



# ICRISAT in India

## Country Overview

Agriculture, with its allied sectors, is India's largest source of livelihood. Close to **70%** of rural households depend primarily on agriculture for their livelihood, with **82%** being small and marginal farmers. While achieving food sufficiency in production, India still accounts for a quarter of the world's hungry people and is home to over **190 million** undernourished people. In the 2023 Global Hunger Index, [India ranks 111<sup>th</sup> out of 125 countries](#). With a score of 28.7, India has a level of hunger that is serious. Anemia continues to affect **50%** of women, including pregnant women and **60%** of children in the country (FAO).

The Government of India (GoI) has been running programs and schemes to strengthen and de-risk the agriculture sector through the [Minimum Support Price](#), [Doubling of Farmers' Income](#), [crop insurance](#), and the like. ICRISAT has significantly contributed to GoI's [National Food Security Mission](#) in increasing pulse and millet production and biofortification initiatives. ICRISAT's Memorandum of Agreement (MoA) with the Indian Council of Agricultural Research (ICAR), signed in 2019 for creating a five-year plan for Indian agricultural research, is due for renewal in 2024.

## Partnerships

ICRISAT was established under a MoA between the Government of India and the CGIAR in 1972. The Secretary, Department of Agriculture and Farmers Welfare, and the Director General of ICAR are the ex-officio members of its Governing Board. ICRISAT works closely with the National Agricultural Research System (NARS), comprising ICAR research institutes and State Agricultural Universities (SAUs). ICRISAT's research has contributed to the Government of India's mission to strengthen agriculture and overcome malnutrition. The UN endorsement of India's proposal for the "International Year of Millets" is an outcome of this fruitful partnership.

ICRISAT has worked with several state governments, civil society organizations, NGOs, and private entities to develop and release improved crops, revive rain-fed agriculture, undertake watershed management, and accelerate the Millet Movement. ICRISAT has a strong network of Corporate Social Responsibility (CSR) partners, farmer-producer organizations, women's cooperatives, and agribusiness startups.



## Milestones

- ▶ **1976 – 2014:** ICRISAT, in association with the Government of Andhra Pradesh (now Telangana), with support from the Asian Development Bank, worked with stakeholders on holistic watershed management in Kothapally, Ranga Reddy district. The project, spanning over 40 years, witnessed a complete revival of the Kothapally watershed.
- ▶ **In 1975:** ICRISAT initiated Village Level Studies (VLS) to understand farming systems in rural areas and identify the socio-economic constraints faced by the farming community in the semi-arid tropics. In 2009, the Bill & Melinda Gates Foundation (BMGF) funded ICRISAT to engage stakeholders in Village Dynamics Studies (VDS) to understand the dynamics of rural poverty in South Asia. The data received over **10,000 citations** as of 2008.
- ▶ **2007 – 2019:** In India, high-yielding and climate-resilient chickpea, groundnut, and pigeonpea were developed under the [Tropical Legumes](#) initiatives. The projects were able to achieve notable increases in the production of seed for groundnut and pigeonpea. Pigeonpea seed production increased from an annual average of **3 tons** in 2008–2009 to over **1,000 tons** in 2012–2013.
- ▶ **2005 – 2007:** ICRISAT scientists, along with partners, worked to better pearl millet seed production and upscale efforts to encourage adoption amongst resource-poor farmers in the drylands to generate higher incomes through better yields. By 2010, HHB 67 Improved was grown on more than **850,000 ha**, attesting to the impact of crop research and acceptance amongst farmers.
- ▶ **2009 – 2016:** ICRISAT, working with the Government of Karnataka, conceived, developed, and implemented a project called Bhoochetana (Revival of the Soil). The project started with six districts and **200,000 farmers, reaching over 26,000 villages and 4.2 million farmers** over the next nine years. With the use of science-backed innovations, millions of farmers experienced **20-66%** higher crop yields and obtained a net benefit of **US\$ 453 million**.



## Ongoing Projects

- 2021 – 2025:** Identification of Markers and Genomic Regions Associated with Aflatoxin Resistance in Peanut funded by Mars Chocolate North America, LLC
- 2018 – 2023:** Pest and disease management for climate change adaptation funded by the Department of Science & Technology, Government of India
- 2021 – 2026:** Agri Monitored Re-Engineering and Transformation (AMRT) funded by the Government of Odisha
- 2021 – 2024:** Developing double herbicide tolerant pigeonpea for improved weed management using two-way approach from haplotype mining in native germplasm and CRISPR-Cas9 mediate genome editing funded by the Department of Biotechnology, India
- 2019 – 2024:** Development of Waxy Sorghum breeding lines for diverse food, feed, and fermentation applications funded by the University of Nevada-Reno
- 2021 – 2024:** Integrated Watershed Management projects in villages of Andhra Pradesh, Telangana, Karnataka, and Maharashtra funded by CSR partners - Trident Sugars Ltd, Ramco Cements Limited, UltraTech Cement Ltd, and JSW foundation

## Key Outcomes

 **63** varieties of Sorghum

 **40** varieties of Groundnut

 **186** varieties of Pearl millet

 **02** varieties of Finger millet

 **58** varieties of Chickpea

 **07** varieties of Small millets

 **55** varieties of Pigeonpea

- High-Iron pearl millet variety ICTP 8203Fe was released as Dhanshakti in Maharashtra state of India in 2013. Dhanshakti is the first mineral biofortified crop cultivar officially released in India.
- About **6.0 million** ha in India is under pearl millet hybrid cultivation, and **60%** of about **100** pearl millet hybrids developed since **2000** by the NARS and seed companies in India are based on ICRISAT-bred material.
- Efforts by ICRISAT and partners have led to a chickpea revolution in Andhra Pradesh, where production increased 8-fold in 15 years. ICRISAT-India partnership varieties (JG 11, JAKI 9218, KAK 2, and Vihar) were instrumental in the success. They cover over **90%** of the chickpea area in Andhra Pradesh.
- ICRISAT, in partnership with ICAR institutes, developed India's first high oleic acid (HOA) groundnut varieties.