agricultural community through participatory and partnership research approaches by the ICRISAT Development Center (IDC) supported by a number of corporate donors through CSR initiatives and the state and national governments,” said Dr Suhas P Wani, Director, IDC.

ICRISAT’s model of participatory watershed management is easily scalable and development agencies are finding it very useful. The programs implemented in different regions of India and other Asian countries such as Thailand, Vietnam and China have shown significant improvement in all areas: crop productivity increased by 43 to 67%, cropping intensity increased by 27 to 60%, surface and groundwater availability increased by 31 to 52%, runoff reduced by 35 to 59% and soil loss reduced by 41 to 68%. This has led to the rejuvenation of degraded lands and better quality of life for farmers in the region.

ICRISAT’s work on livelihoods and community development in the Parasai-Sindh watershed project implemented by ICRISAT with support from Coca-Cola India Foundation, was recognized. The project revived a traditional water harvesting system known as ‘haveli’, in the Bundelkhand region, spread across the states of Uttar Pradesh and Madhya Pradesh in India. This was critical for a chronically water scarce area.

Here low-cost earthen bunds were built across streams to catch rainwater during the monsoon. This water was then used to recharge open wells and for irrigation during the critical stage of the kharif crop (eg, groundnut, pulses, etc.). The local communities were involved in the planning,
ICRISAT wins two CSR awards... from page 1

execution and monitoring of the refurbishment of these traditional *havelis* from the start of the project. This partnership has empowered communities and strengthened the rural livelihood systems.

Special attention was given to gender related issues by promoting an innovative agroforestry initiative, exclusively for the benefit of the girl child.

For example, an initiative to plant 80,000 teak saplings covering more than 60 ha was introduced. Parents with daughters under five years of age were given 100 teak saplings to plant on their land. A fully grown mature teak tree can be sold for more than ₹ 20,000 (US$292) as its wood is preferred for making furniture and in construction.

Highlighting the role of IDC, Dr Wani said, “IDC works in collaboration with its corporate partners to benefit millions of smallholder farmers, as well as protect the environment to achieve sustainable development. It does this by scaling up science-backed technologies to achieve major impact in reducing poverty, hunger, malnutrition and environmental degradation across Asia and Africa.”

Currently IDC has over 13 projects in collaboration with various partners including Governments of Andhra Pradesh and Telangana; Jindal South West Foundation; Coca-Cola India; Asian Paints Limited, India; Powergrid Corporation of India Ltd Foundation; Rural Electrification Corporation Limited; Department of Bio-technology, Government of India; and Department of Agriculture, Government of Philippines.

The ABP News – Global CSR Excellence & Leadership Awards were announced during the World CSR Congress held on 17 February in Mumbai, India.

Dr Wani recognized in list of most impactful leaders in water management

Dr Suhas P Wani, Director, ICRISAT Development Center, has been honored as one of “50 Most Impactful Leaders in Water & Water Management”.

“Earlier farm watersheds were implemented in different Indian states like Madhya Pradesh, Maharashtra, Karnataka and Andhra Pradesh and revisited in 1995-96 to assess the impact. Except for the use of fertilizer and improved seeds, farmers did not continue other interventions such as soil and water conservation. In 1999, based on these experiences, a new model was developed for enabling community participation and evaluated at Adarsha Watershed in Kothapally,” noted Dr Wani.

Dr Wani has contributed to the creation of the Bhoochetana initiative in Karnataka, a strong partnership that reached 4.75 million farmers in five years, with a 20-66% crop increase and total net benefits of US$350 million. Other projects across several Asian countries including China, Philippines, Thailand and Vietnam have helped thousands of farmers.

“I am delighted to receive this award, which I think is a great recognition for our efforts towards water management especially in the drylands where ICRISAT specializes. I would like to thank my colleagues at ICRISAT and our partner organizations for all the support and guidance,” said Dr Wani after receiving the award. He was given the award at the World CSR Congress held 17 February in Mumbai, India.

For more on IDC: [http://idc.icrisat.org](http://idc.icrisat.org)

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IDC team with the award.

Photo: PS Rao

For more, visit [idc.icrisat.org](http://idc.icrisat.org)
Developing tools and a national taskforce to support appropriate fertilizer recommendation for Ethiopia

Participants at a recent national workshop agreed upon the need to start developing decision support tools for appropriate fertilizer recommendation and a national taskforce to lead this work and ensure inclusivity. Participants felt that a lot of scattered information existed across the country that could be used to create the tools.

In an effort to promote soil-test based fertilizer application, soil fertility maps are being prepared for different regions through the Ethiopian Soil Information System (EthioSIS) project. The Ministry of Agriculture and the Ethiopian Agricultural Transformation Agency (ATA) have invested resources to develop the soil-test based fertilizer recommendations for the country. A new national fertilizer blending program launched in February 2013 demonstrated the shift from DAP and urea fertilizers to blended fertilizers in the country.

