INNOVATIONS AND IMPACT REPORT

2024

ICRISAT
INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS

CGIAR


ICPV
21727

FOREWORD FROM THE **DIRECTOR GENERAL**

For more than 50 years, ICRISAT has stood as a beacon of innovation, resilience, and hope for the drylands of Asia, Africa and beyond. Today, as the world navigates unprecedented challenges — from climate extremes to rising inequality — our work has never been more vital. Our legacy is not only one of scientific achievement, but of unwavering service to the people, landscapes, and futures that depend on the drylands.

At the heart of our efforts lies a bold and integrated vision: to nourish communities, reduce poverty, foster equity and inclusion, build resilience to a changing climate, and protect the rich biodiversity and environmental health of our fragile ecosystems. These are not separate ambitions — they are deeply interconnected, and they define the future we are determined to shape.

Central to this mission is our pioneering work in developing next-generation climate-resilient crops, innovations that millions across the drylands will increasingly depend on for survival, dignity, and opportunity. We are not simply responding to today's challenges — we are anticipating tomorrow's, building solutions that are as enduring as they are impactful.

Through science, partnership, and a profound belief in human potential, we are transforming lives and landscapes — bringing to life a future where food and nutrition security, economic opportunity, gender equality, environmental stewardship, and climate resilience are realities for all.

As we chart a dynamic course forward as part of the CGIAR family, our commitment to the drylands — and to the communities who call them home — has never been stronger. The following pages offer succinct glimpses into the real-world impacts of our work: snapshots of progress, resilience, and innovation that inspire us to strive ever higher and extend our reach even further.

Thank you for joining us on this journey of transformation.

Dr Himanshu Pathak
Director General
ICRISAT

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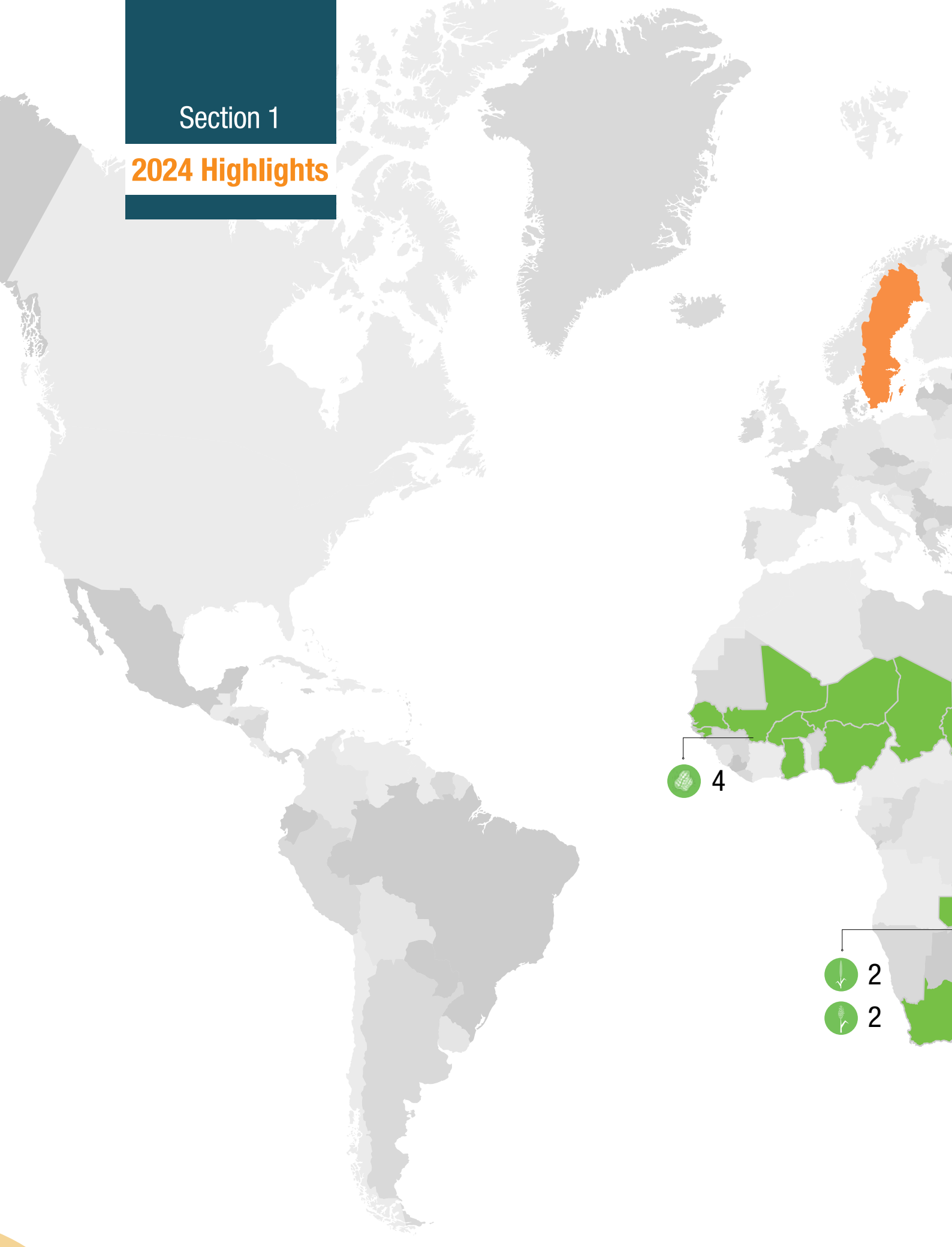
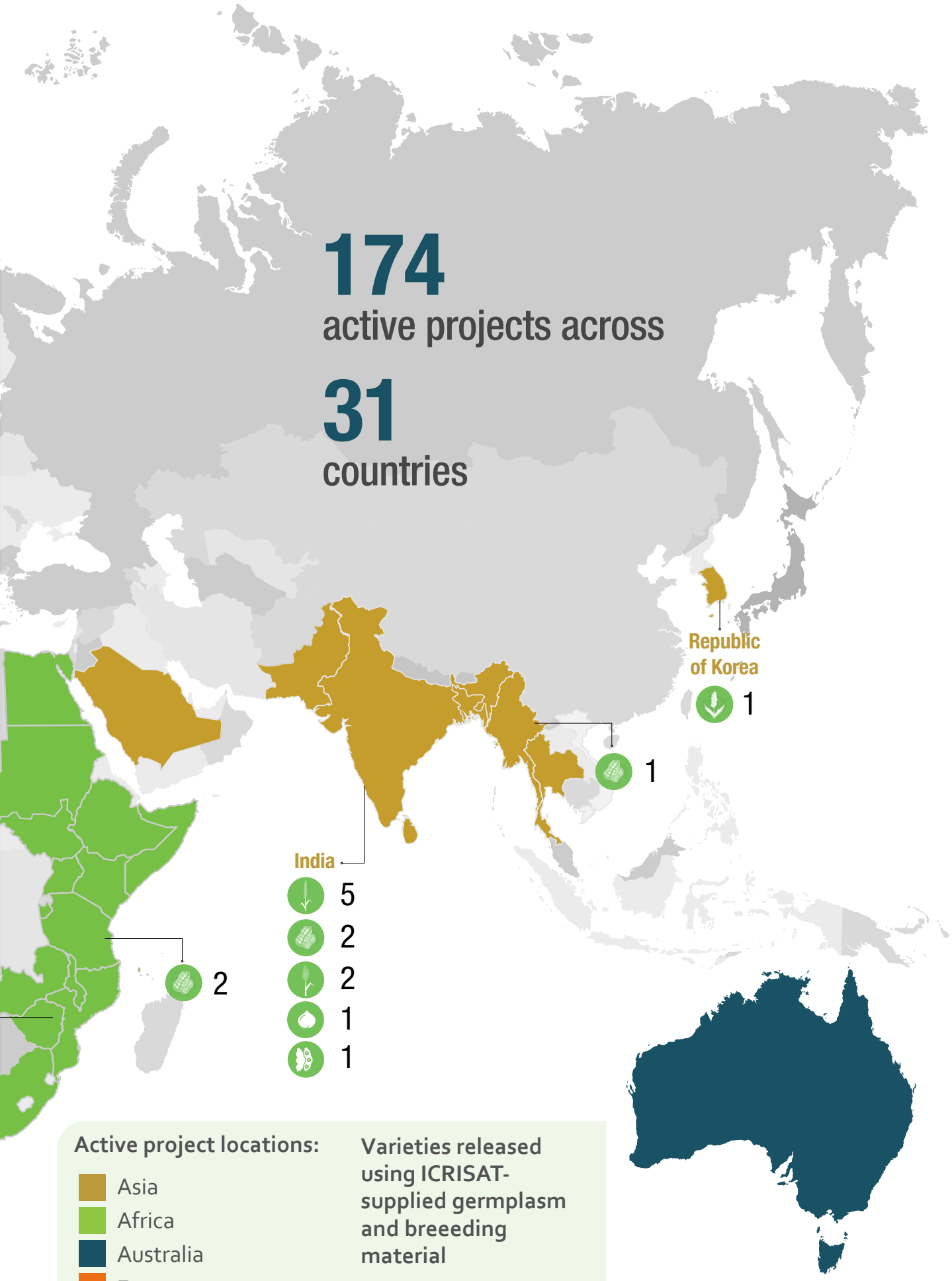
Section 1

