Feature Stories

Enhancing productivity through micronutrient management

A recent study reveals that chickpea variety (JG-130) grown with balanced fertilizers including micronutrients and bio-fertilizers under rainfed condition recorded 15% and 40% higher grain yield compared to JG-130 and local chickpea variety grown without micronutrients respectively. For groundnut the application of micronutrients increased groundnut pods per plant by 9%, seeds per pod by 6% and pod yield by 13%.

Application of balanced fertilizers significantly enhanced growth, yield attributes and yield of groundnut and chickpea. The net economic gain under balanced fertilization was ₹ 3,024 per ha for chickpea and ₹ 7,155 per ha for groundnut. In addition to economic gains a positive residual benefit on the succeeding crops was also documented. For example, the mean yield of wheat was 3,010 kg per ha as a result of residual effect. The yield increased by 231 kg compared to the yield (2,779 kg per ha) without the application of micronutrients.

A three-year study carried out in severely micronutrient deficit semi-arid areas of Uttar Pradesh, India, shows that prolonged and overuse of fertilizers to increase crop yield has resulted in rapid depletion of micronutrients from soils. Instead of single nutrient deficiency, multi-nutrient deficiencies are emerging. Multi-nutrient soil deficiency directly impacts crop productivity and indirectly contributes to malnutrition.

The beneficial effects of balanced fertilization are better growth and productivity of crops which resulted in lower production costs, better profitability, and improved chances of producing a good yield under adverse climatic and soil conditions.

Results from this study also strengthen the argument that balanced fertilizer application is beneficial and necessary to ensure long term sustainability, especially in the context of intensive agriculture.
The research findings showed that 88% farmers appreciated the impact of balanced fertilization. However, only 9% farmers actually used them. The unavailability of micronutrients and lack of awareness by farmers seems to be a major hurdle in scaling up the use of micronutrients. Hence a concerted effort is required by researchers, extension personnel, policy-makers, fertilizer industry and dealers to ensure micronutrient is available to farmers at affordable prices.

This study was conducted at Domagor-Pahuj watershed in Babina block of Jhansi in Uttar Pradesh. In this area, the National Research Centre for Agroforestry (NRCAF) a unit of Indian Council of Agricultural Research (ICAR), Jhansi, is developing a model watershed in consortium mode with ICRISAT and Development Alternatives, a non-governmental organization.

The findings of this research were published in the Indian Journal of Soil and Water Conservation and this paper has been selected as the best paper of 2016 by the Indian Association of Soil Water Conservation (IASWC).


This work contributes to the UN Sustainable Development Goals.

ICRISAT @ Events

A team of researchers from ICRISAT participated in the 24th Conference of Agricultural Economics Research Association (AERA). The theme of the conference was ‘Agriculture for Nutritional Security’. Participants deliberated on the agriculture and nutrition nexus, challenges and options to reduce malnutrition.

The team presented three papers under the technical session on Markets, Consumption and Nutrition. Additional themes discussed in the conference were: engendering food systems for improved nutrition security, crop diversification and technological choices for engendering agriculture, and behavior change among women for improved nutritional outcomes.

ICRISAT was represented by a team from Markets, Institutions, Nutrition and Diversity, Innovation Systems for the Drylands: Dr R Padmaja, Scientist, Gender Research;
New publications


Authors: U Deb, S Pramanik, PE Khan, and C Bantilan.


Abstract: The study reconfirmed prevalence of reverse tenancy in dryland agriculture in southern India in recent years (2009-10 and 2011-12) as was in the mid-seventies. Household level panel data collected from six villages by ICRISAT under its Village Level Studies (VLS) and Village Dynamics Studies (VDS) programme were analysed.

Results indicated that an additional bullock increased rented-in area by 0.22 ha. On the other hand, large farmers had 0.47 ha more area under rented-in compared to other tenants. There was negative relationship between rented-in area and age and education of the household head indicating that educated and elderly people participated less in the tenancy market. Input use level, crop yield and profitability were generally higher in own land than that of rented-in land in the mid-seventies. In recent years, we observed mixed (inconclusive) outcome for input use, crop yield and profitability. Reduction of production risks in one of the study villages has not only reduced tenancy but also abolished reverse tenancy.

http://oar.icrisat.org/9771/

Exploration of cultural norms and practices influencing women’s participation in chickpea participatory varietal selection training activities: A case study of Ada’a and Ensaro districts, Ethiopia.

Authors: Esther M Njuguna, Millicent L Liani, Meseret Beyene and Chris Ojiewo.


Abstract: In order to encourage gender equality in delivery of varietal knowledge to male and female farmers in Ada’a and Ensaro districts of Ethiopia, chickpea breeders set a policy that each male farmer would bring along his wife to participatory varietal selection sessions. Women farmers did not attend the trainings as expected.

Short radius of movement, labor burden, sex of extension agents, intimacy and harmony in the home emerge as key factors considered by women.

http://oar.icrisat.org/9791/

Farewell

The following staff members are retiring on 31 December 2016:

Mr T N Menon, Head, Internal Audit and Associate Director (Asia), CGIAR-IAU, after serving the Institute for over 20 years.

Mr DVSSR Sastry, Senior Manager, Genebank Seed Laboratory, Genebank, Genetic Gains Program, after serving the Institute for over 35 years.

Mr C Muralidhar, Senior Scientific Associate, Genomics & Trait Discovery, Genetic Gains Program, after serving the Institute for over 37 years.

Mr V V S Satyanarayana, Lead - Production & Administrative Officer, Strategic Marketing & Communication, after serving the Institute for over 35 years.

Mr Mohd Nawazuddin, Scientific Associate, Genebank, Genetic Gains Program, after serving the Institute for over 34 years.

Mr D Bapa Rao, Scientific Associate, Genebank, Genetic Gains Program, after serving the Institute for over 32 years.

On their retirement, Team ICRISAT wishes them a very happy retired life.