There was consensus among the participants on establishing a national taskforce that will enhance the innovation process in appropriate fertilizer application in the country. The taskforce will also help facilitate linkages among stakeholders to achieve synergy in efforts.

“Given the diversity of agroecologies and soil types, diverse crop types, and crop production systems, there is a need to further strengthen and refine fertilizer recommendations,” said Dr Fentahun Mengistu, Director General, Ethiopian Institute of Agricultural Research (EIAR) in his opening remarks.

Validation of technologies, fine tuning and scaling up of the same, is gaining recognition in Ethiopia with EIAR and ICRISAT having carried out major validation studies in this context. EIAR conducted crop-fertilizer response trials in 65 districts, validating and refining previous soil-test based nutrient application. ICRISAT generated data on crop response to application of fertilizers from 510 on-farm experiments across Ethiopian highlands, through the USAID AfricaRISING project. The validation trials indicated that there is a huge variability in crop responses to application of fertilizers within a small area, depending on slopes, landscape positions, soil fertility gradients and crop types.

The taskforce will report to Dr Mengistu, DG, EIAR, with Dr Tesfaye Shimer, Director, Land and Water Research Directorate, EIAR and Dr Tilahun Amede Wondifraw, Principal Scientist, Natural Resources/Systems Agronomy, ICRISAT, being responsible for organizing the taskforce and facilitating its functions. The main responsibility of the taskforce is to assemble the available information, identify data and knowledge gaps for further research and ensure stakeholder engagement in the development of simple and functional decision support tools.

The workshop was organized to synthesize existing but scattered research results at a national level; identify knowledge gaps and missing information for further research; create general understanding on the ongoing efforts and agree upon a common research approach in fine-tuning the fertilizer blending recommendation at local and regional scales.

The National Workshop on 'Decision Support Tools for Appropriate Fertilizer Recommendation in Ethiopia', was jointly organized by EIAR and ICRISAT.

For more on Ethiopia see http://exploreit.icrisat.org/page/ethiopia/696

Project: USAID AfricaRISING
Investor: USAID
Partners: EIAR, International Livestock Research Institute (ILRI), International Center for Tropical Agriculture (CIAT), Sinana Research Centre, Debre Birhan University, Mehoni Research Centre, W arabe University and ICRISAT
CGIAR Research Program: Water Land and Ecosystems
**New publications**

**Sustainable use of natural resources for crop intensification and better livelihoods in the rainfed semi-arid tropics of Central India**

**Authors:** Wani SP, Chander G, Sahrawat KL, Pal DK, Pathak P, Pardhasaradhi G and Kamadi PJ

**Published:** 2016. NJAS - Wageningen Journal of Life Sciences. 01-07. ISSN 1573-5214 (In Press)

**Abstract:** Soil health assessment of 11 districts in Madhya Pradesh, India has revealed that in most of the districts only few fields with adequate levels of sulphur, boron, zinc and phosphorus indicating their widespread low levels. Potassium was in general adequate. Farmers’ current blanket fertilization practices focused at macronutrients viz. nitrogen, phosphorus and potassium only, thus does not meet the variable soil fertility needs. Through participatory action research on soil test based fertilizer application, farmers realized benefits in crop productivity to the tune of 5 to 45% in the season of application and additional yield by 5 to 27% due to residual effects of S, B and Zn in succeeding three seasons. An economic assessment showed balanced nutrition as a profitable option in the 1st season itself. In current rainy fallow regions, the landform management as broadbanded and furrow or conservation furrow along with balanced nutrition has shown that fallow lands in black soil regions in Madhya Pradesh can be successfully cultivated to grow soybean crop. In succeeding postrainy season, the rainy season cultivated plots also yielded more as compared to adjoining plots which had only one crop that too only in postrainy season. This study thus found that soil test based fertilization and landform management are twin technologies for sustainable crop intensification in black soils of Central Indian region.

**OAR link:** [http://oar.icrisat.org/9269/](http://oar.icrisat.org/9269/)

**Pearl Millet Improvement for enhanced productivity-strategies and impact**

**Authors:** Rai KN, Gupta SK, Govindaraj M and Yadav HP

**Published:** 2015. Indian Farming, 65 (04). pp. 19-22. ISSN 0019-4786

**Abstract:** With the continuing degradation of natural resource base, adverse climate change effects on crop production and increasing crop cultivation cost, there is growing awareness of the significant role, pearl millet can play in addressing the national food security. Further, with the increasing incidence of various lifestyle diseases and emphasis on food-based solutions, there is a reappraisal of its nutritive value contributing to nutritional security. Considering the relatively limited investments both from public and private sector in pearl millet improvement in India, and negligible strategic research information generated elsewhere, it is essential to rationalize research priorities in terms of target environments, germplasm to be used, plant traits to be improved, and cultivar types to be developed, all of which contribute to enhanced breeding efficiency and improved cultivar development.