2024 Highlights




174
active projects across
31
countries
Republic of Korea
1
1
India
5
2
2
1
1
2
Active project locations:
Asia
Africa
Australia
Europe
Varieties released using ICRISAT-supplied germplasm and breeding material
Pearl millet
Sorghum
Pigeonpea
Groundnut
Chickpea
Small millet
Map not to scale

Section 2

Research Impacts

Impact Area 1

Nutrition, Health and Food Security

ICRISAT's breakthroughs in crop research, precision farming, and food innovation are globally transforming nutrition and food security. From enhancing the nutritional quality of crops to pioneering geospatial mapping of South Asia's agriculture, these innovations support resilient food systems, empower farmers, especially women and youth, and drive sustainable development across Asia and Africa.

Reviving Millets in Bihar, India

Centre of Excellence

Millets Value Chains hub established in Gaya

Validation Trials

3000 trials were conducted

15 **top millet varieties were identified**

Seed Production

20,000 kg millet seed produced

150 farmers reached across **34** ha

Higher Yields

Productivity increased **17–22%**/ha improved varieties, IPM & mechanization

Partnerships

Government of Bihar, ICRISAT, and local partners

Field Days & Training

1194 farmers reached (including **240** women)

Piloted | **Adopted** | Scaled

Asia

Millets in Assam's Mid-Day Meals

Inclusion of millet food in schools as part of Government of India's **PM-Poshan program**

School Meals

11 schools | **2465** children served

Adolescent Nutrition

755 Girls reached | **52** Anganwadi centers (3-month pilot)

Partnerships

ICRISAT and **Assam Millets Mission** are driving the effort

Piloted | Adopted | Scaled

Asia

Safer, More Nutritious Crops

Nutrient-Rich Groundnut
High in **iron, zinc**, and heart-healthy resveratrol

Better Pearl Millet
Enhanced **five key genes** for improved nutrition

Aflatoxin-Resistant Groundnut
Stronger groundnut cell walls reduce aflatoxin risk

Gene Editing
CRISPR-Cas9 applied in **four major crops** for resilience

Partnerships
ICRISAT partners globally to advance **nutritious, safer,** and **resilient crops**

Dryland Crops Drive Food Innovation

New Uses
Pigeonpea, chickpea, and **millets** as natural thickeners/stabilizers

Data-Driven Design
Modelling links crop traits to food functionality

Industry Integration
Machine Learning tools help create better food products

Partnerships
ICRISAT, Foundation of Food and Agriculture (FFAR), HarvestPlus, and University of Kentucky are leading the effort.

Piloted | Adopted | Scaled

Global

Piloted | Adopted | Scaled

Shelf-life Breakthrough

Reduces spoilage, waste & cooking burdens

Versatile Use

Blending strategies enhance **nutritional diversity**

Safer Food

Aflatoxin reduction improves health & livestock safety

Breakthrough in Pearl Millet Flour Shelf-life in Africa

Mapping South Asia's Crops from Space

First-Ever Mapping

27 Cropping systems identified | **477M ha** Mapped

Geospatial Insights

Maps crops, locations and seasonal sequences

Policy Impact

Aids planning in climate resilience and soil health

6 Countries Covered

India | Pakistan | Nepal | Bhutan | Bangladesh | Sri Lanka

Climate & Food Security

Supports SDG goals with data-driven strategies

Piloted | Adopted | **Scaled**

Asia

Millet-Based Recipes & Youth Empowerment in Nigeria

Hands-On Training

120 rural youth trained | **3** across schools in Kano

Innovative Recipes

Millet Doughnut, Cake, "Make Me Well" meal, Peanut Snack, Couscous & Spaghetti

Entrepreneurship Support

Start-up machines provided for small-scale production

Knowledge Sharing

2000 training manuals on millet, sorghum & groundnut recipes distributed

Piloted | Adopted | Scaled

Africa

Impact from the Field

Millets for Change:

Integrated Research Driving Agriculture Transformation in the Drylands of Bihar, India

Advancing Food and Nutrition Security through the Centre of Excellence for Millets in Gaya

In Bihar's Gaya district, an ambitious initiative is quietly transforming the future of farming, nutrition, and rural livelihoods. At the heart of this transformation is the Centre of Excellence for Millets Value Chains, a collaborative effort by the Government of Bihar, ICRISAT, Dr Rajendra Prasad Central Agricultural University (RPCAU), Bihar Agricultural University (BAU), and local partners.

This initiative is more than just about producing and promoting millets-it's a full-spectrum approach to building climate-resilient agriculture, improving diets, empowering women, and developing rural economies. What makes it stand out is how it draws on the combined strengths of ICRISAT's three Global Research Programs-**Accelerated Crop Improvement, Resilient Farm and Food Systems, and Enabling Systems Transformation**-working together from the Genebanks which house the seed collections, through to community companies which sell the final products, in a coordinated, field-ready model.

Building Better Crops from the Ground Up

A major constraint for millet cultivation in Bihar has been limited access to high-performing, diverse varieties. ICRISAT's *Accelerated Crop Improvement* program addressed this through targeted research trials across multiple locations, for six species of millet. These trials have identified promising millet lines which are moving forward to registration trials, before being prepared for wider roll-out across the state.

