

# CATALYST

Collaboration for Agricultural Transformation through Advanced Learning, Science & Technology



*Accelerating  
Innovation from  
Research to Farmers*



# Contents

iv	Foreword
1	Executive Overview
2	About ICRISAT
2	Benefits of Partnering with ICRISAT
4	ICRISAT's Research Programs
7	Our Service Offerings and Ways to Partner
9	Research Grant Model
11	Incubation Membership and Onboarding at ICRISAT
12	Research for Development Services
17	Consulting and Advisory Services
21	Technology and Digital Solutions
25	Training and Capacity Building
30	Pricing Information
31	Annexure A
34	Annexure B
39	Annexure C
40	How to Engage with ICRISAT
40	Contact Information



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## Foreword

Agriculture in the dryland tropics is entering a new era of transformation. Advances in science and technology, rising demand for resilient and nutritious food systems, and momentum for sustainable growth are creating new pathways for crop improvement, stronger farming systems and expanding agri-food markets. For the private sector, this represents a significant commercial opportunity to partner in advancing dryland agriculture while delivering innovations that strengthen livelihoods, food security and climate resilience.

For more than fifty years, ICRISAT has been a global leader in agricultural innovation, drawing on deep scientific expertise and a strong track record of impact across Asia and sub-Saharan Africa. Our work spans crop improvement, resilient farming systems, agri-food systems transformation, digital agriculture, nutrition, natural resource management and capacity strengthening. Across these domains, ICRISAT has pioneered world-first innovations, translating scientific discovery into practical solutions that address real production challenges, strengthen markets and deliver measurable benefits for farmers and food systems.

CATALYST builds on this legacy by creating new opportunities for strategic collaboration with the private sector, investors, innovators, and development partners. Through this initiative, partners can leverage ICRISAT's scientific expertise, research infrastructure, and field-validation networks to accelerate innovation and bring new technologies and solutions to market.

The advantages of partnership are substantial. Working with ICRISAT enables companies to reduce research and development risk, strengthen and accelerate product pipelines, access advanced laboratories and testing platforms, draw on extensive genetic resources, and validate technologies across diverse agroecologies. Equally important, partners benefit from ICRISAT's implementation pathways that support commercialization, market expansion, and measurable impact.

Our speciality crops and systems research are grounded in the realities of dryland agriculture, where resilience, productivity, and competitiveness must advance together. This provides private sector partners with a strong foundation for innovation across a wide range of opportunities, from seeds and digital tools to sustainable inputs, food products, climate services, and emerging agribusiness models.

CATALYST offers a practical framework for engagement, enabling businesses, investors, and innovators to work with ICRISAT to develop solutions that are scientifically robust, field-tested, and scalable while supporting long-term growth and market development.

We warmly invite new partners to explore the opportunities presented in this catalog and to join us in advancing the next generation of science-based agricultural innovation. In collaboration, we can accelerate progress from research to farmers, from innovation to markets, and from partnership to lasting value.







## Executive Overview

ICRISAT partners with the private sector to accelerate science-driven innovation across dryland agriculture in Asia and sub-Saharan Africa.

With more than five decades of applied research experience, ICRISAT combines advanced scientific capability, multi-location field validation platforms and deep smallholder networks to support product development, technology validation and sustainable market expansion. Our mandate crops and farming systems research are grounded in real production environments, ensuring that innovations are scientifically robust, field-tested and scalable.

For private sector partners, this translates into:

- Reduced research and development risk through validated scientific platforms
- Accelerated varietal and product development pipelines
- Access to extensive genetic resources and advanced breeding technologies
- Independent testing and performance validation across diverse agroecologies
- Digital agriculture tools that enhance precision, traceability and impact measurement
- Structured incubation and commercialization pathways

ICRISAT operates within a transparent governance framework and upholds rigorous scientific, legal and compliance standards. Our engagement models are designed to be flexible, accountable and aligned with partner objectives.

We work with seed companies, agribusiness enterprises, technology firms, investors and development finance institutions to co-create solutions that strengthen climate resilience, productivity and market competitiveness across the drylands. The foundation of this partnership approach is ICRISAT's scientific mandate, institutional credibility and multi-country operational footprint.

# About ICRISAT

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a nonprofit, nonpolitical public international research organization that conducts agricultural research for development in Asia and sub-Saharan Africa with a wide array of partners worldwide.

ICRISAT focuses on dryland cereals including sorghum, pearl millet, finger millet and small millets; grain legumes including chickpea, pigeonpea and groundnut; and integrated dryland systems that underpin food, nutrition and income security across the semi-arid tropics. The institution's work addresses critical challenges in agriculture, including:

- Climate-resilient crop improvement
- Sustainable intensification of farming systems
- Market-led agricultural development
- Digital agriculture and innovation
- Nutrition and food security



## Benefits of Partnering with ICRISAT

Collaboration with ICRISAT offers private sector partners distinctive scientific, operational and strategic advantages.

### World-Class Research Infrastructure

Access advanced laboratories, controlled environment facilities and multi-location field research platforms across Asia and sub-Saharan Africa. ICRISAT's infrastructure supports product development, trait validation, performance testing and systems research under diverse agroecological conditions.

### Scientific Expertise

Engage with internationally recognized scientists and technical specialists with deep expertise in dryland agriculture, genomics, crop improvement, natural resource management and agricultural systems science. ICRISAT teams combine fundamental research capability with applied field experience to accelerate innovation and problem-solving.



### **Genetic Resources**

Benefit from access to one of the world's largest collections of dryland crop germplasm. This extensive genetic resource base strengthens breeding pipelines, supports trait discovery and enables the development of resilient, market-responsive crop varieties.

### **Global Network**

Leverage ICRISAT's long-standing partnerships with national agricultural research systems, development institutions and private sector organizations across Asia and sub-Saharan Africa. These networks facilitate field validation, regulatory engagement and market linkage opportunities.

### **Transparency and Impact**

Operate within a framework grounded in transparent processes, rigorous scientific standards and accountable partnership management. ICRISAT emphasizes evidence-based results, enabling partners to demonstrate performance, sustainability and measurable impact.

# ICRISAT's Research Programs

ICRISAT delivers its mandate through three integrated Research Programs that anchor its scientific, systems and market transformation work.

## Accelerated Crop Improvement (ACI)

The Accelerated Crop Improvement Program leads ICRISAT's efforts to develop improved dryland crop varieties for Africa, Asia and other regions of the semi-arid tropics.

The program applies advanced breeding technologies and innovative methodologies to develop high-performing crop varieties with enhanced yield potential, improved nutritional quality and greater resilience to biotic and abiotic stresses. These efforts integrate genomics-assisted selection, gene editing, phenomics and speed breeding to accelerate genetic gain and reduce varietal development timelines.

By combining cutting-edge science with extensive multi-location field validation networks, ACI enables partners to shorten development timelines and enhance the competitiveness of their varietal portfolios.

## Resilient Farming Systems (RFS)

The Resilient Farming Systems Program strengthens the resilience and sustainability of rural production systems across the semi-arid tropics. It integrates plant science, agronomy and technology development to design and validate climate-resilient farming solutions that respond to evolving environmental and market conditions.

At its core, the program develops and tests diversified crop–livestock–agroforestry systems that improve risk management, enhance income diversification and increase resource use efficiency. These systems are grounded in ecological principles and supported by applied research to ensure field-level feasibility and scalability.

RFS advances regenerative agriculture through soil health innovations, including improved monitoring and management approaches that enhance soil function, productivity and long-term sustainability. The program also supports emerging opportunities in carbon and nature-based markets by generating the evidence and measurement frameworks required for credible participation.

Through field validation platforms and structured partnership models, RFS offers partners a science-based pathway to scale sustainable farming systems, strengthen supply chain resilience and unlock new value in climate-smart agriculture across dryland regions.

## Transforming Agri-Food Systems (TAS)

The Transforming Agri-Food Systems Program advances holistic improvements across agricultural value chains by addressing upstream and downstream components of the food system.

The program promotes sustainable and resilient agri-food systems through institutional strengthening, policy engagement, agri-entrepreneurship development, inclusive innovation and nutrition-sensitive approaches. It integrates gender equity and social inclusion principles to ensure equitable participation and benefit sharing.

By linking production systems to markets, finance and policy environments, TAS facilitates scalable pathways for inclusive and market-responsive agricultural transformation.







## Our Service Offerings and Ways to Partner

ICRISAT offers a structured portfolio of services designed to support innovation, product development, validation and market expansion in partnership with the private sector.

