Role of Geospatial Science, Technology and Applications (GeSTA) in Agro-Ecosystems

Youth & Capacity Dev. Engaging and empowering young gen. by creating opportunities

156 Remote sensing missions in orbit°

12 Sensors potential in CRPs/IRPs, etc.

>6 are free

5 Regions

1) The West African Sahel and dry savannas , 2) East and Southern Africa , 3) North Africa and West Asia 4) Central Asia , and 5) South Asia.

Ensuring Food Security

Specific mutual-interaction & synergies between plant and animal species and management practices

Integrated agro-ecosystems: innovative approaches and methods for sustainable agriculture, while safeguarding the environment

Mapping present, emerging & future land use /land cover dynamics, cropping patterns, forage, intensities, water use, pest & diseases, climate change & impacts

Quantification of existing agricultural production systems

Characterization of vulnerable areas for increasing resilience and assist in identifying mitigation pathways with biophysical, socioeconomic and stakeholder feedback as well as specific needs & constraints

$ Startup 35.47m
Total 122.7m

Cooperative Research and Partnerships

Characteristics of agricultural and livestock production in small holder farming systems and rural livelihoods

Gender Address social inequities, greater roles and priorities

Drylands 41% Earth's land area

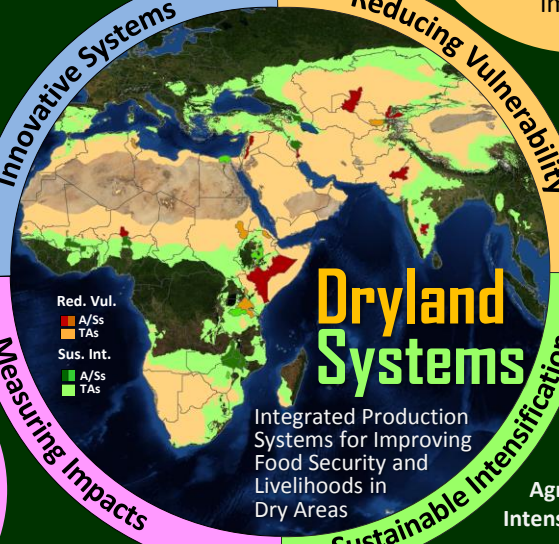
Biodiversity Spatial enrichment and its role in food security, risk mitigation, & sustainability

Innovative Systems

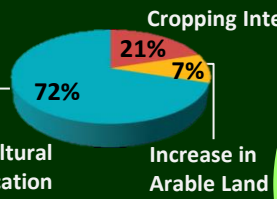
Reducing Vulnerability

Measuring Impacts

Sustainable Intensification



increased Food production potential sources



Measuring the impact at spatial scales, rate, magnitude, synergy among the systems, CRPs, cross-regional synthesis

Mapping the extent of existing & traditional practices, indigenous knowledge, diversity, potential areas for modern & improved, productive, profitable, and diversified dryland agriculture, & linkages to markets

Geospatial commons , KM sharing, stakeholder feedback

Assessing the impact of outcomes in Action Sites, post-project implementation, & M&E

Status & trends of existing production systems

Delineation of potential, suitable areas for sustainable intensification, and diversification of ag. Innovation production systems

Farmers, stakeholders, policymakers, mobilization, & marketing

Health Changing diet patterns, nutrition and health

People 2.5b Live in Drylands

Assessment of present, emerging & future droughts, floods, pests & diseases, extreme events, infrastructure, migration

Livestock 1.5b Depend on Drylands

Improved Livelihoods

CGIAR RESEARCH PROGRAM ON Dryland Systems

Crosscutting themes and linkages of CGIAR Research Programs* (CRPs)

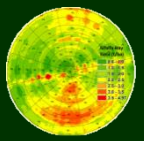
Gene Banks
Managing biodiversity in agro-systems. Focused Identification of Germplasm Strategy. Characterization of genetic resources at landscape level.

GB

Hyper and ultra spectral mapping of genotypic and phenotypic variability

Climate Change
Eco-friendly climate change adoption - strengthening approaches for better management of agricultural risks associated with increased climate variability and extreme events

CRP CCAFS



Mapping inter and intra variability at species, field, and farm scales

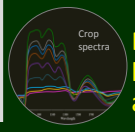
Water, Land and Ecosystems
Improving land and water, productivity, and ecosystem services. Assessment of land degradation, soil health and nutrition, and climate change impact

CRP WLE

Innovative tools and techniques for improved agronomic practices and management

Forest, Trees and Agroforestry
Improving synergies between agriculture, forest, trees as an integrated systems to enhance the sustainable production systems

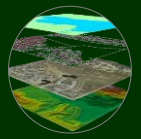
CRP FTA



Bio-physical-spectral libraries for mapping agricultural productivity

CRP L&F

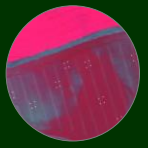
Location based services in natural resource management



CRP DC

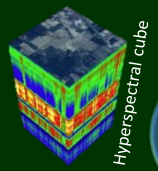
Dryland Cereals
Validating high yielding varieties with better pest and disease resistance, tolerance to abiotic stresses, and improved crop management technologies

Quantification of trends and status of soil fertility, salinity, and degradation,



CRP GL

Grain Legumes
Sustainable intensification-challenges and constraints, integrated crop and pest management practices, and value chain linkages



Geo-referenced *in situ*/field photo and data collection

CRP WHEAT

Wheat
Improving productivity and profitability of wheat, improved resistance to pests and diseases, climate resilient, and increasing yield while reducing inputs

Integrated pests and diseases management

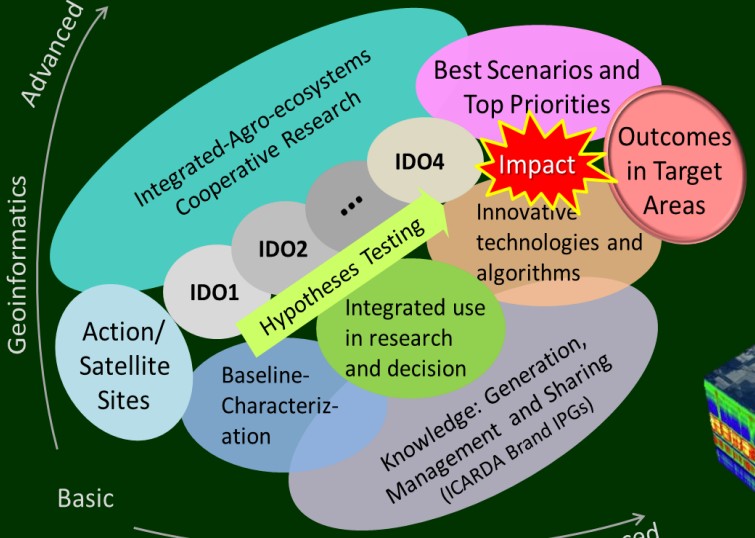
CRP PIM

Policies, Institutions, and Markets
Sustainable intensification, challenges and constraints, integrated crop and pest management practices, and value chain linkages

CRP DS

Dryland Systems
Enhancing productivity and managing risks through diversification, sustainable intensification, and integrated agro-ecosystem approaches

Livestock and Fish
Resilience and vulnerability of livestock production under changing climate, land use and markets, identify and address key constraints and opportunities



*ICARDA Led/Involved