CGIAR Research Program on Dryland Systems

The global research partnership to improve agricultural productivity and income in the world's dry areas

RESEARCH PROGRAM ON Dryland Systems

CGIAR

Low-potential and marginal dry lands: strategies and tools to minimize risk and reduce vulnerability.

Higher-potential dry lands regions: Supporting sustainable intensification of agricultural production systems.

Why focus on Drylands?

Dry areas cover more than 40 percent of the world's land area and are home to 2.5 billion people—over one-third of the global population. Of these, one third depends on dryland agricultural production systems for their food security and livelihoods. Poverty, food insecurity, frequent drought and environmental degradation are widespread, and climate change will only exacerbate these problems.

What is CGIAR doing to address these challenges?

The CGIAR is developing a $150 million program on "Dryland Systems" , led by ICARDA, that will bring together scientists, development practitioners, farming communities and investors in 24 countries in Africa and Asia to improve the wellbeing of the rural poor, conserve vital natural resources, and empower smallholder farmers and pastoralists to cope with inherent climatic variability and climate change.

How is this program unique?

"Dryland Systems" is the first-ever global-scale research program to use an innovative, integrated agro-ecosystem approach involving multi-stakeholders to improve agricultural productivity, protect the planet, and alleviate poverty and hunger in dry areas. It aims to provide the poorest and most vulnerable with the means and capabilities to contribute to innovation, benefit from those innovations and enhance their own livelihoods.

The initiative is part of the CGIAR's new strategy that focuses on large, cross-cutting programs that tap unprecedented collaboration with a diverse range of partners to ensure that research leads to concrete results and significant, positive impact in the lives of poor people in developing countries. The Dryland Systems program works together with an array of public and private partners in five targeted regions, including 1) West Africa and the Dry Savannas, 2) East and Southern Africa, 3) North Africa and West Asia, 4) South Asia, and 5) Central Asia.

The program has adopted two complementary approaches to improving dryland systems:

- Increasing their resilience to biophysical and socioeconomic shocks; and
- Sustainable intensification of production systems to reduce food insecurity and generate more income.

What will the Program do?

- Produce unprecedented biophysical and socioeconomic characterization of major dryland systems in Africa and Asia;
- Identify, adapt and test technologies, institutions, and policies to better manage risk and sustainably intensify agricultural production systems while conserving the natural resources on which production depends;
- Form better public/private partnerships through innovation platforms that effectively deliver technologies to the rural poor in dry areas; and
- Monitoring progress and synthesize knowledge using state of the art tools in modeling and remote sensing.

What are the expected outcomes and impacts?

Dryland Systems research will result in:

- Improved crop and livestock productivity and reduced variability in agricultural production in target systems
- New agribusiness and market opportunities and increased employment from the diversification of production systems and adding value to agricultural products
- Increased capacity of vulnerable smallholder farmers to adapt to climate change by adopting natural resource management options that improve the resilience of their livelihoods
- Equitable access to, and better management of, natural resources
- Policy makers in target regions have access to and use new knowledge about agro-ecosystem develop ment, leading to increased and better focused investment in drylands

Region-specific outcomes will include:

- In West Africa: Research will raise plant and livestock productivity, and rural livelihoods through improved nutrient availability and water-use efficiency to reduce lean periods and lower exposure to system shocks;
- In East and Southern Africa: Research will increase productivity, income, and resilience among pastoralists through better crop-livestock integration and more efficient use of soil, water and other natural resources;
- In North Africa and West Asia: Research will improve technology transfer to farmers and agro-pastoralists to achieve better food, feed, health practices, and animal breeds using better policies, market access, financial tools, and extension systems.
- In Central Asia: Research will improve integrated water and land resources management in mixed agricultural systems to improve agriculture productivity, human nutrition and rural employment;
- In South Asia: Research will increase biomass production in order to provide food, feed, and reverse land degradation, thereby reducing household vulnerability to price and climate shocks;

Partners

The Program involves a wide range of partners including nine CGIAR Centers (Bioversity International, CIAT, CIP, ICARDA, ICRAF, ICRISAT, ILRI, IWMI, World Fish), the Challenge Program for Sub-Saharan Africa, more than 60 national agricultural research systems, advanced research institutions, development agencies, civil societies and private sector. The Program also involves GFAR, AARINENA, APAARI, CACAARI, FARA, ASARECA and CORAF. The Program is led by ICARDA.

Impact:

Dryland Systems research will reduce the vulnerability of farming communities to drought and climate change and sustainably improve agricultural productivity, resulting in improved and more secure incomes for 87 million people in dryland systems, while improving the productive capacity of natural resources and reducing environmental degradation in nearly eleven thousand million hectares in dry areas using the action sites.

Within six years, agriculture productivity and production will be increased by 20 to 30% in high potential areas and 10 to 20% in low potential areas or marginal lands. Out-scaling of proven technologies will cover a much wider area and improve the standard of living of a much larger population.

While the better endowed global agricultural production systems are expected to soon reach their potential, drylands have received the least attention and investment. By better exploiting existing know-how and available technologies, and creating new insights through research with communities, this CGIAR Research Program on Dryland Systems can have a global impact not only on the livelihoods of those that live in dry areas, but on the planet's future agricultural productive capacity and food security.

What we learn about reducing vulnerability and sustainable intensification dryland agro-ecosystems in the program target regions will benefit other parts of the world that face a hotter and drier future from climate change. Investment in dryland systems agricultural research-for-development is more urgent than ever.

Contact:
Dr. William Payne, Director, CGIAR Dryland Systems Research Program
c/o ICARDA
w.payne@cgiar.org
www.icarda.org/dryland_systems/teaser
http://www.cgiar.org/our-research/cgiar-research-programs/cgiar-research-program-on-dryland-systems/