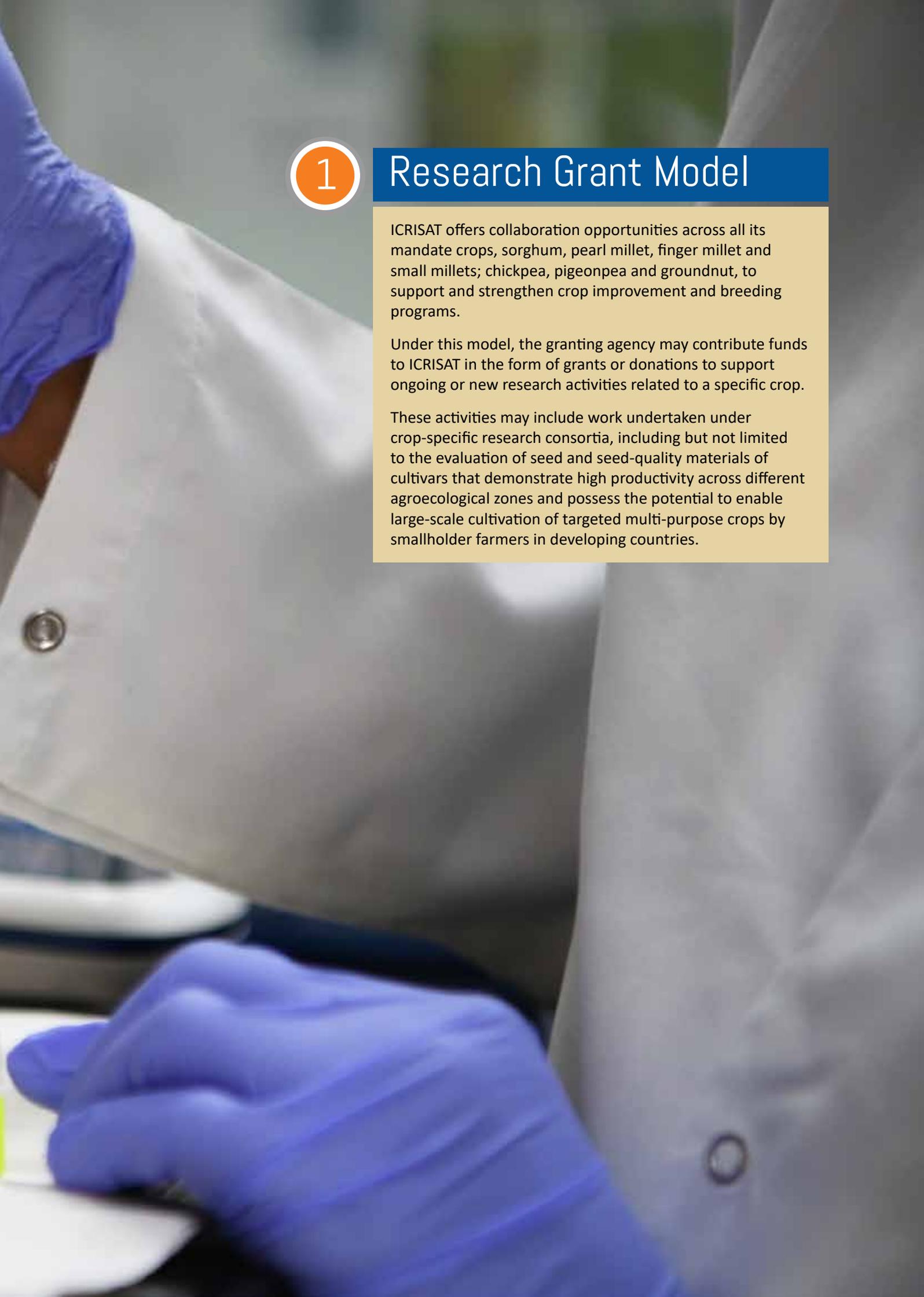
Corporate engagement with ICRISAT can begin through structured licensing and incubation pathways, in addition to access to specialized research, digital and capacity-strengthening services.



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## Research Grant Model

ICRISAT offers collaboration opportunities across all its mandate crops, sorghum, pearl millet, finger millet and small millets; chickpea, pigeonpea and groundnut, to support and strengthen crop improvement and breeding programs.

Under this model, the granting agency may contribute funds to ICRISAT in the form of grants or donations to support ongoing or new research activities related to a specific crop.

These activities may include work undertaken under crop-specific research consortia, including but not limited to the evaluation of seed and seed-quality materials of cultivars that demonstrate high productivity across different agroecological zones and possess the potential to enable large-scale cultivation of targeted multi-purpose crops by smallholder farmers in developing countries.





2

## Incubation Membership and Onboarding at ICRISAT

The Agribusiness Incubation Program at ICRISAT provides structured support to accelerate agribusiness innovation and entrepreneurship across agricultural value chains. Through formal incubation membership, partners establish a defined collaboration framework with ICRISAT. Membership offers customized technical guidance, access to incubation facilities, business development support and opportunities for research and commercial collaboration, based on the specific needs of the incubatee. This model enables startups and growth-stage enterprises to leverage ICRISAT's scientific expertise, infrastructure and networks to advance product validation, scale operations and strengthen market readiness.

Please refer to Annexure A, Section 2 for detailed pricing information.

Beyond these engagement models, ICRISAT delivers specialized services under the following core categories:

- **Research for Development** - Applied scientific research services that support product development, trait discovery, breeding acceleration and validation of technologies across diverse agroecological environments.
- **Consulting and Advisory Services** - Strategic and technical advisory services that support evidence-based decision-making, value chain development, policy design and investment planning across agricultural systems.
- **Technology and Digital Solutions** - Digital platforms, geospatial analytics and artificial intelligence-enabled tools that support precision agriculture, monitoring systems and data-driven agricultural management.
- **Training and Capacity Strengthening** - Structured training programs, executive courses, workshops and institutional learning initiatives designed to build technical capacity, support technology adoption and strengthen agricultural innovation ecosystems.

## Research for Development Services

ICRISAT delivers contract research services that combine specialized infrastructure, advanced scientific capability and multi-location validation platforms to address defined technical challenges and research priorities of private sector partners.

Our services span genomics, pre-breeding, phenotyping, plant health, breeding acceleration, soil and water analysis and nutrition science. Each service area integrates scientific rigor with practical application to support innovation, validation and scalable deployment.

The key service areas are outlined below.

### Genebank & Genetic Resources

The Genebank at ICRISAT, Hyderabad, is one of the largest international repositories of plant genetic resources, conserving more than 132,000 germplasm accessions of 11 dryland crops.

Partners can access diverse and well-characterized germplasm to strengthen breeding pipelines for climate-resilient and nutrient-rich varieties. Services include germplasm characterization, trait-based screening and support for diversity analysis.

The Genebank also collaborates with partners to co-develop digital tools for genebank data

analytics, phenotyping and traceability. In addition, it supports conservation initiatives and capacity-strengthening programs for national partners, reinforcing long-term genetic resource management.

### Genomics and Molecular Biology

The Genomics, Pre-breeding and Bioinformatics Cluster applies advanced technologies to enhance the precision and efficiency of breeding pipelines across all ICRISAT mandate crops in Asia and sub-Saharan Africa.

The cluster integrates forward and reverse genetics and omics technologies to improve understanding and utilization of crop genomes, characterize pathogens and pests and identify molecular markers associated with important traits. These capabilities strengthen marker-assisted breeding pipelines and accelerate trait integration for commercially relevant product development.

A key focus includes exploring diversity and molecular characterization of germplasm, breeding lines, varieties, hybrids and beneficial microorganisms. Through advanced sequencing technologies and bioinformatics, the team examines crop genomes, including pangenomes, to map markers linked to biotic and abiotic stress resistance, quality traits, adaptation and agronomic characteristics.





## Central Analytical Laboratory Service for Soil, Water and Nutrient Analysis

The ICRISAT Central Analytical Laboratory is a Food and Agriculture Organization Global Soil Laboratory Network (FAO-GLOSOLAN) registered and globally recognized facility that provides high-quality analytical services for soil, water and plant nutrient characterization.

These services support agricultural research, innovation, product validation and sustainable natural resource management.

Equipped with advanced analytical instrumentation and operating under internationally standardized protocols, the laboratory ensures precision, accuracy and comparability of analytical results. It supports large-scale research programs, long-term experiments and multi-location studies across diverse agroecological zones.

Please refer to Annexure A, Section 1 for services offered and pricing details.



## Phenotyping and Analytical Services

ICRISAT's Phenotyping and Analytical services focuses on understanding the interaction between crop genotype and production environments, that drive genetic gain and adaptation to abiotic stresses.

Using advanced analytical tools and innovative methodologies, the team characterizes production environments, designs targeted phenotyping strategies and supports breeding programs in effective selection.

A major emphasis is placed on high-throughput phenotyping platforms such as LeasyScan and lysimeter facilities. These platforms enable precise and efficient screening of crop genetic materials for stress resilience, improving selection accuracy and performance prediction.

## Plant Health and Disease Screening

ICRISAT's Plant Health and Disease Screening services focus on developing effective and environmentally responsible solutions for managing diseases and insect pests affecting mandate crops in Asia, including India, Eastern and Southern Africa and West and Central Africa.

These services support early-stage screening, regulatory readiness and integrated resistance strategies that reduce production losses and strengthen supply chain reliability.

Activities include research on the biology, causes, spread and management of major diseases and insect pests. The program identifies sources of disease resistance and insect pest tolerance and integrates them into breeding programs.

Services also include early detection and surveillance, development of diagnostic methods and implementation of integrated pest and disease management approaches aligned with sustainable agricultural practices.



## Accelerated Breeding

ICRISAT's Accelerated Breeding platform addresses major challenges including hunger, poverty, malnutrition, environmental degradation and climate change through science-driven varietal development.

At the core is an innovative breeding program focused on improving crop resilience, nutritional quality and sustainability. The program develops improved varieties of legume, cereal and oilseed crops that play a critical role in food security in dryland regions.

By integrating advanced breeding tools and precision approaches, ICRISAT enhances genetic gain and strengthens varietal development pipelines to support partners seeking competitive, stress-resilient products.

## Rapid Generation Advancement (RGA)

ICRISAT headquarters maintains advanced Rapid Generation Advancement facilities designed to develop and standardize speed breeding protocols for crops of interest.

The facilities support both long-day plants with artificial lighting and short-day plants under controlled conditions. Standardized protocols are available for chickpea, pigeonpea and finger millet, enabling accelerated advancement of breeding populations and reduced varietal development timelines.

