Five bean varieties rich in iron and zinc were recently released for the first time in Uganda. These varieties included three bush and two climber growth types.

Prior to the release, 16 different bean varieties were evaluated for their yield potential, ability to accumulate micronutrients such as iron and zinc and farmer’s preferences. Five varieties that fulfilled all the test requirements were identified for release. These were MOORE 88002, RWR 2154, RWR 2245 (bush type), MAC 44 and Nyiramuhondo (climber type) varieties.

“The varieties, also known as NAROBEAN 1, 2, 3 4C and 5C, are an excellent source of iron. Instead of buying expensive supplements, communities can now buy and grow these beans as a way of boosting nutrition and reducing anemia (a major health concern in Uganda) knowing that they will get yield despite drought,” said Dr Stanley Nkalubo, Scientist and Head of bean research at the National Crops Resources Research Institute (NaCRRI), Uganda.

Evaluation of these varieties was conducted across six agro-ecologies in Uganda encompassing the central, southern, southwestern, eastern, northern and western regions. The Tropical Legumes III (TL III) project, led by ICRISAT, in particular played a great role in supporting the participatory variety selection process and variety demonstration trials.

Common bean breeders in the region identified short cooking time as a major trait demanded by consumers to save on time and energy required for cooking. Hence bean breeders prioritized the assessment of cooking time in all their breeding pipelines. To facilitate further development, two automated Mattson cookers were used to phenotype cooking time of developed breeding lines.

These varieties were developed and released by the Pan-Africa Bean Research Alliance (PABRA); the National Agricultural Research Organization (NARO) together with partners including HarvestPlus, International Center for Tropical Agriculture (CIAT), United States Agency for
International Development (USAID)-Feed the Future and Tropical Legumes III (TL III).

Enhancing common bean productivity and production in Ethiopia, Tanzania and Uganda has been a primary focus of the TL III initiative. This is achieved through strengthening research, providing training on common bean breeding principles, creating awareness on new variety release process and instituting capacity building programs for bean breeders. In addition, several field demonstrations of common bean varieties are being conducted in all three countries.

### Capacity building

To create awareness of the policies and administrative processes that guide new releases, young researchers in Tanzania were trained on government policies on variety release, specific to legumes.

The training covered topics such as: (i) Distinctness, Uniformity and Stability (DUS) testing and characteristics, (ii) development of variety descriptors for DUS, (iii) highlights on use of farmer preferred variety selection (iv) seed quality control, (v) variety release and registration process, (vi) application of marker assisted selection (MAS) in breeding, (vii) seed legislation (seeds act and seed regulations), and (viii) regional seed trade harmonization acts.

This training on ‘variety release process’ was attended by 33 researchers (24 male and 9 female) from six Tanzanian research institutions: Agricultural Research Institute (ARI), Naliendele; ARI, Maruku; ARI, Selian; ARI, Uyole; CIAT; and Sokoine University of Agriculture (SUA).

A Mattson cooker is a standalone machine monitored by a computer and the test results are automatically recorded on the computer.

Cooking time is calculated when 80% of the beans are soft enough to be pierced through by pins i.e, when 20 of the 25 pins in the cooker have penetrated the seeds. The cookers have been utilized to assess cooking time of a set of 150 released bean varieties in the PABRA. Cooking time ranges from 28 to 100 minutes have been obtained. Similar systems have been purchased for installation at three participating national programs (Melkassa Agricultural Research Center (MARC), Ethiopia; NaCRRI and ARI, Uyole).

As a further development of the semi-automated cooker, a thermometer has been integrated to capture temperature data during cooking process. This will help to standardize different types of cookers and electric supply variations.

**Project:** Tropical Legumes III  
**Investor:** Bill & Melinda Gates Foundation  
**Partners:** USAID-Feed the Future, CIAT, International Institute of Tropical Agriculture (IITA), national agricultural research system (NARS), partners from sub-Saharan Africa and India and ICRISAT.  
**CGIAR Research Program:** Grain Legumes

For more details on the TL III initiative [click here](#).
New publications

Understanding the Linkages between Crop Diversity and Household Dietary Diversity in the Semi-Arid Regions of India.