The program has already engaged 150 farmers in seed production over 34 hectares and provided improved seed and training to over 140 more. The target for the 2024–25 season is 20,000 kg of quality millet seed—laying the groundwork for a robust local seed system.

Resilience in the Field

Meanwhile, the *Resilient Farm and Food Systems* program has been working directly with farmers to implement climate-smart cultivation practices. A model farm at Mayapur showcases rainwater harvesting and optimized irrigation—practical tools for farmers facing erratic rainfall and dry spells.

Field demonstrations and the introduction of simple mechanization tools have reached nearly 1,200 farmers, including 240 women. These interventions are helping smallholders increase productivity while reducing drudgery and risk.

Creating Value, Driving Change

The success of millet farming hinges not just on growing the crop—but also on making it valuable. This is where *Enabling Systems Transformation* comes in. The Centre is linking production to processing and markets, with product innovation and value addition built into its design.

Permanent millet processing units, with primary and secondary processing embedded in the community, are being planned. On-site demonstrations have already introduced farmers to tools and techniques for post-harvest processing, which not only reduce losses but also open up new income opportunities.

A strong focus on women's empowerment has been integral to the Centre's success. Women farmers have actively participated in training and field demonstrations, gaining access to knowledge and technologies that put them at the center of their communities' food systems.

A Model for Sustainable Food Futures

This Centre of Excellence is a model for state-led innovation. It is transforming Bihar's millet sector through research, capacity building, and inclusive systems development, laying a foundation for resilient and nutrition-secure communities.

Impact Area 2

Poverty Reduction and Livelihoods

ICRISAT enables **smallholder farmers** to earn more through sustainable agriculture and value chain development. From **boosting seed production in Mali and Niger** to **expanding millet processing in India**, these initiatives are increasing incomes, creating jobs, especially for **women and youth**. Improving yields, reducing input costs, and enhancing market access contribute to making farming a viable livelihood.

Strengthening Local Seed Systems in Northern Nigeria

Community Reach

Implemented in **20 communities** across Jigawa and Bauchi, benefiting **400–600 farmers** through Farmer Field Schools

Farmer Field Schools

The training equips **men and women with skills to grow**, select, and sell quality millet and sorghum seeds

Economic Impact

Empowers local businesses, boosts productivity, and reduces reliance on **external seed suppliers**

Partnerships

ICRISAT, Oxfam Nigeria, USAID, and CIMMYT.

Piloted | Adopted | Scaled

Africa

Restoring Land & Securing Seeds in Zinder, Niger

Land Restoration

Farmer-Managed Natural Regeneration Adopted

2465 villages restored | **4000** (10% Women) farmers benefited

Soil fertility | improved practices in use

Seed Production

100 tons produced | **66** farmers **3 cooperatives** involved

Market Value | **~80 Million XOF (~$ 36,000)**

Tree Cover & Soil Health

337,620 planted | **4,470** ha area covered

Higher Yields

up to **231%** Pearl millet yields increased

Capacity & Market Access

Farmers trained in seed production and linked to agro-dealers, with certification underway

Partnerships

Working with Catholic Relief Services to ensure lasting impact

Piloted | Adopted | Scaled — Africa

Millet Processing Empowers Women in Koraput, Odisha, India

Women's Empowerment

12 Women Self-Help Groups earn ₹ **300** (**$ 3.60**/day via millet processing

Sustainable Business

Processing unit generates ₹ **20L** (**$ 24K**) annually

Better Child Nutrition

3,663 students

55 schools receive millet meals

Policy Impact

Insights from the Pan-India Millet Value Chain Study inform market strategies & farmer incomes

Partnerships

ICRISAT, Odisha University of Agriculture & Technology, and Department of Agriculture

Piloted | Adopted | Scaled — Asia

Fertilizer Advisory Tool Boosts Yields and Incomes in Ethiopia

Higher Yields
17,585 farmers improved wheat, teff & sorghum yields (up to 29%)

Farmer Training
3286 farmers
910 extension agents trained in precision fertilization

Less Waste
20% reduction in fertilizer waste for healthier soils

Stronger Adoption
1570 on-farm trials fostered trust

Partnerships
ICRISAT & CGIAR Excellence in Agronomy

Piloted | Adopted | Scaled — Africa

Climate-Resilient Farming Revives Latur, India

Farmer Support
440 **households** benefited from land and water management

Land Restoration
320 **acres** protected from erosion and **30 hectares** of fallows revived

Higher Yields & Income
30% yield boost
$ 500,000 earned

Sustainable Practices
Ecosystem restoration enhances resilience

Partnerships
Led by ICRISAT under the Government of India's Atal Bhujal Yojana and CGIAR initiative- Sustainable Intensification of Mixed Farming Systems.

Piloted | Adopted | **Scaled** — Asia

Strengthening the Seed System in Mali and Niger

Jobs & Inclusion
1564 jobs created
68% for women

Seed Production
542.7 seeds produced
85.1 tons foundational

Stronger Supply Chains
970 producers
171 cooperatives

Wider Impact
1161 learning plots
347,584 people engaged
84,000+ households reached

Partnerships
Led by ICRISAT under ISSD-Sahel, funded by the Netherlands Embassy

Impact from the Field

Seeds of Change

How ISSD-Sahel is Growing Livelihoods and Reducing Poverty in Mali and Niger

The Challenge

In Mali and Niger, smallholder farmers face a critical barrier to improving their livelihoods: limited access to quality seeds. Low productivity and unreliable seed sources have long kept rural families locked in cycles of poverty.

The Solution

The Integrated Seed Sector Development in the Sahel (ISSD)-Sahel project was launched to change that. With the goal of transforming the seed sector into a driver of rural development, the project supports local seed production, market integration, and farmer empowerment, especially among women.

Working in close partnership with the Royal Tropical Institute (KIT), Netherlands; International Fertilizer Development Center (IFDC); Sasakawa Africa Association (SAA), funded by the Embassy of the Kingdom of the Netherlands, the project is producing the first-generation seeds that are essential for sustainable agricultural growth in the Sahel region.

What Changed? A Look at the Numbers

- **85.1** tons of early-generation cereal seeds produced (Foundation: 10.4 tons | Basic: 74.7 tons)
- **542.7** tons of certified seeds produced—exceeding the 400-ton target
- **1,564** jobs created, with 68% held by women
- **171** seed cooperatives mobilized, engaging 970 producers
- **1,611** learning plots established—nearly 3x the target
- **347,584** people reached via a national awareness campaign
- **84,292** households accessed seeds directly from pilot producers
- **41,688** households bought seeds from market points

Smart Innovations for Lasting Impact

- Pre-order systems helped align seed production with actual demand
- Seed Tracking and Tracing System (STTS) introduced to combat counterfeiting
- 20 business plans developed to unlock financing for seed entrepreneurs
- Demonstration plots and open house events enabled farmers to see results firsthand
- Participation in regional trade events expanded market access for local seed companies

"In 2023, the project created 1,564 jobs, with 68% of these roles filled by women, reinforcing the local seed production and distribution network," shared Mr Sidi Toure, focal point of the ISSD-Sahel project at ICRISAT, noting that this development is not only a testament to the project's success but also a catalyst for gender inclusion and rural job creation.

Why it matters?