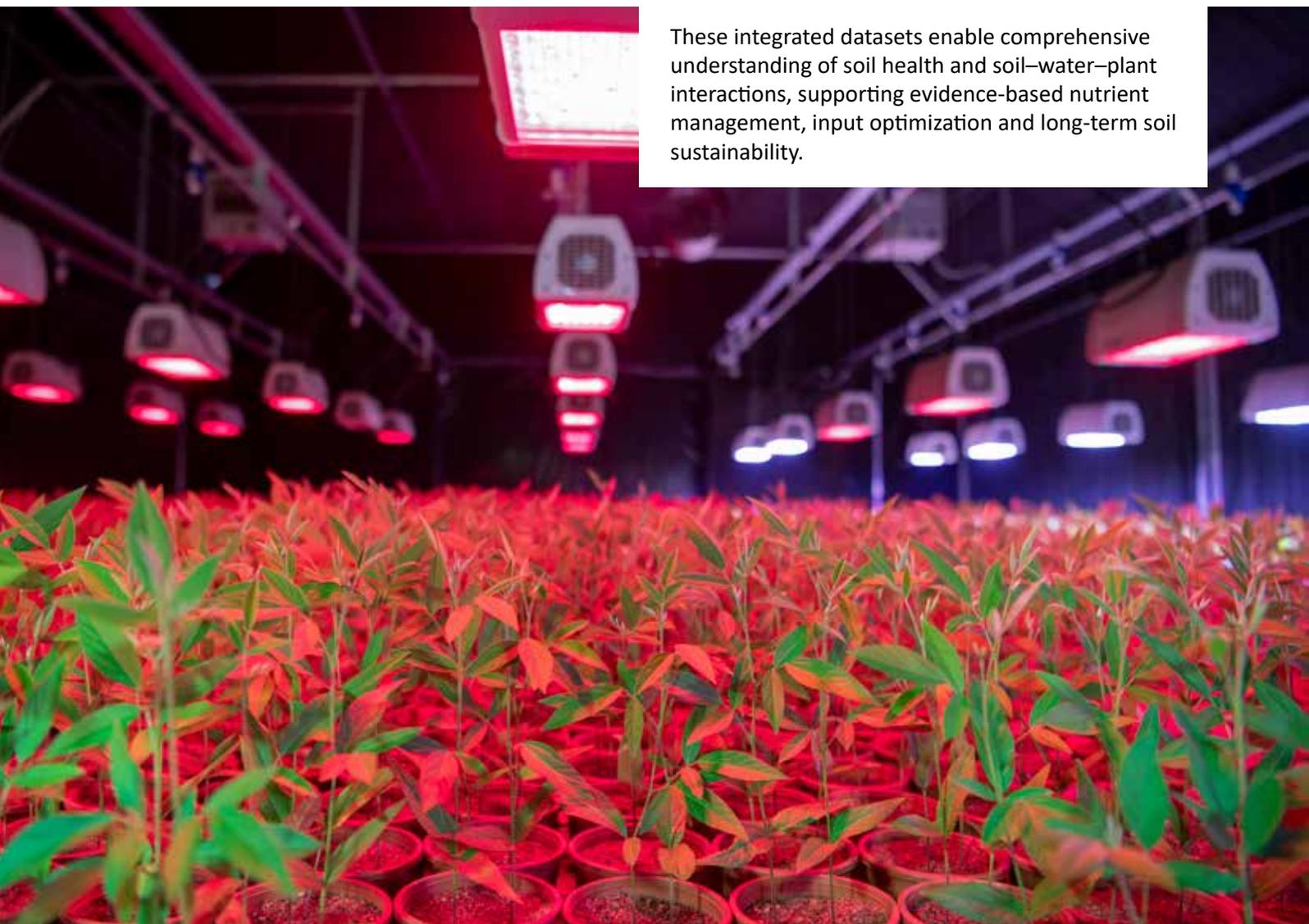
## Soil Biophysical, Nutrient and Biological Characterization Services

ICRISAT provides integrated soil biophysical, nutrient and biological characterization services to support precision agriculture, sustainable land management and climate-resilient farming systems.

Through advanced laboratories and standardized protocols, these services generate high-quality data on:

- Soil physical properties including texture, field capacity, permanent wilting point, bulk density and infiltration rate
- Nutrient status including macro-, micro- and secondary nutrients
- Water quality parameters
- Soil biological activity

These integrated datasets enable comprehensive understanding of soil health and soil–water–plant interactions, supporting evidence-based nutrient management, input optimization and long-term soil sustainability.





## Enhancing Soil Organic Carbon through Biochar and Vermicompost Amendments

ICRISAT promotes soil organic carbon enhancement through integrated biochar and vermicompost technologies, including innovative biomass recycling solutions such as aerobic composting of water hyacinth.

Biochar, produced through controlled pyrolysis of agricultural residues, provides a stable carbon source that improves soil structure, moisture retention and nutrient-use efficiency. Vermicompost and nutrient-rich composts derived from organic wastes enhance microbial activity, soil fertility and crop productivity.

ICRISAT offers end-to-end solutions including:

- Decentralized and centralized biochar production systems
- Standardized composting protocols
- Nutrient-enriched formulations
- Crop- and soil-specific application guidelines
- Capacity-strengthening support

These integrated approaches contribute to regenerative soil management and climate-smart agriculture.

## Landscape Topographical Characterization for Planning Natural Resource Management Interventions

ICRISAT provides high-resolution landscape topographical characterization using Differential Global Positioning System (DGPS) and advanced survey instruments to support the planning and design of natural resource management interventions.

Detailed elevation mapping, slope analysis and terrain profiling enable accurate assessment of drainage patterns, runoff pathways and site suitability for soil and water conservation structures. These datasets support watershed planning, rainwater harvesting design, land restoration and climate-resilient agricultural interventions at plot-to-landscape scales.

## State-of-the-Art Instrumentation for Water Budgeting at Plot-to-Landscape Scale

ICRISAT deploys advanced instrumentation and monitoring networks to generate high-resolution primary data for water budgeting from plot to landscape scales, typically ranging from 5 hectares to 500 hectares.

The system integrates:

- Automatic Weather Stations
- Rain gauges
- Runoff gauging stations
- Soil moisture sensors including Time Domain Reflectometry (TDR) and neutron probes
- Groundwater monitoring tools

These systems capture real-time data on rainfall, runoff, soil moisture and groundwater recharge. Standardized calibration and analytical protocols ensure reliable datasets for water balance assessments, irrigation planning and watershed management. This enables stakeholders to optimize water use, enhance productivity and strengthen long-term water security.



## Grafting Technology for Resilient and High-Productivity Vegetable Cultivation

ICRISAT promotes vegetable grafting technology to address soil-borne diseases, nematodes, heat stress and salinity in major crops including tomato, brinjal, chili and cucurbits.

Grafting improves plant vigor, fruit quality and yields by up to 40–50%, while increasing water- and nutrient-use efficiency. ICRISAT supports large-scale adoption through:

- Hi-tech nursery production of grafted seedlings
- Cluster-based cultivation models
- Standardized production protocols
- Farmer training on crop and pest management.

This technology enables farmers, agribusinesses and development agencies to establish resilient vegetable production systems and achieve sustainable income and productivity gains, particularly in semi-arid and degraded regions.

## Nutrition and Food Technology

ICRISAT advances transformation of agri-food systems in the dryland tropics by integrating food science, value addition and inclusive entrepreneurship.

The program supports post-harvest innovation, nutrition-sensitive product development and value-added processing solutions. Product concepts are designed based on consumer and market-preferred attributes with a strong focus on nutrition and health needs, contributing to the development of resilient and nutrition-responsive food systems.

Beyond laboratory and field-based innovation, ICRISAT translates scientific evidence into strategic guidance that supports policy formulation, investment planning and enterprise growth across agricultural systems.



## Consulting and Advisory Services

ICRISAT provides expert consulting and advisory services that leverage its scientific domain knowledge, field experience and multi-country implementation expertise to support strategic planning, policy formulation and business decision-making across agricultural systems.

These services combine scientific rigor with practical insights to enable evidence-based investment, operational efficiency and resilient value chain development.



### Market Segmentation and Product Profile Development for Targeted Breeding

ICRISAT applies market segmentation approaches to identify distinct customer clusters within target geographies, enabling breeders and seed Companies to deliver more targeted and high-value products.

Target Product Profiles (TPPs) are developed for specific crops based on prioritized trait combinations, agroecological conditions and market demand. This approach strengthens breeding alignment with end-user preferences and enhances product competitiveness.

### Good Agricultural Practices for Aflatoxin Contamination Mitigation

Crops such as maize and groundnut are highly prone to aflatoxin contamination. Good Agricultural Practices must therefore be implemented across the entire value chain to ensure aflatoxin-free grain production. Animal feed manufacturers must procure high-quality commodities to produce mycotoxin-free feed mixtures.

Diagnostics play a critical role in detecting and quantifying aflatoxins. ICRISAT provides advisory and technical services to private-sector clients to support the production and procurement of aflatoxin-free agricultural commodities. Services include training in aflatoxin diagnostics and cost-based laboratory services to quantify aflatoxin levels in raw agricultural commodities and finished food or feed products.

### Strategic Advisory for Seed Systems and Hybrid Adoption

ICRISAT supports the transition from obsolete or low-performing varieties to improved climate-resilient cultivars by combining performance evidence with targeted seed system interventions.

Advisory services include prioritization of varietal replacement zones, alignment of seed multiplication plans with projected demand and acceleration of adoption pathways through coordinated field validation and distribution pathways.

## Strategic Foresight for Crop Improvement and Seed Systems

ICRISAT applies data-driven analytics to support planning, forecasting and coordination of seed production and distribution across seasons and geographies.

Services include analysis of varietal adoption patterns, estimation of future seed demand and development of rolling seed production plans that align Early Generation Seed availability with certified and commercial seed requirements.

These analytical tools support seed companies and producer organizations in aligning multiplication schedules, mitigating risks of shortage or surplus production and improving the efficiency of seed flow from production clusters to end-user markets.

## Climate-Resilient Cropping Systems Advisory

ICRISAT provides advisory services on climate-resilient and regenerative cropping systems tailored to dryland production environments. Services cover varietal selection, cropping system design and demonstration of millet-, pulse- and oilseed-based cropping systems.

Using regenerative agri-technologies, ICRISAT co-designs cropping system options with climate-smart cultivars, including underutilized crops, to rebuild soil health, increase cropping intensity by 30–50% and enhance productivity by 15–25%.