**Direct and indirect plant growth-promoting abilities of Bacillus species on chickpea, isolated from compost and rhizosphere soils.**

**Authors:** Sreevidya M and Gopalakrishnan S

**Published:** 2016. Organic Agriculture. 01-10. ISSN 1879-4238

**Abstract:** A study was carried out to test the effect of direct and indirect plant growth-promoting traits of bacteria isolated from compost and rhizosphere soil on chickpea. A total of 74 bacteria were isolated from herbal vermicomposts and rhizosphere soils of chickpea and screened for their antagonistic potential against soil-borne fungal pathogens of chickpea. Four bacterial isolates (VBI-4, VBI-19, VBI-23, and SBI-23) were found to be promising in both dual culture and metabolite production assays. These isolates were identified as Bacillus species by 16S ribosomal DNA (rDNA) sequence analysis. Under in vitro conditions, all the isolates were found to produce protease, cellulase, β-1,3-glucanase, siderophore, indole acetic acid, lipase (except VBI-19), and hydrocyanic acid (except VBI-23 and SBI-23). All the isolates were tolerant to fungicides such as bavistin, captan, benlate, ridomil (only VBI-23 and SBI-23), and thiram (only VBI-4 and VBI-19) at field application rates. The isolates were also found to tolerate NaCl concentration of up to 8% (VBI-23 up to 10%), temperature range of 20 to 40°C, and a pH range of 7 to 11 (SBI-23 up to only 9). When the isolates were evaluated for their plant growth promotion (PGP) ability under greenhouse and field conditions on chickpea, all the isolates were able to increase growth parameters including nodule number, plant growth and yield parameters when compared to uninoculated control. The isolates also increased the soil mineral properties including total N, available P, organic carbon (OC) %, microbial biomass C, and dehydrogenase activity in rhizosphere, at both flowering and harvest stages over the uninoculated control plots. All the isolates were found to colonize chickpea roots when observed under scanning electron microscope. This investigation indicated the PGP potential of selected bacteria in chickpea cultivation.

[http://oar.icrisat.org/9239/](http://oar.icrisat.org/9239/)

**Genetic variability in Napier grass (Pennisetum purpureum) germplasm conserved at ICRISAT genebank**

**Authors:** Pattanasheetti SK, Upadhyaya HD, Blummel M, Reddy KN, Ramanareddy Y, Kumar V and Singh S


**Abstract:** Napier grass or elephant grass [Pennisetum purpureum Schum.] is an important forage crop valued for...
Scientists link with policymakers on tackling climate change and variability in Eastern Kenya

Scientists of the Agricultural Model Intercomparison and Improvement Project (AgMIP) met policy makers to explore future collaboration to address climate change in Kenya. The discussions centered around how to adapt farming systems in the region to current climate change and variability. The guiding documents that were used to direct the discussion were the Makueni County Integrated Development Plan: 2013-2017 and Kenya’s Vision 2030.

Research on appropriate farming technologies including viable crop varieties and livestock breeds is central in helping Makueni achieve food security and alleviate poverty,” said Ms Jane Nzesya, Chief Officer, Agriculture, Livestock and Fisheries, Makueni County, who attended the meeting.

The scientists shared findings from an earlier Climate Change, Agriculture and Food Security (CCAFS) supported research on participatory evaluation and promotion of integrated sorghum - legume technologies in the region. The participants discussed the usefulness of the results, gaps (if any), stakeholders to involve in future initiatives, as well as suggestions of dissemination platforms that could be used to share the findings with the local community. The study was led by ICRISAT and the Kenya Agricultural and Livestock Research Organization (KALRO).

AgMIP seeks to adapt smallholder systems to climate change and variability through a stakeholder-driven, multi-modeling integrated assessment approach. The project team will continue to engage with stakeholders in Africa to design suitable adaptation packages for the region.

Discussion between the scientists and the county policymakers took place on 3 February, at Wote, in Makueni County, Eastern Kenya.

