





DryArc: a framework for a Sustainable Transformation of Dryland Agri-food systems under Climate Change

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International Center for Agricultural Research in the Dry Areas

ICARDA in the One CGIAR: sustainable dryland agri-food systems under climate change



The DryArc Region is a third of the world population and agricultural land

Systemic Innovation for Dryland Family Farming





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A systemic crisis requires a Systemic System of Innovation

There is large portfolio of Component Innovations



Bread

Wheat

Durum Wheat



Barley



Forages



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Four approaches to food security and sustainability in the Drylands



NENA Agricultural Land (2.5 M km2)

We need Systemic Innovation for a Sustainable Transformation of Agri-food Systems





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Five MODULES to Design and Manage R4D Projects

Arro-scoaystems Area (m.ha) × Irrigated systems 312 15 Rainfed systems 312 15 Rainfed systems 312 25 Agropestoral systems 873 43 Daset famming Potential 342 17 SHARE Knowledge, Technologies and Data



Module COMBINE – technologies in systemic innovation

125 mm Rainfall





Upstream Water Harvesting and Biodiversity Restauration



4.5 T/ha of barley

3 years



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Downstream "Marab"

- Communitybased
- Livestock
 Management
- Land Governance

Module COMBINE – technologies in systemic innovation

Laser assisted precision land leveling: a silent water revolution with impact at scale through science and partnerships

Systemic Innovation for 15000 Dryland Family Farming 10000

International Maize and Wheat Improvement Center



- Introduced through partnerships between CGIAR and NARS through eco-regional program, The Rice-Wheat Consortium (RWC)
- Best example of impact at scale in NRM with large private investments (~US\$ 500 million) with public and private benefits





Water saving in RW system (5 mha, 18 ha-cm ha-1 yr-1) = 10 km3 yr-1

irrigation

Other benefits- GHG mitigation, savings in subsidy bill etc

Module ACCELERATE: Co-design with farming communities

Addressing the challenges of the Sahel









- Build partnership to scale-up innovations
- Adopt efficient systemic approach
- Improve system productivity and efficiency
- Promote options for agribusiness to youth and women
- Build capacity of partners
- Leading to improve livelihood and increased resilience of people









Systemic Innovation for

Dryland Family Farming

Module ACCELERATE: Co-design with farming communities

Linking farmers in community of practices Scaling innovations through planned comparison



Module – INTEGRATE: Innovation and methods



Module – ENABLE: Policies and institutions for systemic innovation

Multisectoral models at country level to support policy and investments (e.g. AIDA)





Activities (producers)



Module SHARE Knowledge, Technologies and Data



AOI-Area of Interest; APIs- Application Program interface; KMT-Knowledge Management Tools; IMF- Integrated Modelling Framework; MEL- Monitoring and Evaluation Platforms; GeoOC-Geoinformatics Option and Context; GeoAgro- Geoinformatics for Sustainable Agroecosystems; TEDs- Technology Extrapolation Domains;

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Next Steps

- Co-design the DryArc Interface and Modules:
 - Avoid duplication and create synergies for Dry Regions (FAO, GYGA, CSIRO...)
 - Define provision of services with stakeholders and governments
 - Accelerate knowledge sharing on innovations for the DryArc agro-ecosystems
 - Identify Hot-Spots for Systemic Innovation
- Co-design and raise funding for targeted R4D projects with countries and international Organisations
 - Regional or Country Level
 - Consideration of One or several of the Agro-ecosytems
 - Define targets in SDGs considering trade-offs and synergies
 - Engage with stakeholders and policy makers
- Participatory implementation of projects:
 - With local communities
 - Public-Private Partnership
 - Capacity development, Gender and Youth
 - Feed back to the DryArc Knowledge base for other regions icarda.org

Thank you



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