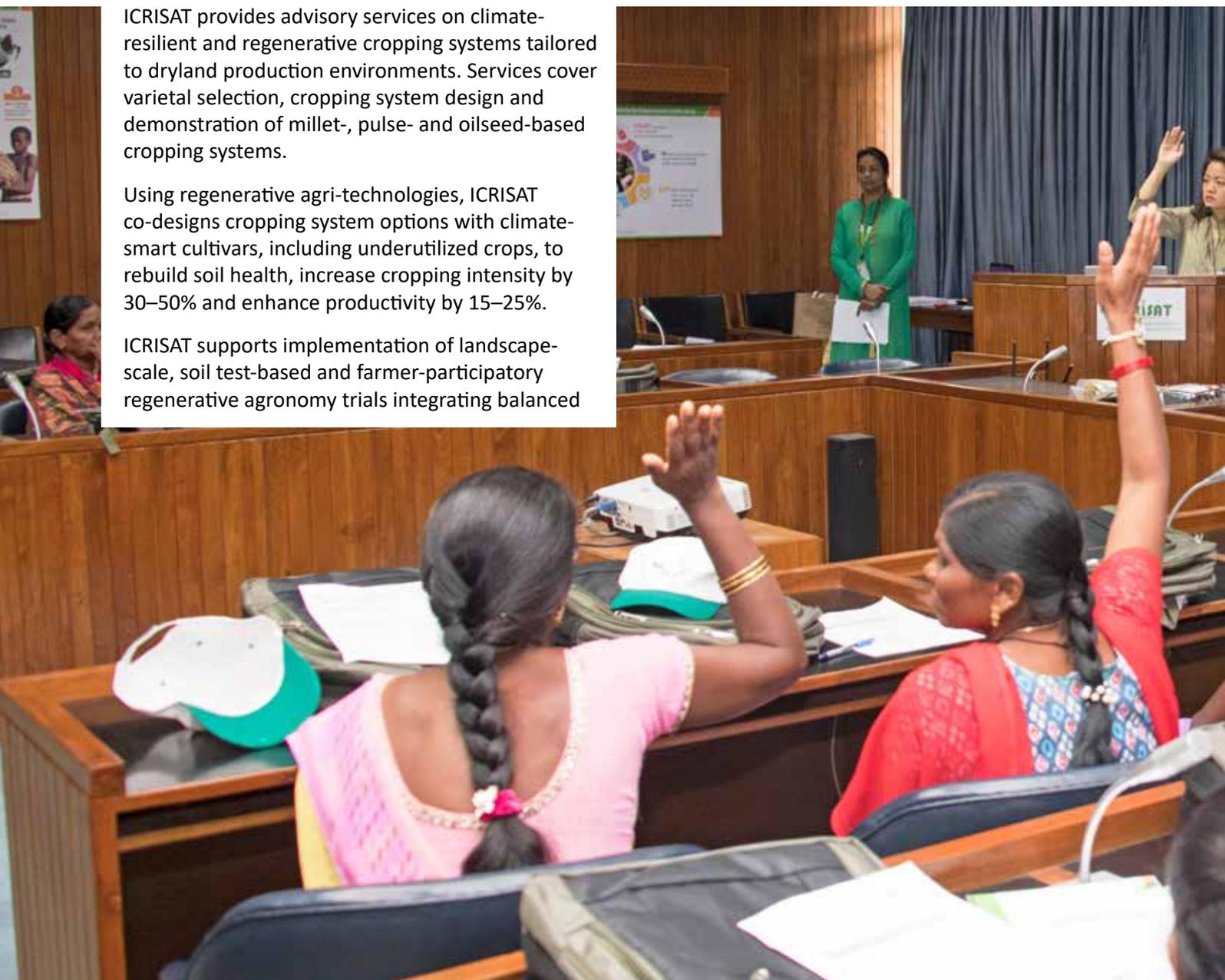
ICRISAT supports implementation of landscape-scale, soil test-based and farmer-participatory regenerative agronomy trials integrating balanced

nutrient management, organic amendments, water-smart practices, integrated pest management and diversified cropping systems. These approaches are supported by digital and climate services to deliver context-specific recommendations and scalable climate-smart productivity gains.

## Farm Mechanization and Soil Management Advisory

ICRISAT provides expert consultancy in farm mechanization and soil management to optimize scale-appropriate equipment, including precision seeders, dibblers and residue management tools, to reduce labor costs and enhance operational efficiency.

Advisory services also include development of custom hiring center models supported by digital platforms for scalable service delivery.



Soil management advisory encompasses precision diagnostics and degraded land restoration protocols using biofertilizers, biologicals, biochar and conservation tillage. These interventions are designed to enhance yield performance, improve soil function and support carbon modeling for sustainability certification and climate reporting.

### **Business Incubation and Co-Incubation Services**

ICRISAT delivers structured incubation and co-incubation services designed to accelerate agribusiness innovation and entrepreneurship across agricultural value chains.

By leveraging strategic partnerships and scientific infrastructure, the program provides scalable solutions that enable startups, corporates, rural enterprises and ecosystem partners to innovate, grow and create measurable impact in agriculture.

### **Value Chain Development through Technical and Handholding Support**

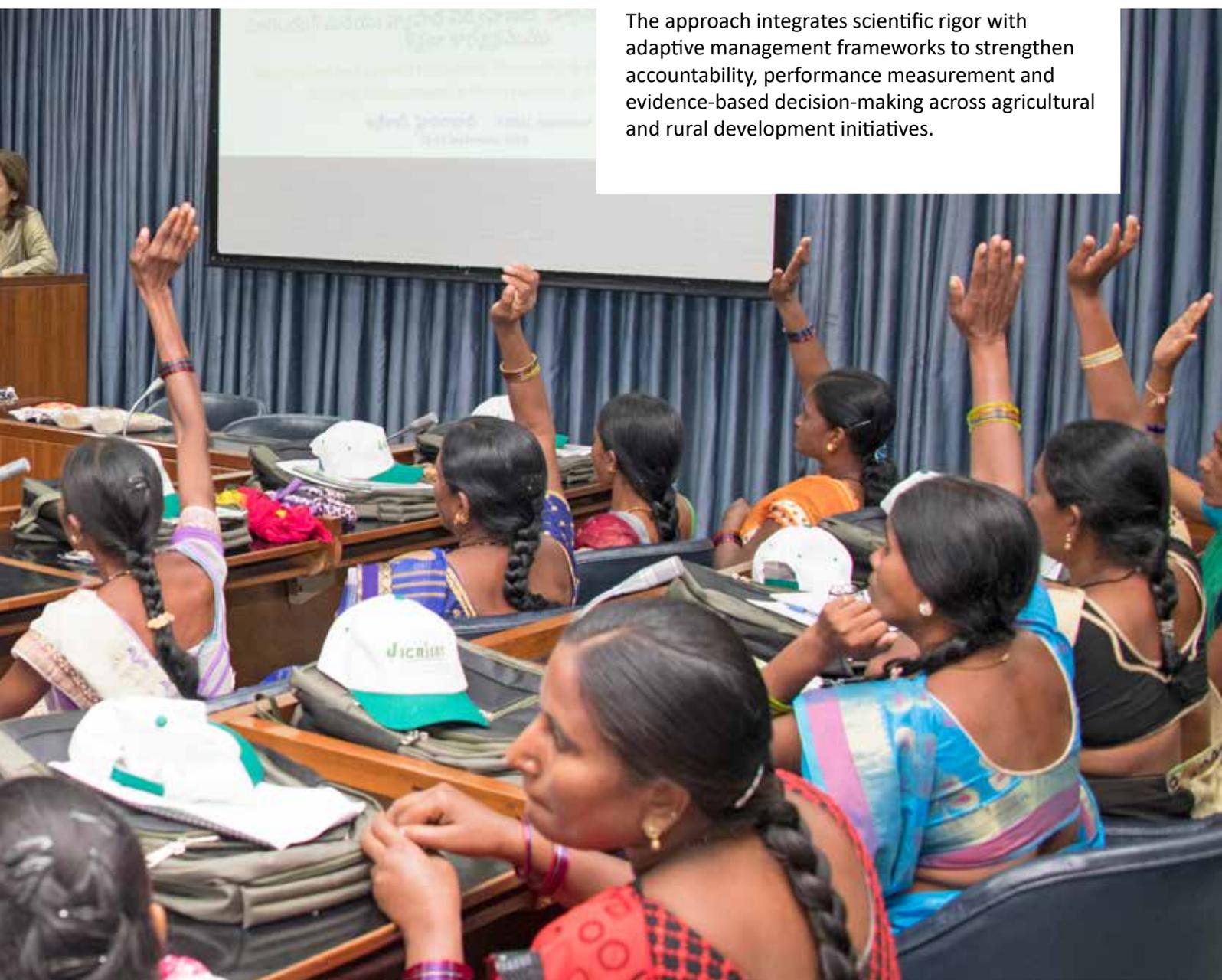
ICRISAT supports agribusiness development and inclusive entrepreneurship across Asia and Africa by strengthening agricultural value chains.

Services include capacity strengthening, enterprise development, technology transfer, market linkage facilitation and value addition strategies designed to improve productivity, profitability and competitiveness across the value chain.

### **Monitoring, Evaluation, Learning and Impact Assessment (MELIA)**

ICRISAT offers comprehensive Monitoring, Evaluation, Learning and Impact Assessment services to help corporates plan, track and demonstrate the value and impact of their projects and investments.

The approach integrates scientific rigor with adaptive management frameworks to strengthen accountability, performance measurement and evidence-based decision-making across agricultural and rural development initiatives.



## System Dynamics Modeling for Agribusiness Strategy

ICRISAT applies system dynamics modeling to analyze and simulate the complex behavior of agricultural value chains, integrating production systems, markets, finance, climate variables and policy drivers.

This approach enables partners to:

- Visualize feedback loops and structural constraints
- Assess investment trade-offs
- Test “what-if” scenarios
- Evaluate intervention impacts
- Design adaptive and resilient agri-food system strategies

By combining socioeconomic, biophysical and institutional datasets, these models support long-term strategic planning and sustainable growth.

## Intellectual Property, Technology Transfer and Legal Support

Comprehensive intellectual property and legal advisory services are available for corporate and institutional partners engaging with ICRISAT.

Services include strategic guidance on intellectual property protection, commercialization pathways and portfolio management, covering invention assessment, filing strategies, licensing frameworks, enforcement considerations and navigation of relevant legal and regulatory environments.

## Digital Agriculture Consulting and Advisory Services

ICRISAT provides digital agriculture advisory services grounded in both scientific expertise and field implementation experience across diverse agroecological contexts in Asia and Africa.

Services include:

- Evaluation of artificial intelligence model performance
- Design of digital Monitoring, Reporting and Verification systems aligned with global carbon standards
- Advisory on precision agro-advisory platform deployment
- Farmer-centric digital transformation strategies

## Geospatial Strategy and Spatial Decision Advisory

ICRISAT offers strategic advisory services that utilize geospatial intelligence to inform policy design, investment prioritization, program development and climate-risk management.

Services include guidance on interpreting:

- Cropland mapping outputs
- Crop suitability analysis
- Water productivity metrics
- Groundwater assessments
- Watershed prioritization models

Geospatial greenhouse gas estimation, climate exposure mapping and spatial monitoring frameworks are applied to support carbon initiatives, sustainability reporting and large-scale performance tracking.

By integrating spatial analytics with climate projections and crop modeling outputs, ICRISAT enables scenario analysis, territorial planning and long-term climate adaptation strategies tailored to diverse agroecological regions.