This article first appeared in - https://ccafs.cgiar.org/news/improving-adaptive-capacity-farmers-eastern-kenya#VrzAXHon7ID

New publications....... from page 4

its high biomass production, perennial nature, pest resistance, and forage quality. Its high dry matter, sustains its utilization for direct animal grazing and as a feed complement during drought periods. It has additional advantages like preventing soil erosion and improving soil fertility. Napier grass also has potential for bioenergy production and conversion to alcohol or methane. The present study was planned to assess the genetic variability among purpureum germplasm conserved at ICRISAT genebank, Patancheru for their potential utilization in development of forage varieties and bajranapier hybrids.

http://oar.icrisat.org/9248/

Pearl Millet Seed Production and Processing

Authors: Yadav OP, Mahala RS, Rai KN, Gupta SK, Rajpurhit BS and Yadav HP


Abstract: Seed is the vital input and driver in crop production, as seed quality determines the return on investment made on other inputs like fertilizer, irrigation, pesticide, labour etc. A poor seed quality will result in poor return despite best investment on other farm inputs, which, implies that utmost attention must be given to the use of quality seed in crop production. Therefore, every country needs a robust seed production and supply chain system as one of the key components of sustainable growth in agricultural production. A robust seed production programme is central to providing high quality seeds of improved hybrids, pure-line cultivars and open-pollinated varieties (OPVs) for agricultural development, and food security. High quality in case of seed refers to high genetic purity (true to type), high physical purity (freedom from objectionable weeds, other crops’ seeds, inert matter etc.) and high seed vigour and germination in addition to freedom from seed-borne diseases.

http://oar.icrisat.org/9237/
International Plant Breeding Congress (IPBC) and EUCARPIA - Oil and Protein Crops Section Conference, Antalya, Turkey.

The 2nd International Plant Breeding Congress and EUCARPIA - Oil and Protein Crops Section Conference was organized during 1 - 5 November 2015, with 333 participants and articles around 400 from 40 countries.

The major topics in the Congress are: Plant Breeding, Molecular Genetics and Biotechnology, Genetic Engineering and Genomics, Genetic Resources for Plant Breeding and Oil and Protein Crops.

The following ICRISAT papers were presented at the conference:

Validation of field resistance to late leaf spot by using a molecular marker in groundnut.

Authors: Yol E, Upadhyaya HD and Uzun B
http://oar.icrisat.org/9270/

High yielding and drought tolerant genotypes developed through marker-assisted back crossing (MBAC) in chickpea.

Authors: Samineni S, Varshney RK, Sajja S, Thudi M, Jayalakshmi V, Vijayakumar A and Mannur DM
http://oar.icrisat.org/9271/

Effect of post-emergence herbicide imazethapyr on phenological and agronomic traits in chickpea breeding lines

Authors: Sajja S, Samineni S, Gadekar M, Jayalakshmi V, Vijayakumar A, Yasin M and Varshney RK
http://oar.icrisat.org/9272/

Hybrid pigeonpea: Research to reality.

Authors: Sameer Kumar CV, Vijay Kumar R, Hingane A and Saxena R
http://oar.icrisat.org/9273/

IX Biennial Conference on ‘Eco-responsive Feeding and Nutrition: Linking Livestock and Livelihoods’

Animal Nutrition Association (ANA) conducted its IX Biennial Conference at Guwahati during 22-24, January 2015. The demand for animal-origin foods is projected double over the next few years; opening up a window of opportunities for smallholder livestock keepers to step up production. Poor nutrition constitutes one of the key hurdles in optimizing productivity in smallholder production system. There is a need to identify constraints, build capacities and create more opportunities among these livestock farmers. The present conference, aims at flagging off some of the above issues and is hosted by College of Veterinary Science, Assam Agricultural University, Guwahati.

The following ICRISAT papers were presented at the Conference:

Evaluation of different cultivars of sorghum for fodder quality and agronomic performance in Semi-Arid Tropics.

Authors: Vinutha KS, Rao PS, Anil Kumar GS, Prasad KVSV, Reddy YR, Prakasham RS, Yaswanth VVN and Blummel M
http://oar.icrisat.org/9242/

FEAST- A User-friendly Tool for Feed Assessment to Support Dairy Intensification.

Authors: Padmakumar V, Reddy YR, Duncan AJ, Shreewani K, Wani SP and Blummel M
http://oar.icrisat.org/9246/

Quantification of Dhurrin in Different Types of Sorghum Forages by Near-Infrared Reflectance Spectroscopy.

Authors: Vinutha KS, Rao PS, Prasad KVSV, Reddy YR, Prakasham RS, Sheelu G, Nikhila B and Blummel M
http://oar.icrisat.org/9243/

Reader’s comment

This CSR corporate - ICRISAT initiative has the potential to go along a very productive path for upscaling of innovation, a partnership in which all are winners. ICRISAT has a great role to play as a facilitator, in all country partnerships, especially in sub-Saharan Africa.

The motto that such collaboration can be greater than the sum of its parts could also apply to inter-Institute collaboration within CGIAR. There are many examples where Institutes are neighbours on the same field stations - where an integrated shared plan with the host country and the private sector could play dividends, and where joint opportunities could be developed such as agronomic and genetic projects for inter-cropping, which could extend to QA market programs.

It may be interesting to explore whether inter-cropping may assist mitigation of climate change.

Congratulations and best wishes to ICRISAT and partners.

Bob Redden