

inger millet [*Eleusine coracana* (L.) Gaertn.], which figured among the six small millets in ICRISAT's research portfolio, has now been formally made a mandate crop. This decision was taken at the recent Governing Board meeting. This is an important recognition for a crop which has been an integral part of the institute's research portfolio.

The high nutritive value of finger millet coupled with its ability to thrive under low rainfall and poor soil fertility makes it a 'climate smart' crop. The ICRISAT genebank holds nearly 6,000 finger millet germplasm accessions from 24 countries, conserved for use in research and development.

Among the projects that focus on finger millet, the Harnessing Opportunities for Productivity Enhancement of Sorghum and Millets in Sub-Saharan Africa and South Asia (HOPE) project funded by the Bill & Melinda Gates Foundation is showing encouraging results in improving productivity of finger millet and household incomes in East Africa. This was achieved by enabling farmers to adopt improved varieties and associated agronomic practices and linking producers to both input and product markets.

#### Crops in ICRISAT research portfolio

##### Mandate crops

- Sorghum
- Pearl millet
- Chickpea
- Pigeonpea
- Groundnut
- Finger millet

##### Minor millets

- Foxtail millet
- Little millet
- Kodo millet
- Proso millet
- Barnyard millet
- Tef

In Malawi, the introduction of three finger millet varieties highly valued by farmers is expected to resurrect a crop that had 'disappeared' from the southern region of the country. Farmers wanted access to seeds of Gulu E, ACC 32 and KNE 1124 varieties, so that they can start growing the crop again (<http://www.icrisat.org/newsroom/latest-news/happenings/happenings1677.htm#1>).

At a recent field day in Kenya, the Kenya Agricultural and Livestock Research Organization and ICRISAT displayed six elite varieties of finger millet for participatory varietal selection by farmers. Finger millet variety U15 was the most preferred for its early maturity and grain color, while IE 3779 was preferred for its resistance to blast disease and tolerance to lodging (<http://www.icrisat.org/newsroom/latest-news/happenings/happenings1695.htm>).

Through a multi-institutional collaboration, ICRISAT scientists in ESA have generated a whole genome sequence of finger millet. This opens a new chapter in future breeding of this nutritious crop.

In the Indian state of Karnataka, finger millet is among the 'climate smart' crops that figures high on the agenda of the government. <http://www.icrisat.org/newsroom/latest-news/happenings/happenings1664.htm#1>

Along with its partners, ICRISAT is targeting commercial production of finger millet, diversification of household-level diets, value addition and processing for food, feed and industry. Efforts are being made to pilot and incubate small and medium entrepreneurs from among the farmer groups and individuals to develop products for the market.

##### Finger millet facts

- Rich in fiber, iron and calcium (contains 40 times more calcium than maize and rice, 10 times more than wheat and 3 times more than milk).
- Plays an important role in both the dietary needs and incomes of many rural households in eastern and southern Africa and South Asia.
- Accounts for about 12% of the area under millets globally
- Cultivated in more than 25 countries in Africa and Asia, predominantly as a staple food grain.
- Major producers are Uganda, Ethiopia, India, Nepal and China.

Read more on finger millet: [http://exploreit.icrisat.org/page/small\\_millets/875](http://exploreit.icrisat.org/page/small_millets/875)

[Back to top](#) 

[Designing robust intervention strategies to improve resilience of smallholder farmers](#)



Team using the Integrated Assessment Tool. Photo: ICRISAT

To better integrate knowledge across disciplines in order to devise higher impact strategies for constrained farming systems, a workshop on systems analysis of smallholder agriculture was held in Niger recently.

The use of systems analysis, encompassing the biophysical and socioeconomic makeup of farm households, requires a range of computer based tools to capture some of the complexities of mixed farming systems and help researchers devise robust intervention strategies which can more effectively lead smallholders out of poverty.

Farm households operate in environments with high climatic variability and are highly heterogeneous with multiple constraints of labor, capital and access to resources. Interventions like these are important because in the resource-constrained mixed farming systems prevalent in the semi-arid tropics, understanding what interventions result in benefits to farm households in terms of improvements in food security and income is not an easy task.

Sharing his experience, Dr Bright Salah Freduah from the University of Ghana, said that the skills he learnt have equipped him to design new farming systems and undertake ex-ante analysis of technology on resource constraints and adaptation to changing climate.

The workshop had two concurrent sessions. The advanced course on crop modelling with the Agricultural Production Systems SIMulator (APSIM) was led by former ICRISAT staffer, Dr John Dimes. Dr Ian Watson from Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia and Dr Cyrille Rigolot from National Institute for Agricultural Research (INRA), France, led the session with a team using the Integrated Assessment Tool (IAT) which combines outputs from a range of models and expert knowledge to gain enhanced understanding of bio-economic behavior of mixed smallholder systems.

The hands-on training course from 21-25 September had 20 participants from west Africa representing staff from Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), National Agricultural Research and Extension Systems from several countries, ICRISAT and other CGIAR centers. ICRISAT was represented by Dr Malick Ba, Senior Scientist - Entomology (Grain Legumes / Dryland Cereals) and Country Representative, Niger. Dr Vincent Bado, Principal Scientist – Dryland Systems and Livelihood Diversification (Resilient Dryland Systems), organized the workshop. Dr Anthony Whitbread, Director, Research Program - Resilient Dryland Systems initiated the workshop. The workshop was funded under CRP Dryland Systems and capacity development was by ICRISAT.

A follow-up workshop titled 'Modern tools for systems analysis and modelling' will be held at ICRISAT headquarters from 30 November to 3 December. The workshop was organized by ICRISAT and partners from CSIRO, International Center for Agricultural Research in the Dry Areas, and the Center of Excellence for Dryland Agriculture, Chinese Academy of Agricultural Sciences, China.