## Water Budget-Based Cropping System Design

ICRISAT provides advisory services on water budget-based cropping system design to align crop planning with available water resources at farm, watershed and landscape scales.

Using rainfall data, soil moisture dynamics, groundwater availability and crop water requirements, this approach identifies optimal crop choices, cropping sequences and irrigation strategies that maximize productivity while minimizing water stress.

These services support governments, development agencies and agribusinesses in promoting sustainable intensification, improving water-use efficiency and enhancing farmer incomes through location-specific cropping strategies.

To operationalize strategy at scale, ICRISAT integrates digital architecture, artificial intelligence and geospatial intelligence into practical platforms that support precision agriculture and climate-resilient systems.

## Technology and Digital Solutions

Digital agriculture is transforming how farming systems are monitored, managed and optimized. By integrating geospatial intelligence, artificial intelligence, predictive modeling and digital field data systems, agricultural decision-making shifts from reactive to proactive.

ICRISAT's digital architecture integrates data acquisition, analytics, advisory delivery, monitoring and reporting into a connected ecosystem that operates in near real time. These digital systems enable partners to improve traceability, enhance farmer engagement and generate real-time performance data for supply chain optimization.

This transition enables greater precision at the farm level, stronger climate resilience across seasons, more transparent value chains and measurable impact at scale. It empowers farmers to optimize crop management and water use, supports policymakers in designing climate-adaptive strategies and enables corporates to improve resource efficiency. The result is more resilient, sustainable and performance-driven agricultural systems.





### **Agricultural Cropland Mapping and Cropping Systems Analysis**

ICRISAT uses multi-temporal satellite data to map croplands, identify crop types and monitor cropping patterns across seasons. These services support acreage estimation, cropping intensity analysis and spatial planning for input supply and market engagement.

### **Crop Yield Assessment and Suitability Analysis**

This service integrates remote sensing imagery with ground-truth data to estimate in-season crop yields and assess crop suitability. It supports production forecasting, risk assessment and evidence-based planning across value chains.

### **Crop Modeling**

ICRISAT deploys crop modeling tools including the Decision Support System for Agrotechnology Transfer (DSSAT) and the Agricultural Production Systems sIMulator (APSIM), along with machine learning approaches and semi-physical models, to simulate crop growth and yield under varying environmental and management conditions.

These tools enable partners to assess climate risk, test management scenarios and optimize input strategies before field deployment, reducing uncertainty and improving investment decisions.

### **iHub Startup Incubation and Co-Creation Platforms**

The iHub supports agri-innovation through structured incubation programs, co-creation partnerships, proof-of-concept development and field validation of digital and climate-smart technologies. Corporates may collaborate to test, refine and scale emerging solutions within real-world farming systems.

### **iSAT Deployment and Customization**

iSAT the Intelligent Agricultural Systems Advisory Tool, is ICRISAT's hyperlocal artificial intelligence-driven agro-advisory system. It integrates short- and medium-range weather forecasts, soil data and agronomic decision rules to deliver crop-specific and location-specific advisories through Short Message Service (SMS), WhatsApp, Interactive Voice Response (IVR) and mobile applications in local languages.

iSAT supports customer retention, advisory differentiation and scalable farmer outreach across defined geographies. Corporates, including telecommunications companies, insurance providers, input companies and agri-platforms, can co-deploy and customize iSAT for specific geographies, crops or value chains.



### Plant Health Detector (PHD)

The Plant Health Detector is an AI-powered diagnostic dashboard that uses computer vision and deep learning to identify pests, diseases and nutrient deficiencies from smartphone images with high accuracy.

Corporates, including agro-input companies, insurance firms and extension service providers, may license the technology, co-develop crop-specific diagnostic modules or integrate Plant Health Detector APIs into existing platforms.

### MSOIL Digital Platform for Soil Health Monitoring

MSOIL is a mobile and web-based platform for geotagged soil sample collection, laboratory data management and generation of personalized Soil Health Cards with fertilizer recommendations.

Partners such as fertilizer companies, agri-input firms and rural financial institutions can deploy MSOIL across farmer networks, integrate soil intelligence into advisory systems or use the platform to strengthen traceability within supply chains.

### MPRO Digital Monitoring, Evaluation and Learning Platform

MPRO is a multi-project, role-based digital Monitoring, Evaluation and Learning platform that enables geotagged, offline-capable data collection, real-time key performance indicator dashboards and geospatial reporting.

Companies implementing large Corporate Social Responsibility programs, impact investors and development finance institutions can license or co-deploy MPRO to track, validate and report outcomes at scale. The platform strengthens outcome reporting, enhances compliance transparency and supports impact validation across large-scale investment and sustainability portfolios.

### Research and Development in Generative AI for Agriculture

ICRISAT collaborates with corporates to develop custom generative artificial intelligence applications for agriculture. Services include domain-specific large language model fine-tuning, chatbot development for agricultural knowledge systems and AI-assisted content generation for extension services.

ICRISAT contributes validated agronomic datasets, scientific expertise and domain credibility to ensure accuracy, contextual relevance and responsible deployment of generative AI solutions.

In addition to research and digital platforms, ICRISAT strengthens partner capacity to adopt, scale and operationalize innovation through structured learning programs.





6

## Training and Capacity Building

ICRISAT's Dryland Academy is a distinctive platform for transformative capacity strengthening, knowledge exchange and dissemination of dryland technologies. It leverages ICRISAT's international expertise and cutting-edge research to deliver structured, high-impact learning experiences.

The Academy enables partners to build internal technical capacity, strengthen partner ecosystems and accelerate adoption of validated technologies. It strengthens institutional and organizational learning while fostering a culture of continuous knowledge sharing. By combining technical depth, innovative learning design and strategic insight, the Dryland Academy delivers capacity-strengthening initiatives tailored to diverse stakeholders.

## Core Capabilities

### Technical and Subject Matter Expertise

The Academy brings deep domain expertise across dryland agriculture and related disciplines. It provides accurate, evidence-based guidance and translates complex scientific knowledge into practical, field-ready solutions for diverse audiences.

### Integrated Labs, Land and People

A unique advantage of the Dryland Academy is the co-location of advanced laboratories, extensive research land and expert scientific teams within a single integrated campus. This enables experiential learning that combines theory, laboratory practice and field application.

### Learning Design and Facilitation

The Academy designs and facilitates participatory, engaging and inclusive training programs, workshops, webinars and mentoring sessions. Programs apply adult learning principles and are customized to specific institutional or project needs.

### Knowledge Management and Digital Proficiency

The team curates, organizes and manages institutional knowledge to ensure accessibility and relevance. It utilizes digital platforms and tools to capture, share and disseminate learning resources effectively across geographies.

### Communication and Stakeholder Engagement

The Academy demonstrates strong written and verbal communication capabilities and experience in building networks and strategic partnerships. It fosters collaboration and engages internal and external stakeholders in structured learning processes.

### Monitoring, Evaluation and Research

Capacity needs assessments, evaluation of learning outcomes and data-driven feedback mechanisms are integrated into program design. These processes ensure continuous improvement and measurable results in knowledge-sharing initiatives.

### Innovation and Adaptability

The Academy adopts new approaches, technologies and methodologies to enhance learning effectiveness and respond to evolving organizational and learner requirements.

### Leadership and Strategic Alignment

Capacity-strengthening initiatives are aligned with organizational, project and thematic priorities. The Academy provides mentorship, guidance and strategic direction to ensure sustainable learning outcomes and institutional impact.

ICRISAT designs and facilitates engaging workshops, training programs, webinars and mentoring engagements grounded in participatory and adult learning methodologies. Learning resources are curated and disseminated through digital platforms and customized materials to ensure accessibility and practical relevance.



## Available Training Programs

The Dryland Academy offers structured training across the following areas:

- Beekeeping (Apiculture) for Livelihood Enhancement
- Breeding, pathology and molecular marker technology
- Cost-effective design of rainwater harvesting structures
- Differential Global Positioning System (DGPS) and survey tools for topographical characterization
- Diffuse Reflectance Spectroscopy for rapid soil assessment
- Disease detection, phenotyping and management
- Establishment of referral laboratories for soil physical and nutrient analysis
- Establishment of runoff gauging stations and sediment samplers
- Gender-responsive training courses for diverse stakeholders
- Genomics tools, technologies and bioinformatics analysis
- Grafting technology for vegetable cultivation
- Host plant resistance for crop pests through attachment training
- Molecular biology, multi-omics, transformation and gene editing
- Natural Resource Management planning
- Need-based irrigation scheduling using the Water Impact Calculator for enhanced water-use efficiency
- Plant genetic resources and genebank management
- Quantification of greenhouse gas emissions
- Rapid Generation Advancement and speed breeding, including Controlled Integrated Optimization Technology (CIOT) operations through hands-on workshops
- Regenerative agricultural practices
- Seed system strengthening and community-based seed production
- Sustainable biochar systems for residue management and soil carbon enhancement
- Water budgeting and irrigation scheduling
- Water hyacinth management through aerobic composting

Building on its capacity-strengthening initiatives through the Dryland Academy, ICRISAT also offers specialized executive education programs designed to equip senior leaders and technical professionals with strategic and operational insights for advancing resilient and competitive agri-food systems.



## Executive Courses

Building on its leadership in research, innovation and capacity strengthening, ICRISAT offers specialized executive education programs designed for private sector organizations and institutional partners. These programs combine strategic insight with operational depth, enabling both senior leadership and technical teams to strengthen decision-making, accelerate innovation and improve competitive positioning across agri-food systems.

## Executive Learning Formats

ICRISAT's executive education programs are structured to address the needs of both strategic leadership and technical specialists.

**Strategic Executive Programs (2–3 days)** - Designed for senior management and decision-makers, these programs focus on investment planning, climate risk assessment, value chain strategy and systems-level decision-making.

## Technical Immersion Programs (5 days or longer)

- Designed for technical specialists and operational teams, these programs provide in-depth technical knowledge and hands-on exposure to advanced agricultural technologies and research platforms.

## What Participants Experience

All executive courses combine scientific expertise with applied learning and field-based exposure.

