CGIAR Regional Program for Sustainable Agricultural Development in Central Asia and the Caucasus

(1) Developments and challenges in the Region
(2) About the Regional Program
(3) Highlights from Annual Report 2010–2011
(4) Outlook

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Temperature at ground level (1979-2010)

Rainfall (1979-2010)

Area-Averaged Time Series (GPCP, 1D-Mo 2.1)
(Region: 54E-64E, 37N-47N)

-17%


The Aral Sea Basin

is among the most ancient centers of civilization

- 70% of the population of CAC
- High labor share in agriculture
- Largest irrigation area in the world (9.1 million hectares)
- Low rainfall, extreme rainfall variability, severe heat and cold
- Predicted temperature increase
- Loss of thousands of small glaciers
- Shift and reduction of rainfall
- Water distribution
  - Reduced production but growing demand for food and agricultural products
  - Loss of unique genetic diversity
Land degradation

<table>
<thead>
<tr>
<th>Soil salinity</th>
<th>36 million ha</th>
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<td>Low soil fertility</td>
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<th>Shallow groundwater</th>
<th>64 million ha</th>
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<td>Soil erosion</td>
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19 million ha

(E. de Pauw, ICARDA, 2008)

The Program

- Collaborative research for development since 1998
- International agricultural research centers
  - Bioversity International
  - International Center for Biosaline Agriculture (ICBA)
  - International Center for Agricultural Research in the Dry Areas (ICARDA) – convening Center
  - International Maize and Wheat Improvement Center (CIMMYT)
  - International Potato Center (CIP)
  - International Water Management Institute (IWMI)
  - Michigan State University
  - World Vegetable Center – AVRDC
- National agricultural research programs
- Objectives:
  - Increased productivity
  - Food and nutritional security
  - Environmental sustainability
  - Rural development
The Program

• Works in close collaboration with national partners - research organizations, governments, policy makers, farmer associations, universities, emerging private sector and other stakeholders

• Implements projects:
  – Center-funded ‘core’ activities
  – Grants directly funded by donors
  – Sixty projects implemented (50,000 – 5 million USD)
  – More than 25 million USD in new projects raised in ten years (mainly development cooperation budgets)
  – Seed money from the World Bank (3.4 million USD)

• Program Facilitation Unit in Tashkent - providing technical, policy and administrative support

• Governance by Program Steering Committee

Research areas

Productivity of Agricultural Systems
  Germplasm Enhancement
  Strengthening National Seed Supply Systems
  Crop Improvement
  Crop Protection
  Agriculture Diversification

Natural Resource Conservation and Management
  Irrigation, Drainage, and Water Basin Analysis
  On-Farm Soil and Water Management
  Rangeland Rehabilitation and Management

Conservation and Evaluation of Genetic Resources
  Plant Genetic Resources
  Animal Genetic Resources

Socioeconomic and Public Policy Research

STRENGTHENING OF NATIONAL PROGRAMS
The Program

- Each Center has its own mandate and available, global expertise – transfer, testing and development of technologies in CAC
- Research issues are inter-related
- Working together: complementarities and synergies
- CGIAR Research Programs to become operational in 2012
  - CRP1.1 Integrated Agricultural Production Systems in Dry Areas
  - Multi-disciplinary research teams working on selected research sites across the CAC Region
  - Benchmark areas and action sites identified

CGIAR Research Program 1.1 “Dryland Systems” – Action Sites in Central Asia and the Caucasus
High yielding, yellow rust resistant and heat tolerant wheat

- Introduction and testing of improved germplasm of winter and spring wheat to address production constraints
- More than 1000 seed samples tested yearly
- High yield, quality traits and tolerance to drought, heat, salinity, yellow rust
- Barley, chickpea, lentil, faba bean and grasspea
- Four new winter and one spring wheat varieties released in the past year

Identifying salinity tolerant wheat

Field Variability for Salinity

Salinity Tolerant & Susceptible Varieties

Normal Soil
Developing more resistant potato varieties and improving farmer-based seed production systems

Releasing new vegetable varieties and promoting their use

- AVRDC – the World Vegetable Center:
  - Twelve new varieties released (hot and sweet pepper, mung bean, soybean, long yard bean, leafy cabbage and tomato)
  - Very high potential to increase the area of cultivation and production, diversify diets and increase farmers’ incomes from fresh and processed products
Integrated Pest Management

- Development and delivery of ecologically based Integrated Pest Management packages for key food security crops – wheat, tomato and potato

Testing groundnut germplasm
Improving livelihoods of smallholders and rural women through value-added processing and export of cashmere, wool and mohair

Laser leveling
Soil and crop management practices
Raised-bed planting
Residue retention
Food legumes
Improving water productivity at all levels

Simple groundwater irrigation technology at the pilot small farm in the Fergana Valley

Number of boreholes

2001 2004 2007 2010
Innovative approaches to reclamation of marginal, low-quality land and water resources

- Reclamation of marginal, low-quality land and water resources
- Alley-cropping systems, direct sowing of mixed crops using zero tillage, crop rotations alternated with halophytes
- Crop diversification: evaluation and improvement of high-yielding, salinity-tolerant sorghum and pearl millet varieties (grain and fodder)

Conserving genetic resources

CAC considered center of diversity for cultivated fruits (apple, pear, peach, apricot, walnut, grapevine)
- Options for conserving horticultural crops and their wild relatives in Central Asia (GEF)
- Assessment of diversity
- Databases, guidelines and manuals (13 in the past year)
- Demonstration plots and nurseries
- Enabling legislation
- Regional networking and training on genebanks and germplasm enhancement
- Regeneration of crop collections
Food policy research

Field Days
## Capacity building and dissemination of research outputs (2010-2011)

- 35 training courses held in the Region
- About 120 researchers received short and long term training
- More than 1000 people participated in various farmers’ field days, farmers’ fairs, traveling workshops, farmers' schools and demonstration activities
- Scientific and technical publications
- Dissemination through exhibitions, presentations, interviews
- Shared media: CAC-News, posters, leaflets, website
- Central Asia and the Caucasus Association of Agricultural Research Organizations (CACAARI)

## The wider linkages and initiatives (2010-2011)

- Central Asian Countries Initiative for Land Management (CACILM)
- Towards the 6th World Water Forum – Cooperative actions for water security
- International Exhibition and Conference ‘Science, technique and innovation technologies in the Great Revival’, Turkmenistan
- The World Overview of Conservation Approaches and Technologies (WOCAT)
- Linkages with FAO, GIZ, UNESCO, IFAD, UNDP, European Union...
- Cooperation with Tashkent State Agrarian University
Outlook

- Demonstrated impact:
  - Adoption of technologies
  - Building bridges among the national agricultural research programs in CAC and between them and global research community

- An integrated approach to research

- Public policies must support improvements, e.g. diversification of agricultural production, water use efficiency

- Farmers are open to new approaches and innovations

- Potential of the Human Resources capital available in CAC

- Importance of field research

- Closer cooperation among the Centers

- Program is open to new collaboration with research and development partners

Who is Who in the Program Facilitation Unit

[Image of a group of people]