By improving access to high-quality seeds, ISSD-Sahel is boosting farm productivity, increasing household incomes, and building more resilient rural economies. The project's inclusive approach—especially its focus on women and youth—ensures that no one is left behind. A national media campaign reached 347,584 people, resulting in 84,292 households acquiring quality seeds from pilot producers and 41,688 purchasing them from sales points.

Impact Area 3

Gender Equality, Youth and Social Inclusion

ICRISAT's work across Asia and Africa is advancing Gender Equality, Youth, and Social Inclusion by placing women, youth, and vulnerable communities at the center of agricultural transformation. Field initiatives foster inclusiveness in farming and enterprises, while studies on trait preferences, malnutrition, and nutrition literacy guide gender-responsive research and policy. By building leadership, these efforts are shifting the narrative—from participation to empowerment—in the regions that need it most.

Women, Water & Change: Transforming Bundelkhand, India

10,000
women empowered through **irrigation, income,** and **leadership**

15,000 Hectares of land now under climate-smart water management

Crop yields up **40-70%** **80%** of households in project areas saw improved food security scores

1.5-3 hrs/day saved on water collection, freeing time for livelihoods

Social shifts:
women lead farms, water committees, and local governance

Partnership
ICRISAT, the Government of Uttar Pradesh, and local NGOs

Piloted | Adopted | Scaled

Asia

Women-Led Pulse Farming in Rice Fallows in Odisha

Women Lead

53% of farmers are women, gaining income and leadership

Minimum Dietary Diversity of Women

29.7% to **43.9%** Increase

Pulse intake

Rises to **40.2 g/day** meeting Indian Council of Medical Research norms

Economic Gains

33% Rabi income is up, fallow land use doubled

Widespread Reach

152,601 farmers across **8 districts** with Govt–CGIAR support

Piloted | Adopted | Scaled

Asia

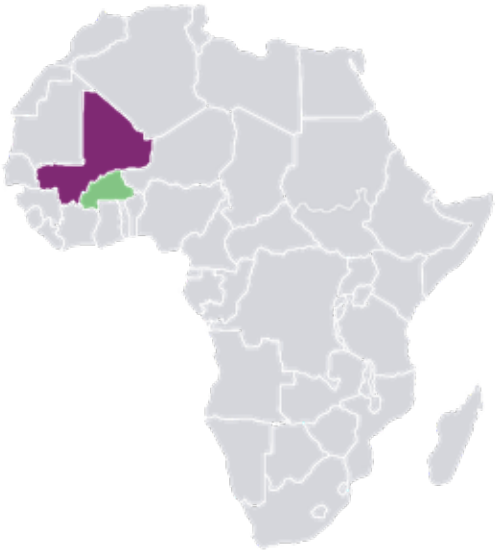
Study on Gender-Responsive Breeding in Mali and Burkina Faso

Inclusive Study: Covered women across the millet value chain – producers to consumers.

Strong Participation:
45% of 1,324 respondents were women.

Key Traits for Women:
Ease of cooking, food yield, decortication, and consistency.

Policy Insight: Breeding programs must reflect gendered trait preferences.



Published in: Frontiers in Sustainable Food Systems, Vol. 8 (2024) DOI.

High Prevalence
87% of 695 adolescent girls are underweight or stunted

Risk Factors
Early marriage, starchy diets, poor healthcare access

Education Link
Schooling tied to better nutrition

Hygiene Impact
Poor sanitation worsened health outcomes

Policy Urgency
Calls for action on education, sanitation, and empowerment

Study Highlights Malnutrition Crisis Among Indigenous Girls in Telangana

Asia

Study Reveals Nutrition Knowledge Gaps Among Women in Telangana

Survey Scope
536 pregnant women, mothers, and frontline workers in two districts

Key Finding
Mothers knew **50%** less about vital micronutrients than frontline staff

Behavioral Impact
Low awareness affected diets and nutrition practices

Method
Weighted response analysis identified literacy gaps

Published
SAGE Journals
Link

South-South Learning Fosters Millet Innovation and Enterprise

Global Training
27 participants | **11** countries | trained in millet processing and markets

Women & Youth Focus
Emphasis on small-scale millet enterprises

Shared Success
Participants share their successes and learnings

Organized by
ICRISAT under ITEC, with support from India's MEA

Piloted | Adopted | Scaled

Asia

Impact from the Field

From Labor to Leadership:

How Women Are Reshaping Agriculture in India

A new study released in 2024 reveals how women in rural India are taking on stronger roles in agriculture as more men migrate in search of work. Carried out by ICRISAT, the MS Swaminathan Research Foundation, Professional Assistance for Development Action (PRADAN), and the University of East Anglia, the research looked at four very different regions across India—forested, mountainous, semi-arid, and coastal.

Women Take the Lead

With many men away, women are no longer just supporting agriculture—they are leading it. In some of India's poorest regions, women have used remittances from migrant family members to invest in tools like water pumps and threshing machines. These investments have reduced hard labor and boosted productivity.

Women have also adopted new techniques, like trellis farming for vegetables, after receiving training through local development programs. This has improved food security at home and created new income opportunities through market sales.

Strength in Collectives

Across several regions, women's groups and federations have become powerful platforms for change. These groups help women access credit, lease land, and even advocate for better wages. In one area, a women's federation enabled members to take up dairy farming and lease land—activities that were once out of reach.

While social barriers such as caste and land ownership still exist, these collectives are helping women push boundaries and make their voices heard.

Everyday Decisions, Bigger Roles

The study found that women are increasingly involved in farming decisions—what to grow, when to sell, and how to invest. In coastal areas, for example, strong social networks and SHGs (self-help groups) allowed women to lease more land and increase their farm outputs.

Not One Story, But Many

Importantly, the study shows there's no single story of change. A woman's age, marital status, caste, and family setup all affect how much freedom and responsibility she has. Younger women in joint families, for instance, often have less decision-making power than older women in nuclear families.

Seasonal migration patterns also make a difference—some women manage farms on their own, while others collaborate with their husbands when they return during peak farming seasons.

In regions with a long history of male migration, women who had gained confidence through dairying and federation membership were even beginning to engage with local governance.

What Needs to Change

The research calls for stronger policies that go beyond welfare programs and truly empower women. This means giving them the right to own land, access resources, and lead farming decisions.

Read more

Impact Area 4

Climate Adaptation and Mitigation

ICRISAT's **climate-smart innovations** help smallholders adapt to climate risks while improving yields, restoring ecosystems, and reducing emissions. From drought-tolerant crops and mobile kraaling to digital climate tools and carbon farming, these scalable solutions link resilience with better nutrition, income, and environmental health—powered by strong partnerships across Africa and Asia.