Participants benefit from:

- Interactive sessions with ICRISAT scientists and industry experts
- Field visits to research stations and demonstration sites
- Case studies drawn from successful agricultural partnerships
- Peer networking opportunities with fellow participants and ICRISAT leadership
- Curated course materials and access to relevant publications
- A certificate of completion issued by ICRISAT



## Executive Course Portfolio

Course	Focus Area	Target Participants	Duration	Program Investment
Structured Training Program in Breeding, Pathology and Molecular Marker Technology	Breeding methodologies and operational workflows; disease and insect screening protocols; speed breeding systems; molecular marker-assisted selection; high-throughput phenotyping for abiotic stress tolerance; trait discovery and genomic selection procedures	Plant breeders from public and private sector institutions	10 days	INR 300,000 per trainee
Rapid Generation Advancement (RGA), Speed Breeding and Controlled Integrated Optimization Technology (CIOT) Operations	Operationalization of Rapid Generation Advancement (RGA), speed breeding systems and Controlled Integrated Optimization Technology (CIOT) platforms for accelerated crop improvement pipelines, including facility architecture, environmental control and plant expression management	Breeders working on field crops including cereals, legumes and vegetables	2–3 days to 1 week	INR 50,000 per participant
Climate-Smart Agriculture and Digital Solutions for Agribusiness	Climate adaptation strategies and enabling technologies; precision agriculture systems; carbon credit opportunities in agricultural landscapes; digital platforms for integrated farming systems management; emerging climate-smart agribusiness models	Agri-tech executives, sustainability leaders, climate investors and agribusiness decision-makers	2 days	INR 40,000 per trainee
Integrated Farming Systems and Precision Agriculture Technologies	Soil health management; water-efficient irrigation systems; crop modeling and forecasting; remote sensing and Geographic Information Systems (GIS); integrated pest management strategies	Professionals in agronomy, horticulture, plant protection, soil science, water management, digital agriculture and field operations	5 days	INR 100,000 per trainee
Agri-Food Value Chain Innovation and Market Development	Value chain transformation strategies; nutrition-sensitive business models; market linkage development for dryland crops; startup ecosystem engagement and scalable agribusiness growth pathways	Food industry executives, value chain managers, market development directors and agribusiness entrepreneurs	2–3 days	INR 50,000 per participant
Food Technology, Nutrition and Product Development	Food processing technologies; grain and food quality assays for nutritional profiling and health claim validation; product formulation and scale-up methodologies; quality assurance systems and food safety standards	Food technologists, product development managers, quality control specialists, nutrition scientists and processing unit managers	5 days	INR 120,000 per participant

# Pricing Information

ICRISAT follows a transparent and structured pricing approach across all service offerings. Pricing models are designed to ensure clarity, consistency and fairness while accommodating the technical complexity and scope of different engagements.

The fees and charges are exclusive of all applicable taxes, which shall be borne additionally by the recipient as per prevailing laws.

Our pricing framework is organized into the following categories:

## Category 1: Predefined Pricing

This category includes services with established and fixed pricing based on standardized protocols, methodologies and clearly defined deliverables.

Examples include selected analytical services, genotyping services and certain training modules.

Associated costs for services under this category are provided in Annexure B, Section 1.

## Category 2: Case-by-Case Pricing

This category covers services where technical criteria and engagement frameworks are defined,

but pricing varies depending on scope, scale, duration and specific partner requirements.

These engagements are discussed and mutually agreed upon during the planning phase. Most consulting and advisory services, as well as technology and digital solutions, fall under this category.

A detailed list of services included in this category is available in Annexure B, Section 2.

## Category 3: To Be Defined

This category applies to emerging services or highly customized solutions where pricing principles are under development.

ICRISAT works collaboratively with partners to establish fair, transparent and mutually agreed pricing structures based on technical inputs, resource requirements and expected outcomes.

A list of services currently included under this category is provided in Annexure C.



# Annexure A

## Section 1: Central Analytical Laboratory Service – Soil, Water and Crop Nutrient Assessment

All costs are indicated at USD<sup>1</sup> per sample.

Category	Package	Parameters Included	Cost
<b>Crop Analysis</b>	Package 1	Total Nitrogen (Total Protein), Total Phosphorus and Total Potassium	USD 1.00 (up to 100 samples) USD 3.00 (>100 samples)
	Package 2	Total Iron, Copper, Manganese, Zinc, Aluminum; or Total Iron, Zinc, Aluminum, Calcium and Magnesium	USD 3.00 (up to 100 samples) USD 2.50 (>100 samples)
	Package 3	Total forms of Potassium, Calcium, Magnesium, Sodium, Aluminum, Zinc, Iron, Copper, Manganese, Sulfur, Boron, Arsenic, Cadmium, Chromium, Cobalt, Lead and Nickel	USD 6.90 (up to 100 samples) USD 6.00 (>100 samples)
	Package 4	Oil, Protein and Ash Content	USD 10.00 (up to 100 samples) USD 8.00 (>100 samples)
<b>Irrigation Water Testing</b>	Standard Package	pH, Electrical Conductivity, Total Dissolved Solids, Sodium, Potassium, Calcium, Magnesium, Sodium Adsorption Ratio, Residual Sodium Carbonate, Hardness and Percent Sodium	USD 2.60 (up to 100 samples) USD 2.50 (>100 samples)
<b>Soil Chemical Analysis</b>	Package 1	pH, Electrical Conductivity, Organic Carbon and available nutrient analysis including Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Sodium, Iron, Copper, Manganese, Zinc, Boron and Sulfur	USD 26.00 (up to 100 samples) USD 25.00 (>100 samples)
	Package 2	pH, Electrical Conductivity, Organic Carbon and total nutrient analysis including Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Sodium, Iron, Copper, Manganese, Zinc, Boron and Sulfur	USD 15.00 (up to 100 samples) USD 14.00 (>100 samples)
	Package 3	Organic Carbon, Total Organic Carbon, Permanganate Oxidizable Carbon and Carbon Pools	USD 12.00 (up to 100 samples) USD 11.00 (>100 samples)
	Package 4	pH, Electrical Conductivity, Organic Carbon, Nitrogen, Phosphorus and Potassium	USD 13.00 (up to 100 samples) USD 12.00 (>100 samples)

<sup>1</sup> All currency conversions between Indian Rupees (INR) and United States Dollars (USD) are subject to the prevailing monthly exchange rate as determined and applied by ICRISAT at the time of invoicing.

## Section 2: Incubation and Onboarding

ICRISAT's Agribusiness Incubation (ABI) Program provides structured incubation and partnership pathways for startups, growth-stage enterprises and innovation-driven organizations.

### A) Membership Fee Structure

Particulars	Details
Annual Membership Fee	INR 50,000 per year
Payment Mode	Bank transfer, demand draft or online payment
Payment Frequency	Annual upfront payment at the time of signing the agreement
Fee Applicability	Nonrefundable and nontransferable
Renewal Due Date	12 months from the date of enrollment, which is the date of signing the agreement
Start Date and End Date	Start date is the date of signing the agreement. End date is 12 months from the date of signing.
Extension or Cancellation	In case of nonrenewal, the agreement stands canceled and is terminated at the end of Year 1.
Tenure of Incubation	Standard tenure is one year. Clients may avail services for up to three years by making upfront payment for three years at the time of signing the agreement.
Frequency of Review of Membership Fee	Membership fees may be reviewed after a three-year interval for revision, if applicable.

### B) Membership Entitlements

#### Complimentary Package Services

Included in the membership fee:

#### 1. Networking Opportunities

- Access to ABI visitors, ABI-ICRISAT clients and partner organizations

#### 2. Capacity Strengthening

- Complimentary participation in two training programs organized by ABI-ICRISAT per year
- Access to selected capacity-strengthening activities organized by ABI-ICRISAT partners

#### 3. Information Access

- Regular updates on agribusiness activities, events and opportunities

#### 4. Promotional and Marketing Support

- Promotion through ABI platforms
- Participation in one national agri-exhibition or entrepreneurship mela (exhibition) per year

#### 5. Advisory Support

- Access to intellectual property and legal advisory services, limited to two sessions per year
- Access to ABI mentors across business, technical and investment domains

### 6. Facilities and Infrastructure

- Access to the ABI lounge for 10 days per year for business-to-business meetings
- Entry to the ICRISAT campus, subject to prior approval
- Administrative support services
- Housekeeping of allocated laboratory or office space, where applicable

### C) Services Available on a Payment Basis

The following services are available at additional cost:

- Access to agro-technologies and technical support, as per the applicable technology fee structure
- Office space, subject to availability and rental charges
- Laboratory space and field infrastructure, based on usage charges
- Office infrastructure including fax, photocopier, scanner, internet and secretarial services
- ABI conference and meeting room facilities
- Video conferencing facilities

Facilities and Support Included	Virtual Incubation	Resident (Physical) Incubation
Membership Fee <sup>1</sup>	INR 50,000 for Indian entities USD 1,000 for international entities	INR 100,000 for Indian entities USD 2,000 for international entities
Housekeeping of lab or office space	Not applicable	Included
Seating table for one person	Not applicable	Included
Access to the ABI lounge for business meetings	Not applicable	10 days per year
Access to ICRISAT R&D facilities, laboratory and field infrastructure on a standard cost basis	Included on a pay-and-use basis	Included on a pay-and-use basis
Networking opportunities with ABI visitors, ABI-ICRISAT clients and partners	Included	Included
Free participation in ABI-ICRISAT capacity-strengthening activities	Two training programs per year	Two training programs per year
Access to capacity-strengthening activities organized by ABI-ICRISAT partners	As available	As available

<sup>1</sup> **Membership Fee Basis:**

The membership fee is determined using a cost-recovery and service-scope model that accounts for infrastructure, utilities, staffing and program delivery. Fees are benchmarked against comparable incubation platforms and are reviewed annually by the CEO and Head – Agribusiness Innovation Platform and approved by the Research Program Director, Transforming Agri-Food Systems.



# Annexure B

## Section 1: Services with Pre-defined Pricing

All prices are as indicated. Travel, logistics and consumables are excluded unless otherwise specified.

