Delivering nutrition to the drylands

ICRISAT Annual Report 2017

We believe all people have a right to nutritious food and a better livelihood.
**Research Highlights**

**Country strategies**

**Mali**
- Accelerating agricultural growth and family farming
  - Use of satellite imagery technology (Sentinel-2 Agriculture): >200% increase in the number of farm plots amenable to earth observation monitoring
  - Benefits from improved varieties: 60% increase in grain yield
  - Benefits from improved market integration: 42.3% increase in gross household income

**Niger**
- Reducing malnutrition and land degradation
  - Bioreclamation of degraded land (BDL): Benefit to women
    - US$ 500-800 annual income from a 0.02 ha plot
  - BDL technology dissemination: 10,770 farmers reached in Benin, Nigeria, Senegal, and Niger

**Nigeria**
- Increasing domestic food supply and creating jobs
  - 10,000 undergo agribusiness training, includes 4,662 youth and women farmers and small-scale processors
  - Benefits from improved varieties: 38-64% increase in grain yield
  - Benefits from improved market integration: 54.3% increase in gross household income

**Zimbabwe**
- Climate resilience and improved food security
  - A study in Nkhi using a multi-model framework forecasts that 65% of farming households may suffer from climate change.
  - Groundnuts have been identified as an opportunity to increase income for the poorest

**Zambia**
- Increasing yields and market integration: >51,000 chickpea farmers reached (about 30% are women)
  - Yield increased from 1,000 to 3,200 kg/ha

**Ethiopia**
- Accelerating agricultural growth and family farming
  - Use of satellite imagery technology (Sentinel-2 Agriculture): >200% increase in the number of farm plots amenable to earth observation monitoring
  - Benefits from improved varieties: 60% increase in grain yield
  - Benefits from improved market integration: 42.3% increase in gross household income

**India**
- Doubling Farmers’ Income and managing watersheds
  - CSR watershed pilot sites record 100% increase in farmers’ income in Karnataka, Andhra Pradesh, Telangana, Maharashtra and Odisha

**Kenya**
- Focus on women and youth
  - Impact of newly-introduced ‘Double up legume technology’ (intercropping pigeonpea and groundnut)
  - >100,000 households reached with nutrition messages

**Bangladesh**
- Heat-tolerant chickpea variety released

**Malawi**
- Reducing hunger and poverty
  - Impact of newly-introduced ‘Double up legume technology’ (intercropping pigeonpea and groundnut)
  - 800-1,100 kg/ha yield increase

**Tanzania**
- 2 stress-tolerant groundnut varieties of ICRISAT origin have been prioritized for production. Seed companies, farmer groups and agro-dealers are being mobilized for better production

**Tanzania**
- Groundnut seed roadmap designed to produce and deliver by 2019 – 267 tons of basic seed and 4,000 tons of certified/quality declared seed

**Zambia**
- Groundnut seed production: 27.5 tons (against a target of 23.2 tons)

**Outputs contributing to global impact**

**Genetic gains**
- Near aflatoxin-immune groundnut developed

**Genebank**
- 12,514 unique germplasm accessions assembled from 19 genebanks

**Crop improvement**
- 23 varieties released in 6 countries

**Digital agriculture**
- 9 start-ups incubated

**Seed production**
- 14,261 tons of seed of ICRISAT mandate crops shared with farmer groups, NARS and NGOs

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For detailed interactive version: annualreport2017.icrisat.org
Delivering Nutrition to the Drylands

Integrating nutrition across the agricultural R4D value chain: This graphic represents ICRISAT’s holistic approach – working from land and water management all the way through to agribusiness and market development. Here are examples of how we have integrated nutrition at each stage.

1. Testing approaches to better nutrition
- 179 mothers of malnourished children in rural Malawi were trained in diet diversity, hygiene and food safety. They were also taught to record the anthropometric data of their babies.
- 21 days later, incidence of diarrhoea almost entirely disappeared, impact on wasting showed progressive improvements.

2. Healthy soils, healthy crops, healthy people
- Soil health testing and use of treated wastewater
  - 300 locations in Asia & Africa under watershed development projects follow soil health protocols
  - 20,000 liters of wastewater is regenerated every day by a processing unit set up in Kothapally, Telangana, India.
  - Untreated wastewater, often used by farmers, comes with serious health risks

3. Breeding solutions for malnutrition and food safety
- Biofortification
  - 1 high-iron pearl millet cultivar released in India (2013)
  - 4 high-iron, high-zinc pearl millet biofortified cultivars released (2017)
  - Near aflatoxin-immune groundnut developed (2017)

4. Driving diet diversity from farms to homes
- Increase in dietary diversity in a year, recorded in a Kenyan project
  - Children 100%, Women/households 20%
  - ICRISAT mandate crops were used in this project