Dwarf Sorghum Innovation for Conflict-Affected Farming in Nigeria

Security-Ready
Replaces banned tall **sorghum** in **conflict zones** with a **dwarf variety (<1m)** for better field visibility

Fast Growth
Early maturity (75 days) minimizes conflict and **drought risks**

Nutrient-Rich
High iron & zinc (>50ppm) enhances nutrition

Mechanization-Friendly
Enables efficient harvesting and **lowers labor costs**

High Grain Yield
3+ tons/ha Dual-purpose variety yields

Partnerships
Developed by ICRISAT & IAR Samaru-Zaria

Piloted | Adopted | Scaled — Global

Climate Information Boosts Farmer Resilience and Income in Niger

Local Forecasting
96 extension workers
167 villages trained in rainfall monitoring

Farmer Training
966 smallholders
(32% women) use CIS for better planning

Higher Earnings
Up to
XOF **24,943**/ha
($ 42.4)
gained with timely CIS use

Time Savings
Farmers saved
8-36 hours/ha optimizing farm activities

Partnerships
ICRISAT & Catholic Relief Services

Piloted | Adopted | Scaled

Africa

Earth Observation Drives Climate Action in West Africa

Local Forecasting
Supports restoration, mining oversight, and water/crop monitoring in **3 countries**

Capacity Built
308 people
68 institutions trained

Practice Change
61,509 farmers adopted better land use

Sustainability
19,395 ha improved

15,264 ha
mitigating emissions under SERVIR West Africa

78,239
People Reached

Piloted | Adopted | Scaled

Africa

Mobile Kraaling: Boosting Soil Fertility & Yields in Southern Africa

Efficient Fertilization
30-70% nutrient loss
Livestock manure is applied directly

Strong Adoption
1,000+ farmers
910 extension agents trained in precision fertilization

Yield Gains
1,000+kg/ha
increase over traditional methods

Community Reach
250+ engaged at Hwange Agroecology Fair

Collaborative Model
Led by ICRISAT with TAKUNDA partners

Piloted | **Adopted** | Scaled

Africa

Water for Change: Restoring Farms in Uttar Pradesh, Maharashtra and Odisha

Bundelkhand: From Scarcity to Sustainability

Water Storage
15.7M m³ harvested
4.2M m³ capacity

Groundwater
3-10 m harvested
4,000 wells revived

Farm Productivity
20-60% yield increase
40-70% lower cultivation costs

Income Growth
₹ 30,000–70,000
▼
₹ 80,000 - 350,000
($ 360 - 840 ▸ $ 960 - 4200)

Sustainability
250,000 trees planted
7,000 ha fallow land revived

Latur: From Drought to Development

Water Storage
0.35M m³ harvested
0.11M m³ capacity

Groundwater
4-10 m harvested
150 wells revived

Farm Productivity
30% yield increase
25% less diesel use

Income Growth
₹ 80,000 –1,20,000
($ 960-1440)
▼
₹ 1,10,000 – 2,00,000
($ 1320-2400)

Livelihoods
Milk yield up
0.5 L/day per animal

Angul, Odisha: Gravity-Based Irrigation in Odisha

Water Storage
4,000 m³ capacity farm ponds created

Groundwater
500 demonstrations conducted to educate farmers

Farm Productivity
Cropping intensity increased from
60% to **130%**

Income Growth
Crop yields improved by
15% to **60%**

Livelihoods
Annual household income increased by
₹ 10,000 – 22,000

Odisha PVTG Empowerment & Livelihood Improvement Program Project

Water Storage
81,000 m³ of storage capacity created to harvest **0.45 M m³** of surface runoff annually

Groundwater
20 hectares brought under supplemental irrigation

Farm Productivity
300 acres Enabled crop intensification across

Income Growth
Cropping intensity increased from
40% to **120%**

Livelihoods
Annual household income increased from
₹ 4,500 – 30,000

Science-Backed Gains in Rural Odisha

Better Yields
4,550 households
15-41% gains from soil-test-based farming

Higher Incomes
₹ 10,500-18,000/ha ($ 126-216)
Pulses/vegetables added

Women-Led Enterprises
400 households earned **₹ 2,000-3,500/month ($ 24-42)** earned from mushrooms

Digital Advisory
4,080 trained via **136** sessions
ISAT app piloted

Partnerships
With Govt of Odisha, OLM, and NGOs

Asia

Piloted | **Adopted** | Scaled

Impact from the Field

Enhancing Farmers' Resilience in Senegal

AICCRA Project: Empowering Farmers through Climate-Smart Agriculture and Climate Information Services

In Senegal, the **AICCRA project** is making a significant impact by strengthening farmers' ability to adapt to climate change. By integrating **Climate-Smart Agriculture (CSA)** practices with **Climate Information Services (CIS)**, the project empowers farmers to make informed decisions, boost their productivity, and reduce climate-related risks.

The success of the Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) project is driven by strong partnerships between CGIAR centers, government agencies, private sector players, and national research institutions. These collaborations have enabled the project to reach a wide number of farmers and provide them with reliable climate information and tools to improve agricultural practices.

Over the past three years, the project has introduced climate-resilient seed varieties and soil fertility management practices across 26 villages in Senegal. By integrating seasonal weather information into farming decisions, farmers have been able to better plan for climate extremes and enhance their crop yields.

Engaging Farmers through Participatory Extension

A core component of the AICCRA project's success has been its Participatory Extension Approach. Through training sessions, workshops, and field demonstrations, farmers have learned about CSA techniques and adopted them effectively. Over 300 farmers have attended workshops at community technology parks, and 241 demonstration sites have been established across the country.

Farmers Share Their Experiences

Farmers are seeing real benefits from the project's activities. During the June 2024 pre-season training, 100 farmers shared their stories:

> Thanks to the AICCRA project, we received high-quality, climate-adapted seeds. Initially skeptical, many farmers saw improved yields in the demonstration plots, and now we're adopting these new varieties widely.
>
> **– Mr Mourtalla Ndiaye, a pilot farmer**

> The AICCRA project's increased seeding rates boosted millet production, even in areas with limited land. It's a game-changer for sustaining millet farming.
>
> **– Mr Isma Mbaye**

> A farmer using agro-advisory services, emphasized: Receiving timely weather updates has been invaluable. It helped protect my crops from unexpected rain and allowed me to plan my farming activities better.
>
> **– Mr Mr Abdoulaye Niang**

Read more

Impact Area 5

Environmental Health and Biodiversity

ICRISAT advances environmental health and agrobiodiversity by conserving genetic resources, restoring ecosystems, and promoting eco-friendly innovations. From seed repatriation and conserving small millets to AI-driven plant health, composting weeds, mobile soil testing, and using solar-powered harvesters, its science-led, community-driven partnerships are scaling sustainable solutions for healthier soils, resilient crops, and thriving rural landscapes.

ICRISAT Genebank Secures Dryland Diversity at Svalbard, Norway

Accessions deposited

2,950 seed accessions | **56** dryland crops deposited

among the largest recent global deposits. Includes **9 wild groundnut** relatives new to the Vault

Accessions conserved

131,000+ accessions | **144** countries

97% duplicated at Svalbard

Partnerships

Crop Trust, NordGen, and Norwegian Ministry under the BOLD Project.