No.	Service	Pricing
1	Amino acid profiling	INR 2,500 per sample
2	Bioinformatics Services (Genome Assembly, Long-read Sequencing, Phylogenetics, Metagenomics, Transcriptomics, Epigenomics, Next-Generation Sequencing (NGS) data Quality Control (QC) and Management)	Genome assembly and annotation: USD 500–5000 Differential gene expression analysis: USD 200–500 Metagenomics analysis: USD 80–200 Phylogenetic analysis: USD 150–200 NGS data QC and management: USD 70–150
3	Climate change research facility to conduct studies on elevated temperature and carbon dioxide (CO <sub>2</sub> ) in Open Top Chamber (OTC), Free-Air CO <sub>2</sub> Enrichment (FACE), and Controlled Temperature Gradient Tunnel (CTGT) under simulated climatic conditions	USD 4,000–5,000 per month to run individual facilities (OTC, FACE, CTGT)
4	Cropland and Land Use Land Cover (LULC) analysis	USD 6,000 per district (analysis only; minimum defined area)
5	Differential Global Positioning System (DGPS) survey for topographical characterization	USD 4
6	Digital Monitoring, Reporting and Verification (MRV) – Customization and deployment of platforms	Hosted on client infrastructure: USD 100,000 for three years; after the third year, an annual fee of USD 20,000. Deployment for one Verification Project Area (VPA). Default emission factors will be adapted for emission estimation. Localization of emission factors will require on-farm emission monitoring with additional budget requirements. The pricing model will differ for deployment in multiple VPAs.
7	Double-ring infiltration test/Tension disc infiltration test	USD 50 per test, up to steady state (excluding travel)
8	Establishing check dam cum runoff gauging station	Catchment <5 ha: USD 4,000 (including civil work and DIVER installation) Catchment (5–20 ha): USD 6,000 (including civil work, weir construction and DIVER installation) Catchment (20–100 ha): USD 10,000 (including civil work, weir construction and DIVER installation) Catchment (100–500 ha): USD 15,000 (including civil work, weir construction and DIVER installation)
9	Estimation of grain iron (Fe) and zinc (Zn) using X-Ray Fluorescence (XRF) in pearl millet, sorghum, chickpea and finger millet	USD 6 per sample

No.	Service	Pricing
10	Field screening: Grain mold, anthracnose, leaf blight and charcoal rot in sorghum; downy mildew, blast, smut, ergot and rust in pearl millet; and finger millet blast. Greenhouse screening: Blast of pearl millet and finger millet, downy mildew in pearl millet and sorghum, and rust in pearl millet and sorghum	Field screening: USD 35 per sample/3 replications/ minimum 50 samples Greenhouse screening: USD 30 per sample/3 replications/pathotype/minimum 15 samples
11	Gas Chromatography–Mass Spectrometry (GCMS) plant sample analysis – volatiles, fatty acids and amino acids; High-Performance Liquid Chromatography (HPLC) plant sample analysis – amino acids, fatty acids, secondary metabolites and organic acids	USD 35 per sample – GCMS USD 11 per sample – HPLC
12	Genomics Services (Deoxyribonucleic Acid (DNA) isolation, Ribonucleic Acid (RNA) isolation and QC)	Genomic DNA isolation and QC: USD 3–10 Total RNA isolation and QC: USD 30–45
13	Grain and food quality, functional nutrition Research and Development (R&D), alternative protein, bioanalytical research, food and ingredient testing	INR 220,000 per sample Wet extraction standardizations: INR 100,000 Dry classification/trial: INR 50,000
14	Health claim validation of food products	INR 180,000
15	High-Throughput (HTP) phenotyping for early vigor, growth rate, canopy dynamics, transpirational dynamics and component traits of adaptation using LeasyScan in the initial vegetative stage (4–6 weeks)	USD 10 per sector (Genotype × replication = sector)
16	Insect cultures – Egg/Egg mass and neonates – Pod borer, tobacco caterpillar, fall armyworm, stem borer, Maruca and pupae	USD 3–3.5 per 100 neonates USD 1 per two pupae
17	Installation of Automatic Weather Station (AWS) and training of two staff for one week	USD 12,000 per AWS
18	Installation of manual cum automatic rain gauge and training of one staff	USD 1,000 per setup
19	Installation of sediment sampler	USD 4,000 per sampler (with installation)
20	Irrigation scheduling using Water Impact Calculator (WIC)	USD 100 per cropping system
21	Metabolomics analysis using Liquid Chromatography–Mass Spectrometry (LC-MS) A. Non-targeted metabolomics analysis B. Targeted metabolomics	A. INR 7,000 per sample B. INR 5,000 per sample

No.	Service	Pricing
22	Molecular biology services A. Quantitative Reverse Transcription Polymerase Chain Reaction (qRT-PCR) B. Gene cloning	A. qRT-PCR: INR 5,600 per sample [includes RNA isolation, complementary DNA (cDNA) synthesis, and qPCR analysis with 3 biological and 3 technical replicates, including 1 reference gene] B. INR 20,000 per insert
23	Monitoring, Evaluation and Learning Platform (MPRO) – Digital platform	Hosted on client infrastructure: USD 50,000 for 2 years After the second year, annual fee of USD 15,000
24	MSOIL – Soil health monitoring and advisory platforms	Hosted on client infrastructure: USD 60,000 for three years After the third year, annual fee of USD 15,000 Rate limitation depending on the client's infrastructure
25	Non-destructive assessment of groundnut (with pods) shelling %, kernel weight and kernel grade using computed tomography	USD 2.4 per sample without grade; USD 4 per sample with grade
26	Non-destructive assessment of grain protein, oil/fat and moisture using Near Infrared Spectroscopy (NIRS; calibration accuracy 0.95)	USD 1 per sample per trait
27	Plant Health Detector	Two options to use ICRISAT-developed algorithms and advisory content: Starter option: Application Programming Interface (API) access (120,000 calls/year) at USD 20,000 per year Hosted on client infrastructure: USD 65,000 for 3 years After the third year, annual fee of USD 15,000 Rate limitation depending on the client's infrastructure
28	Profile sampling and soil biophysical analysis (texture, FC, PWP, BD) for respective layers (up to 1.2 m)	USD 100 per profile (excluding travel)
29	Protein, tannins, flavonoids, carbohydrates, starch, phenols and enzyme assays – Trypsin, Chymotrypsin, Protease inhibitors	USD 10–15 per sample
30	Proteomics (label-free quantification) using LC-MS	INR 20,000 per sample
31	Quantification of mycotoxins such as aflatoxins, fumonisins, ochratoxins and cyclopiazonic acid	USD 10 per sample
32	Quantifying nodulation, nitrogen fixation and plant–microbial interactions in leguminous plants; quantitative and/or qualitative trials for evaluation of efficient Plant Growth-Promoting Rhizobacteria (PGPR) and biocontrol agents under greenhouse and/or field conditions	Lab and greenhouse screening: USD 50 per sample/3 replications/minimum 20 samples PGPR trials and biocontrol agents testing in the field: USD 35 per sample/3 replications/minimum 50 samples
33	Rapid Generation Advancement (RGA) for speed breeding	USD 40,000 for protocol development (2 years for short-day plants) USD 60,000 for protocol development (3 years for long-day plants)

No.	Service	Pricing
34	Screening for diseases in chickpea and pigeonpea (field and controlled conditions) – Fusarium wilt, dry root rot, Ascochyta blight, Botrytis gray mold, sterility mosaic and Phytophthora blight	Varies for individual disease Field screening (1 ha): USD 22,000–25,000 per crop season  Controlled environment screening: USD 10–12 per line
35	Screening for major insect pests of sorghum/proso millet/finger millet – artificial infestation and legume pod borers – natural and artificial infestation greenhouse (minimum 50 lines required for testing)	USD 35 per line
36	Sequencing Services (Whole genome sequencing, Whole genome resequencing, Genotyping-by-sequencing, Transcriptome sequencing, Metagenomics, Targeted sequencing, Amplicon sequencing), Sanger sequencing services	Illumina library preparation: USD 50–70 Skim sequencing library preparation: USD 20–30m RNA library preparation: USD 110 Total RNA library preparation: USD 170 (including ribo-depletion) V3–V4 library preparation: USD 55–80 ITS region library: USD 55–80 Sequencing on Illumina NovaSeq X: USD 8–10 per Gb (>150 Gb) Sequencing on PacBio Revio system–SMRT 25 M cell: USD 2,500 Sanger sequencing–DNA/PCR amplicon per reaction: USD 5–6
37	Soil biological property analysis	Microbial population (culturable bacteria, fungi, actinomycetes, Rhizobium, nitrogen-fixing Jensen’s media, phosphate solubilizers, potash solubilizers, zinc solubilizers): USD 222.  Soil enzyme activity (dehydrogenase, aryl sulfatase, phosphatase) and respiration rate: USD 10
38	Soil physical properties: Soil retention properties (Field Capacity and Permanent Wilting Point); soil physical properties: Texture (sand, silt, clay and gravel %)	USD 10 per sample (1–20 samples)  USD 8 per sample (21–100 samples)
39	Soil physical properties: In-situ bulk density	USD 10 per sample, excluding travel
40	Spatial Yield and Suitability Analysis	USD 10,000 per district (analysis only; minimum defined area)
41	Testing of new molecules / bio-efficacy trials of insecticides or biopesticides (7–9 treatments) under field and lab conditions (0.1 ha / two seasons)	USD 13,000–14,000
42	Trichome density analysis of plants	USD 10 per sample
43	Watershed management planning	USD 1 per hectare
44	Value addition (food and ingredient product development), product scale-up and pilot trials, technology transfer	Regular products such as Ready-to-Cook (RTC) mixes, cookies and extruded snacks: INR 500,000 Niche products such as millet milk and high-protein products: INR 2,000,000
45	Village-scale water budgeting and cropping system design	USD 10,000 per village (or watershed)