5. Technologies for safer food and higher yields
- >5 billion people at risk of aflatoxin exposure
  - On-farm management techniques helped reduce contamination by:
    - 70-84% in Mali (2003-2005)

Socio-economic studies on nutrition initiated

1975: Focus on food security
- Watershed projects pilot a holistic food systems approach
- Partnership with private seed companies through HRC*
- Agri-Business Incubation program started
- High Fe and Zn groundnut lines identified
- India’s first, high-iron biofortified pearl millet (Dhanashakti) released
- Near aflatoxin-immune groundnut developed
- High-iron, high-zinc pearl millet cultivars released

Food security
- Food safety
- Diversifying diets
- Nutrient profiling of chickpea (3000 lines)

Sustainable food systems
- Partnerships and market linkages

For detailed interactive version: annualreport2017.icrisat.org
Communication initiatives

- Smart Food initiative

ICRISAT timeline

Science of Discovery to Science of Delivery

Media coverage

423 regional news posts
58 global news placements, includes coverage in:
- BBC
- The Guardian
- Thomson Reuters Foundation News

Infographics

27 Infographics
19 videos in Youth in Agribusiness series

Smart Food initiative - Science of Discovery to Science of Delivery

ICRISAT timeline

Win top 10 Global Food Innovation

The Smart Food initiative was selected as one of the winning innovations for 2017 by LAUNCH Food which is supported by the U.S. Agency for International Development and the Australian Department of Foreign Affairs and Trade.

600,000 viewers per episode for reality TV show

A 13-episode Smart Food reality TV show was hosted by the Kenyan Television Network, to raise awareness on sorghum, millets and legumes.

Aistou Cuisine becomes Smart Food Ambassador

Senegalese chef based in Paris, Aistou Cuisine, developed recipes and championed Smart Food benefits through her social media.

Our people

ICRISAT Governing Board

Nigel Wells Kerby, Britain, Chair, ICRISAT GB (From May 2017)
Chandra A Madramootoo, Canada, Vice Chair, ICRISAT GB ( Till April 2017)
Trilochan Mohapatra, India, Vice Chair, ICRISAT GB
David Bergvinson, Canada, Director General, ICRISAT
Rachel K Chikwamba, South Africa
Sissel Ragne Norberg, Sweden
Wendy Umberger, Australia
Oswandie Muoyo Ngoma, Zimbabwe

Financial summary

Top Ten Donors for 2017 (in US$ thousands)

United States of America
Bill & Melinda Gates Foundation
17,109

India
9,928

CGAR Centers
6,041

CGAR System Organization
4,129

European Union
2,001

Zimbabwe
1,482

Global Crop Diversity Trust
1,122

Germany
1,106

Contribution to grant revenue by project size (in US$ thousands)

- Small (<100)
- Medium (100-500)
- Large (>500)

Staff

26 Nationalities
6 USA, Europe and Australia
4 Asia and Southeast Asia
9 West and Central Africa
7 Eastern and Southern Africa

Gender

♂ 80% ♀ 20%

Knowledge sharing

355 Learner participants

46% Interns
44% Scholars
10% Fellows

Read the full report: annualreport2017.icrisat.org
**Vision**
A prosperous, food-secure and resilient dryland tropics

**Mission**
To reduce poverty, hunger, malnutrition and environmental degradation in the dryland tropics

**Approach**
Inclusive Market-Oriented Development (IMOD)

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**Research Programs**

West & Central Africa
- Niger
- Nigeria
- Mali

Eastern & Southern Africa
- Malawi
- Ethiopia
- Zimbabwe
- Kenya

Asia
- Crop Improvement
- Integrated Crop Management
- Policy and Impact
- Plant Quarantine Unit
- ICRISAT Development Center
- Farm and Engineering Services

Innovation Systems for the Drylands
- Agribusiness and Innovation Platform
- System Analysis for Climate Smart Agriculture
- Monitoring, Evaluation, Impact & Learning
- Digital Agriculture & Youth
- Markets, Institutions, Nutrition & Diversity

Genetic Gains
- Genebank
- Pre-breeding
- Cell, Molecular Biology & Genetic Engineering
- Genomics & Trait Discovery
- Forward Breeding
- Seed Systems
- ESA-Biotechnology
- Systems Biology

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ICRISAT offices: HQ - Hyderabad, India; New Delhi, India; Bamako, Mali; Niamey, Niger; Kano, Nigeria; Bulawayo, Zimbabwe; Addis Ababa, Ethiopia; Nairobi, Kenya; Lilongwe, Malawi; Maputo, Mozambique.

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Our work contributes towards the following SDGs