Piloted | Adopted | Scaled — Global

ICRISAT Repatriates Germplasm to South Korea

Accessions Repatriated 160

- Sorghum 73
- Proso millet 29
- Groundnut 48
- Foxtail millet 10

Mission Focus

ICRISAT's repatriation effort is part of a broader mission to preserve plant biodiversity and restore national seed collections

ICRISAT's Global Mission

55,800+ accessions repatriated to **12** countries

Partnerships

South Korea's National Genebank under the ITPGRFA framework

Technology on Wheels: Mobile Soil Testing for Farmers

Mobile Lab

1,775 samples from **20 villages** tested, and **603 soil health cards** customized with advice

Farmer Training

20 sessions | **16** compost demos to promote nutrient use

School Outreach

6 programs reached | **1400** students | **50** staff

Community Engagement

2,850 farmers | **20,736** people reached via events and digital media

Partnership: CSR initiative by Laurus Labs Charitable Trust with ICRISAT

Piloted | Adopted | Scaled

Asia

Small Millets Field Day Hyderabad, India

Diversity Showcased
7,000+ lines of six small millets displayed

Engagement
51 researchers from **24 institutions**

Outcomes
4 collaborations
800+ seed samples shared

Key Traits
Drought tolerance, blast resistance, early maturity, high yield, nutrition

Hosted by
ICRISAT Genebank

AI for Plant Health

Early Detection
Cuts pesticide use, protecting soil and water

Massive Reach
40M+ users
Top agri app on Google Play

Smart Diagnostics
AI detects
780+ crop issues
(90% accuracy, 35 crops)

Inclusive Access
20 languages, including Swahili; accessible to all.

Data-Driven
100M+ geo-tagged images enable real-time eco-advice.

Partnership
ICRISAT and Plantix

Piloted | Adopted | Scaled

Asia

Waste to Wealth: Clean-Tech for Restoring Ecosystems & Livelihoods

Eco-Innovation
₹ 200,000 ($ 2400) Low-cost solar harvester clears ponds and removes **70% of weeds**, restoring biodiversity

Waste to Compost
2,200 tons hyacinth converted
1,300 tons of compost
replacing **2,260 urea** bags annually

Women-Led Impact
5 SHG-run compost units generating income;
15–20% farmer adoption supported by **45 trainings**

Ecosystem Gains
10 ponds revived, fish farming enabled, **soil** and **crop diversity improved**

Biochar Boost
Community-scale biochar model enhances soil and sequesters carbon

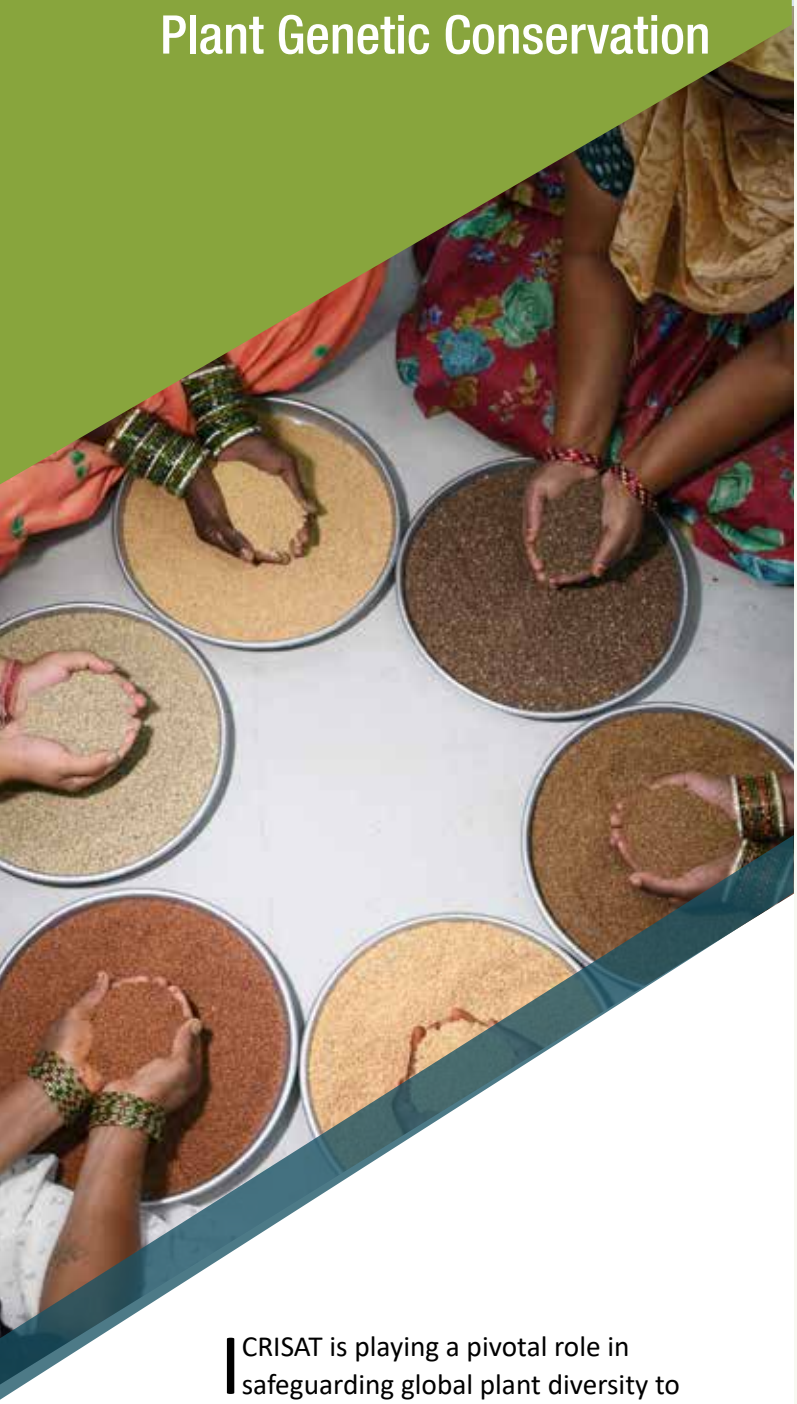
Piloted | Adopted | Scaled

Asia

Impact from the Field

Safeguarding Plant Diversity

ICRISAT's Global Efforts in Plant Genetic Conservation



ICRISAT is playing a pivotal role in safeguarding global plant diversity to ensure food security and climate resilience. In 2024, the institute's Genebank undertook several significant initiatives that highlight its commitment to preserving plant genetic resources and fostering collaborative research.

Repatriation to South Korea: Strengthening Global Partnerships

As part of its mission to restore and protect plant diversity, ICRISAT repatriated four key crops—sorghum, groundnut, foxtail millet, and proso millet—to the National Genebank of South Korea. This repatriation aligns with the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), which promotes global conservation efforts. The crops, critical to agricultural systems in Asia and beyond, were flagged off by ICRISAT's leadership team.

Showcasing Small Millets at the Genebank Field Day

On 11 November 2024, ICRISAT hosted its 3rd Genebank Small Millets Germplasm Field Day at its headquarters in Hyderabad, India. Over 7,000 small millet germplasm lines were displayed, drawing 51 researchers from 24 organizations, including public and private sector representatives, the Indian Institute of Millet Research (IIMR), and other institutions. These millets, including finger millet, foxtail millet, barnyard millet, and others, are vital to global food security, especially in semi-arid regions.

The event provided a platform for researchers and breeders to assess germplasm with valuable traits such as drought tolerance, disease resistance, and higher yields. Participants also discussed key challenges and opportunities for small millets, including non-lodging, synchronous maturity, and herbicide tolerance.

Depositing Seeds at Svalbard: Securing Future Food Systems

ICRISAT's commitment to global plant diversity also extends to the Svalbard Global Seed Vault, a critical backup facility for genebanks worldwide. In October 2024, ICRISAT deposited 2,950 seeds from 56 species, including pearl millet, sorghum, and wild relatives of the peanut (groundnut), some of which are new to the Vault. These seeds are part of a 100-year experiment, where six international partners will periodically assess their viability, ensuring a lasting safety net for food security.