Authors: Kavitha K, Soumitra P and Padmaja R.
Published: 2016. Agricultural Economics Research Review 29:129-137. ISSN 0971-3441

Abstract: This paper examines crop diversity and dietary diversity in six villages using the ICRISAT Village Level Studies (VLS) data from the Telangana and Maharashtra states of India. The study has revealed that the cropping pattern is not uniform across the six study villages with dominance of mono cropping in Telangana villages and of mixed cropping in Maharashtra villages. The analysis has indicated a positive and significant correlation between crop diversity and household dietary diversity at the bivariate level. In multiple linear regression model, controlling for the other covariates, crop diversity has not shown a significant association with household dietary diversity. However, other covariates have shown strong association with dietary diversity. The regression results have revealed that households which cultivated minimum one food crop in a single cropping year have a significant and positive relationship with dietary diversity. From the study it can be inferred that crop diversity alone does not affect the household dietary diversity in the semi-arid tropics. Enhancing the evidence base and future research, especially in the fragile environment of semi-arid tropics, is highly recommended.

This study has used the data of cultivating households for constructing the crop diversity index while dietary diversity data is from the special purpose nutritional surveys conducted by ICRISAT in the six villages.

http://oar.icrisat.org/9822/

Role of Pulses in Enhancing Nutritional Status of Rural Poor: Micro-Level Evidence from Semi-Arid Tropics of India

Authors: Padmaja R, Soumitra P and Bantilan MCS.
Published: 2016. Agricultural Economics Research Review 29:65-74. ISSN 0971-3441

Abstract: This paper presents evidence on the role of pulses in improving the nutritional status of the rural communities in the semi-arid tropics. The study has revealed that there has been a decline in the area and production of pulses in the study villages of India, even though at the macro-level, pulses production has increased. The regression analysis has indicated the importance and role of pulses in improving the nutritional status of the rural communities.

The study concludes, that there has to be a concerted policy and program action to reintroduce pulses into the cropping pattern in SAT-India and improve the consumption of pulses to the level that has a positive impact on human nutrition. Empowering women along the entire pulse value chain has been observed as one approach to enhance pulse productivity and consumption. Nutrition education, awareness generation and nutrition-sensitive agricultural interventions for pulses are the ways forward to reduce malnutrition in India.

The paper has used primary data from the ICRISAT VLS nutrition surveys (8 villages from Telangana, Andhra Pradesh and Maharashtra) and the longitudinal panel micro-level data (for 6 villages of Telangana and Maharashtra) from 2009 to 2014.

http://oar.icrisat.org/9821/

Mainstreaming Gender and Empowering Women in Agriculture in the Thar Region of India

Authors: Sharma N, Kumar S, Padmaja R and Tyagi P.
Published: 2016. ICRISAT Research Report No 69, Innovation Systems for the Drylands

Abstract: As part of the CGIAR Research Program on ‘Dryland Systems: Integrated Agriculture Production System for the Poor and Vulnerable in Dry Areas’, ICRISAT in collaboration with GRAVIS, has implemented a project in eight randomly identified villages in three districts - Barmer, Jaisalmer and Jodhpur in western Rajasthan. The program is aimed at developing technological, policy and institutional innovations to improve food security and livelihoods using an integrated systems approach.

The aim was to create an enabling environment to empower, specifically women and rural communities in general. Sensitizing different stakeholders on the contributions of women to their livelihoods as well as the economy was a first step towards this. Direct interventions like new knowledge, agricultural technologies along with access to services such as financial, health and child-care, enable women to participate in the decision making processes at the household and community level.

Participation in decision making process along with the male members is empowerment for women as they acquire the ability to make strategic life choices.

http://oar.icrisat.org/9823/