## Section 2: Services with Pricing Based on Scope of Work

No.	Service
1	Advisory on climate-resilient cropping systems and varietal selection
2	Artificial intelligence-powered climate information services, agro-advisory services and market informatics
3	Biocontrol identification, formulation and application in legume-based cropping systems
4	Co-incubation services and partnership development
5	Computer vision use case: Plant Health Detector (PHD)
6	Crop intensification in fallow areas using spatial analysis
7	Crop modeling using Decision Support System for Agrotechnology Transfer (DSSAT), Agricultural Production Systems sIMulator (APSIM), machine learning (ML) and semi-physical models
8	Decision support tool for managing soil health in Ethiopia
9	Digital soil mapping
10	Establishment of value chain-based incubation centers
11	Evidence-based nutritional intervention studies
12	Farm mechanization advisory and systems integration
13	Flash flood vulnerability mapping
14	Good Agricultural Practices (GAP) for mitigation of pre- and post-harvest aflatoxin contamination
15	Greenhouse gas emission estimation using geospatial methods
16	Groundwater potential zone mapping
17	Integration of Land Resource Inventory (LRI) and hydrology for Natural Resource Management (NRM) planning
18	Intellectual property, technology transfer and legal support
19	Intelligent Agricultural Systems Advisory Tool (ISAT) deployment and customization
20	Inventory of irrigated command areas (cropping pattern and crop condition assessment)
21	Irrigation infrastructure mapping and assessment of potential created and utilized
22	Market segmentation and product profile development for targeted breeding
23	Monitoring and evaluation using geospatial technology
24	Monitoring of water bodies (tanks) and irrigated areas
25	Monitoring, Evaluation, Learning and Impact Assessment (MELIA) services
26	Pathogen detection and race characterization in chickpea and pigeonpea
27	Performance evaluation and monitoring (irrigation intensity, crop productivity and water-use efficiency)
28	Procurement and validation of low-cost equipment, processing machinery and associated technologies
29	Rural livelihoods development and enterprise strengthening
30	Seed systems research for West and Central Africa (WCA) and Eastern and Southern Africa (ESA): data-driven breeding pipelines integrating Near Infrared Spectroscopy (NIRS) and X-Ray Fluorescence (XRF) for nutrient profiling and Controlled Integrated Optimization Technology (CIOT) operations for seed-to-seed research support
31	Seed viability testing of germplasm and breeding lines
32	Soil test-based fertilizer recommendation

No.	Service
33	Startup incubation, co-creation platforms and field validation for agri-entrepreneurship
34	Strategic foresight for crop improvement and seed systems
35	Strengthening or establishing food processing enterprises through technical handholding support to promote rural livelihoods
36	System dynamics modeling for agribusiness strategy, investment planning and policy and strategy design
37	Transgenic and gene-editing product evaluation in Plant Protection Level 2 (P2) biosafety greenhouses
38	Unmanned Aerial Vehicle (UAV)-based imaging using Red-Green-Blue (RGB) and multispectral sensors
39	Water productivity assessment
40	Wetland and fish culture suitability mapping

## Annexure C

### Services with Pricing to Be Defined

No.	Service
1	Climate modeling using Coupled Model Intercomparison Project Phase 6 (CMIP6) projections and downscaled Regional Climate Model (RCM) outputs, including Regional Climate Model (RegCM), Providing Regional Climates for Impacts Studies (PRECIS) and Weather Research and Forecasting (WRF) models
2	Computer vision and image analytics using artificial intelligence (AI) for crop monitoring
3	Crop stress mapping and sub-seasonal weather forecasting
4	Design and development of digital platforms and tools based on stakeholder needs across agricultural value chains
5	Digital Monitoring, Reporting and Verification (MRV) for agricultural carbon standards using MPRO
6	Generative artificial intelligence (GenAI) use cases for genebank applications
7	Pathogen detection and race characterization in chickpea and pigeonpea
8	Post Entry Quarantine Isolation Area (PEQIA) facility for quarantine clearance of imported seed material
9	Research and development in generative artificial intelligence (GenAI) for agriculture
10	Vulnerability mapping under climate extremes

# How to Engage with ICRISAT

ICRISAT follows a structured and transparent engagement process to ensure clarity, efficiency and alignment with partner objectives.

## Step 1: Initial Contact

Partners may contact the Private Sector Engagement team at [icrisat-pse@icrisat.org](mailto:icrisat-pse@icrisat.org) to share their areas of interest, technical requirements and proposed scope of collaboration.

## Step 2: Consultation

ICRISAT will schedule a consultation to understand the specific needs, objectives and expected outcomes of the engagement. During this stage, the most appropriate services, technical teams and collaboration models are identified.

## Step 3: Proposal Development

Based on the agreed discussion, ICRISAT develops a detailed proposal outlining the scope of work, technical approach, timelines, deliverables and pricing structure.

## Step 4: Agreement

Upon mutual agreement, a formal contract or Memorandum of Agreement is established. The agreement clearly defines roles, responsibilities, deliverables, financial terms and compliance requirements.

## Step 5: Implementation

ICRISAT's technical teams execute the agreed services in accordance with defined milestones and quality standards. Regular communication, monitoring and reporting mechanisms are maintained to ensure timely delivery and performance accountability.

## Contact Information

General Inquiries:

**Private Sector Engagement Team**

Email: [icrisat-pse@icrisat.org](mailto:icrisat-pse@icrisat.org)

Website: [www.icrisat.org](http://www.icrisat.org)

## Key Contacts

Overall Portfolio and CATALYST Initiative

<b>Contact</b>	<b>Dr Dinesh Kumar Chauhan</b>
<b>Designation</b>	CEO and Head – Agribusiness Innovation Platform
<b>Scope</b>	Overall queries related to ICRISAT's portfolio and the CATALYST initiative
<b>Email</b>	<a href="mailto:dineshkumar.chauhan@icrisat.org">dineshkumar.chauhan@icrisat.org</a>

Research Program	Contact Person	Email
<b>Accelerated Crop Improvement (ACI)</b>	Dr Shashi Kumar Gupta	<a href="mailto:shashikumar.gupta@icrisat.org">shashikumar.gupta@icrisat.org</a>
<b>Resilient Farming Systems (RFS)</b>	Dr Ramesh Singh	<a href="mailto:ramesh.singh@icrisat.org">ramesh.singh@icrisat.org</a>
<b>Transforming Agri-Food Systems (TAS)</b>	Dr Dinesh Kumar Chauhan	<a href="mailto:dineshkumar.chauhan@icrisat.org">dineshkumar.chauhan@icrisat.org</a>

**Headquarters:**

ICRISAT, Patancheru 502324

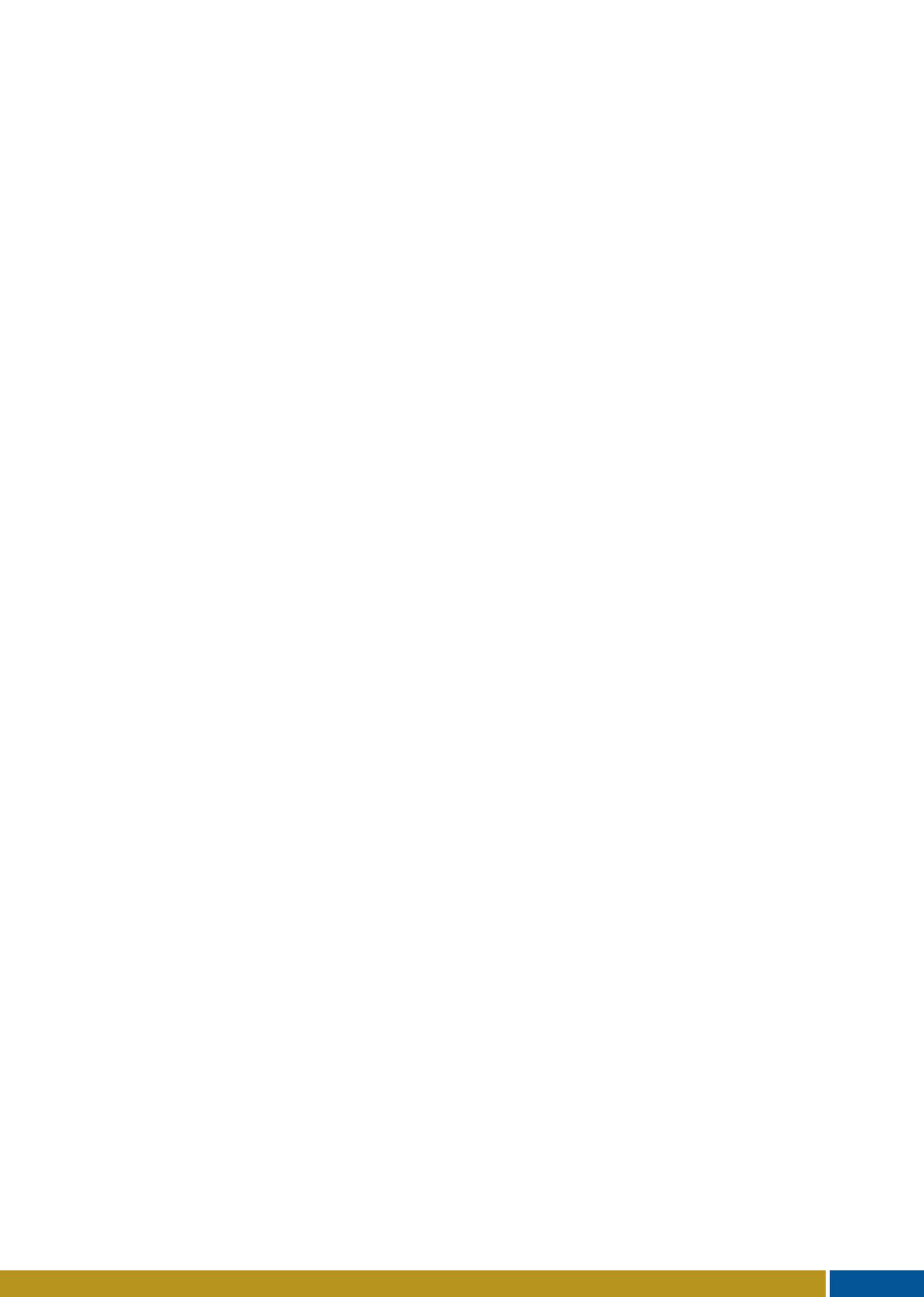
Telangana, India

Scan the QR code to download the digital version of the **CATALYST document**.



Scan the QR code to access the **ICRISAT–Industry Partnership Overview**.





# Join Us in Transforming Agriculture

ICRISAT is committed to building partnerships that advance innovation, sustainability and measurable impact in agriculture. Whether you are a seed company, agribusiness enterprise, technology provider, investor or development organization, we invite you to explore collaboration opportunities that leverage our scientific expertise, research platforms and field validation networks.

Together, we can develop and scale solutions that address climate variability, strengthen food and nutrition security and enhance rural livelihoods across the semi-arid tropics. By combining science, innovation and market engagement, we aim to generate durable value for smallholder farmers, value chains and agricultural ecosystems.

We look forward to partnering with you.



## 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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