A Unified Effort for Global Food Security

The ICRISAT Genebank in Hyderabad, supported by regional banks in Niger and Zimbabwe, remains at the forefront of ensuring future food security through the protection and sustainable use of plant genetic resources.

Section 3

ICRISAT Governance, Leadership and Global Representation

ICRISAT Governing Board Members

Prabhu Pingali
Chair, ICRISAT Governing Board
USA

Himanshu Pathak
Vice Chair, Secretary, Department of Agricultural Research and Education & Director General, ICAR, India
(Ex officio member)

Devesh Chaturvedi
Secretary, Ministry of Agriculture and Farmers Welfare
(from Aug 2024)

Manoj Ahuja
Secretary, Ministry of Agriculture & Farmers Welfare, India
(until July 2024)

A Santhi Kumari
Chief Secretary of the State of Telangana, India
(Ex officio member, from Jan 2023)

Jacqueline Hughes
Director General, ICRISAT
(until October 2024)

Stanford Blade
Interim Director General, ICRISAT
(from November 2024)

Yaye Kene Gassama
Member, Audit and Risk Committee
Senegal

Yilma Kebede
Chair, Program Committee
Ethiopia

Cathy Reade
Chair, Corporate Governance Committee
Australia

Regine Andersen
Member, Corporate Governance Committee
Norway

Folasade Ogunde
Chair, Audit and Risk Committee
Nigeria

Nicholas Austin
CGIAR Integrated Partnership Board member, Australia
(From Dec 2024)

Alice Ruhweza
CGIAR Integrated Partnership Board member, Uganda (From Dec 2024)
Transitional Board member from the CGIAR System Board
(January – June 2024)

Shenggen Fan
Transitional Board member from the CGIAR System Board
January – June 2024

Patrick Caron
Transitional Board member from the CGIAR System Board
January – June 2024

Research Leadership

ICRISAT's Research Directors form an outstanding team of leading global scientists pivotal in shaping the Institute's scientific pursuits and spearheading innovation in dryland agriculture. With robust scientific and academic backgrounds, they bring diverse expertise in agronomy, genetics, plant breeding, economics, and social sciences and more. This diversity enriches our research landscape and fosters interdisciplinary collaboration to address the multifaceted challenges in the drylands of Africa, Asia and beyond.

Dr Stanford Blade
Deputy Director General – Research and Innovation

Dr Rebbie Harawa
Regional Program - Africa

Dr Victor Afari-Sefa
Global Research Program - Enabling Systems Transformation

Dr Mangi Lal Jat
Global Research Program - Resilient Farm and Food Systems

Dr Sean Mayes
Global Research Program - Accelerated Crop Improvement

Corporate Leadership

ICRISAT's Corporate Services Division ensures the seamless operation of ICRISAT's mission. The division supports all departments, allowing them to concentrate on their primary tasks while overseeing essential functions such as Human Resources, Communications, Finance and Business Development.

Sanjay Agarwal
Assistant Director General

Ramkumar Ramaswamy
Corporate Services

Lydia Murimi
Business Development

Kunal Sarkar
Human Resources

Ramon Peachey
Communications

Country Representatives

ICRISAT's Country Representatives are instrumental in advancing the Institute's mission by devising local solutions for unique dryland challenges. Serving as the face of ICRISAT, they leverage their deep understanding of local contexts to collaborate with farmers, communities, and governments. Through partnerships and advocacy, they promote innovative technologies, sustainable practices, and resilient crop varieties tailored to specific agro-ecological conditions. Their efforts help bolster agricultural systems, enhance livelihoods and ensure improved food security in dryland regions.

Dr Rebbie Harawa
Kenya

Dr Martin Philani Moyo
Zimbabwe

Dr Andre F van Rooyen
Ethiopia

Dr Samuel M C Njoroge
Malawi

Dr James Mwololo
Mozambique

Dr Falalou Hamidou
Niger

Dr Ignatius Angarawai
Nigeria

Dr Ayoni Ogunbayo
Mali

Section 4

CORPORATE SERVICES

Corporate Operations: Driving Operational Excellence and Sustainability

The vision for Corporate Services is to establish a sustainable operating and financial model that supports ICRISAT's long-term success. Corporate Services encompass key functions, including Finance, Digital Solutions, Farm and Engineering Services, Procurement, Housing and Food Services, Travel, Security, Transport, and Health.

In the reporting period, the Finance and Procurement teams advanced the implementation of Oracle NetSuite. This strategic upgrade is designed to automate and streamline transaction processing and reporting, while strengthening internal controls and governance.

The Digital Solutions team focused on accelerating digitalization, strengthening enterprise infrastructure, expanding cloud adoption, enhancing information security, and leveraging data and artificial intelligence for strategic advantage. Significant projects were successfully delivered across all these priority areas.

Farm and Engineering Services continued to play a critical role in enabling field research by maintaining and upgrading farms, glasshouses, laboratories, and vital utilities such as power, water, refrigeration, and air conditioning. In support of ICRISAT's sustainability agenda, a 500KW rooftop solar power plant was commissioned, with feasibility studies underway for further capacity expansion. Innovative technologies, such as drone-based spraying, were also introduced to modernize operations.

The Medical Services team enhanced holistic wellness across the Institute by improving primary healthcare access, introducing preventive health programs, providing safety training, and organizing wellness camps. The field medical unit continued to offer 24/7 emergency response services, safeguarding the health of staff, students, farm workers, and visitors.

Housing and Food Services made significant strides toward realizing their vision of delivering a world-class guest and visitor experience. Efforts included the digitalization of operations, continuous quality improvements, expansion of service offerings, and targeted training for chefs and hospitality teams.

The Security team upheld the highest standards of safety and security on campus, notably through the digitalization of the visitor management system to ensure a seamless and secure visitor experience.

The Transport team ensured the provision of safe, reliable, and efficient transportation services to staff, guests, and visitors, reinforcing ICRISAT's commitment to operational excellence.

Human Resources: Building a Resilient Organization

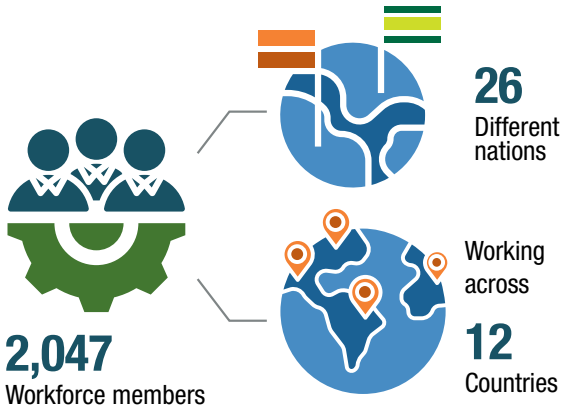
In 2024, ICRISAT achieved significant progress in employee engagement, operational efficiency, and workforce development, reinforcing its commitment to building a resilient and high-performing organization.

Capability building was a key priority, with 44 learning sessions conducted across 18 unique programs, reaching over 300 staff members. These initiatives reflect ICRISAT's focus on fostering a culture of continuous learning and professional growth.

Structured career progression frameworks and targeted compensation and benefits interventions were implemented to attract, engage, and retain top talent, ensuring alignment with the Institute's strategic objectives.

A major highlight of the year was the CGIAR Workforce Engagement Survey results, where ICRISAT outperformed the overall survey sample and benchmark median across all 13 assessed dimensions. This outcome affirms the Institute's ongoing commitment to enhancing the employee experience. Voluntary attrition remained low at 5%, indicating strong employee satisfaction and organizational stability.

In parallel, ICRISAT successfully transitioned to a modern and agile Human Resources Information System (HRIS), streamlining HR operations, enhancing performance management, and supporting data-driven decision-making.



Business Development and Partnerships: Mobilizing Resources for Greater Impact

Collaboration remains at the core of ICRISAT's research and innovation agenda. In 2024, ICRISAT deepened relationships with existing donors and expanded its diverse network of partners and funders.

Aligned with the Institute's new Research and Innovation Strategy, these partnerships enabled the pursuit of transformative initiatives, enhanced farmer livelihoods, and accelerated the exchange of knowledge and expertise. They also played a crucial role in building the capacities of farmers and government stakeholders, fostering the development of innovative and resilient technologies to address emerging global challenges.

A delegation from the Confederation of Indian Industry (CII) Telangana engaged in a focused panel discussion and interactive session with ICRISAT on 15 November 2024, to explore collaboration opportunities in agriculture and food processing. Key stakeholders, including government officials, industry leaders, and ICRISAT scientists, attended.

An ICRISAT delegation, led by Dr Rebbie Harawa, Regional Director for Africa, and Ms Lydia Murimi, Director of Business Development, held a successful meeting with the Islamic Development Bank. The discussions centered around a shared vision for transforming drylands and enhancing agricultural resilience.

In January 2024, ICRISAT Headquarters hosted the CGIAR Legal Focal Points' Global Meeting from 23–25 January, bringing together legal experts from across the CGIAR system to strengthen collaboration and knowledge exchange.

Communications and Outreach: Amplifying Global Impact, Building Trust, and Inspiring Action

In 2024–2025, the Communications Department played a pivotal role in elevating ICRISAT's visibility, supporting strategic initiatives, and strengthening stakeholder engagement. Through the production of flagship publications—including the Strategic Plan 2025–2030 and the Africa Vision 2025–2030—and the rollout of refreshed communication policies, the team contributed to strengthening ICRISAT's leadership in dryland agri-food systems innovation.

Digital engagement expanded significantly, with the website attracting close to 80,000 visitors, integration of new event and visitor management tools, and broader visibility through CGIAR's CGSpace platform. Social media audiences grew strongly across all platforms, with ICRISAT achieving one of the highest engagement rates among all CGIAR centers.

ICRISAT's visibility continued to grow, with over 880 media stories secured during the reporting period. The Communications team also provided critical support to major global events such as CGIAR Science Week and COP16, while enhancements to Visitor Services—through digitalization—helped deliver a 96% positive visitor experience rating.

Internally, Communications completed 362 service requests—including those from hosted centers—covering editorial, graphic design, videography, and printing projects and also managed the curation and dissemination of 211 scientific publications to the Open Access Repository. Special marketing initiatives, such as Science Week campaigns and donor engagement stories, directly contributed to new partnership opportunities and heightened donor interest.

Recognizing regional staffing challenges, Communications developed a cost-neutral plan to expand communication capacity across Africa by reallocating existing roles. Through strategic storytelling, digital innovation, and operational excellence, the Communications Department continues to drive global visibility for ICRISAT's research and reinforce its leadership in transforming dryland agriculture.

Highlights

In July 2024, ICAR and ICRISAT renewed their long-standing collaboration in New Delhi. Dr Himanshu Pathak, then Director General of ICAR, and Dr Jacqueline Hughes, then Director General of ICRISAT, signed a five-year work plan (2024–2028) to strengthen joint research and development initiatives.

Media

2,300 mentions

YouTube

20 videos

108,500 total views

1.8M impressions

1,200 new subscribers

Website interactions

407,169 visits

Visitors

14,149 visitors to ICRISAT HQ

X (formerly Twitter)

53,468 followers

30,771 engagements

379,486 impressions

Facebook

33,714 followers

59,599 engagements

1.6M impressions

LinkedIn

125,983 followers

206,322 engagements

2M impressions

Instagram

466 followers

1767 engagements

27,396 impressions

Dr Ismahane Elouafi, Executive Managing Director of CGIAR, visited ICRISAT's headquarters from 30 - 31 January 2024, to strengthen collaboration and engage with ongoing research and innovation initiatives.

In February 2024, ICRISAT launched its revamped website, unveiled by Dr Jacqueline Hughes alongside Dr Victor Afari-Sefa (GRP Director - Enabling Systems Transformation), Mr Ramon Peachey (Director of Communications), and Ms Tahira Carter (Head of Communications). The new platform serves as a comprehensive hub for dryland agricultural research, news, and resources.

Section 5

KNOWLEDGE PRODUCTS

Publications

254
Research and review papers

1 Conference output

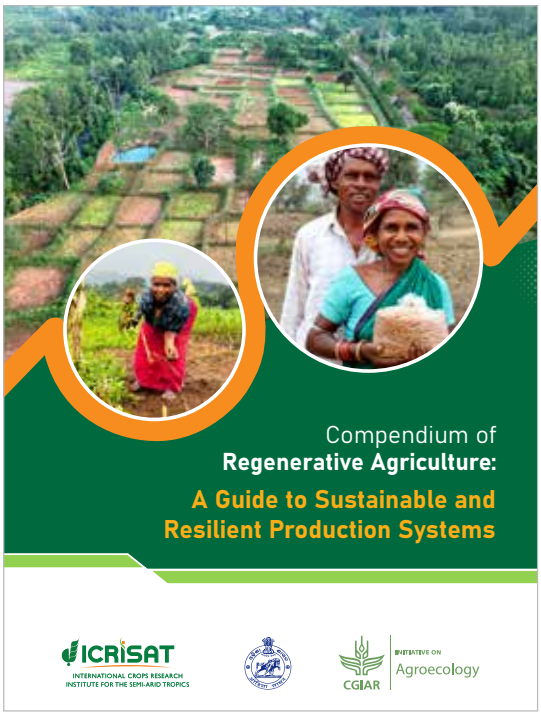
10
Monographs

1
Thesis

35
Book chapters

1
Book

2
Policy Briefs



ICRISAT
INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS

About

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a pioneering non-profit organization focused on scientific research for development, committed to transforming dryland farming and agri-food systems. Working with global partners, ICRISAT develops innovative solutions to address hunger, poverty, and environmental degradation, benefiting 2.1 billion people across the drylands of Asia, Africa, and beyond.

ICRISAT was established under a Memorandum of Agreement between the Government of India and CGIAR, dated 28 March 1972. In accordance with the Headquarters Agreement, the Government of India has extended the status of a specified "International Organization" to ICRISAT under section 3 of the United Nations (Privileges and Immunities) Act, 1947 of the Republic of India through Extraordinary Gazette Notification No. UI/222(66)/71, dated 28 October 1972, issued by the Ministry of External Affairs, Government of India.

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