



RESEARCH
PROGRAM ON
Dryland Systems

Enhanced smallholder wheat-legume cropping systems to improve food security under changing climate in the Drylands of West Asia and North Africa (2012-2015):

IFAD Grant Number: COFIN-ECG-56-ICARDA

Acknowledgments

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Disclaimer

The opinions expressed here belong to the authors, and do not necessarily reflect those of Dryland Systems, ICARDA, or CGIAR.

BACKGROUND ON THE PROJECT

W3 Project mapped to CRP-DS

Project title

Enhanced smallholder wheat-legume cropping systems to improve food security under changing climate in the Drylands of West Asia and North Africa (2012-2015).

IFAD Grant Number: COFIN-ECG-56-ICARDA

This project is more on the side of Promotion of Technologies than on Research *per se*

This project ended on the 31st of October 2015.

Project Components

PC1. Seeds tasks: 1.1-Early seed increase (breeder, foundation seed), 1.2-Seed increase for technology dissemination platforms, 1.3-Varieties released, 1.4-Varieties promoted (in progress for release), 1.5-Seed sector study, 1.6-Strengthening NARS quality seed capabilities and development of quality seed with alternative informal seed systems

PC2. Dissemination and Promotion of improved production technologies tasks: 2.1-On-farm dissemination platforms of new varieties (variety popularization), 2.2-On-farm dissemination platforms of integrated technology packages (varieties with IPM, CA and SI technology package components), 2.3-On-farm dissemination platforms of CA (Demonstrations on Direct drill or Raised beds), 2.4-On-farm dissemination platforms of IPM packages (Demonstration of control packages for weeds, Orobanche, insects, foliar diseases and others relevant pests). 2.5-On-farm dissemination platforms of SI packages (Demonstrations on supplemental irrigation: management and systems), 2.6-Participatory variety selection (PVS activities on advanced on-farm verification trials).

PC3. Capacity development tasks: 3.1-Capacity development of farmers and local extension field support staff (FFS sessions, technical interaction field/harvest days, short interactions in-country training courses), 3.2-Capacity building of researchers and research support staff (Group/Individual training courses, degree research back up of graduate students, degree studies, participation to national and international scientific events).

PC4. Socio-economic studies and Gender tasks: 4.1-Socio-economic baseline study/survey (characterization of target area: assets/results and adoption analysis), 4.2-Cost/Benefit analysis of sub-components 2.2 to 2.5, 4.3-Genders issues (mainstreaming, empowerment and opportunities/income equity).

PC5. Back up and gap filling research tasks: 5.1-Adaptation of technologies better responding to farmers' production environments and end-user requirements, 5.2-Development of new technologies and integrated technology packages better adapted to climate variability and change, 5.3-Establishment of processes and production decision-making tools and methods responding to climate variability and change.

a. Progress NAWA/ Rainfed (Algeria, Morocco, Tunisia, Lebanon, Jordan and Turkey)

I. Progress towards outputs (2 pages)

Numerous decisive outputs have been generated from the project five components (PC1: Seed increase to promote new varieties, PC2: Dissemination of improved technologies, PC3: Socio-economic and constraint studies, PC 4: Constraint surveys and back up research, PC5: Capacity development of farmers, extension and research staff).

These were mainly in:

-Technology dissemination of wheat, food legume varieties and IPM/IDM packages, -Seed increase of promising lines and varieties and NARS seed sector strengthening, -Promotion of CA-direct drill and bed planting and supplemental irrigation, -Capacity building of farmers through FFS classes, field days and on farm focused training sessions, -Capacity building of research scientists and support staff with relevant national and regional training courses and support to degree research of young graduate students, -Constraints and assets identification with baseline surveys, -Cost/benefit, gaps studies and assessment of adoption of promoted technologies.

Important progress were made in the adoption of project technology packages which have been already exposed in the 6 project countries of the region to an estimated number of 13 000 farmers. Success areas are: adoption of durum wheat and related management packages in all six countries, striking adoption of chickpea technology in Tunisia, Turkey, Lebanon and Jordan, sticking progress in lentil in Algeria and Turkey, well appreciated progress in the promotion of CA-direct drill in Algeria, Morocco, Jordan, Lebanon and Turkey despite limitations of the availability of direct drill planters for small farmers. Important achievement in strengthening of the seed sector with the establishment of small seed enterprises, especially for food legumes in Algeria, Morocco, Tunisia and Jordan. The project provided the basic assets: seed processing machines and training of farmers in seed business planning/

Links:

- Country Project Reports 2014-15 and Synthesis power point presentations made during the project closing workshop held in Rabat October 10 and 11, 2015
- Project Completion External Review Report

These reports will be shortly on the project web site hosted by ICARDA.

Refer to indicators from Table 1, as relevant.

II. Progress towards the achievement of research outcomes and IDOs (2 pages)

Most of the progress was on IDOs related to increased productivity, increased resilience to climate change and variability, improved nutrition diets and food safety, improved human and animal health through better agricultural practices, progress in adaptation and mitigation and strengthening of NARS partners research capabilities and delivery and particular progress on strengthening farmers capabilities, motivation and adoption of improved technologies.

III. Progress towards Impact (1/2 page)

Technologies deployed in all six countries have already impact farmers of the project zones. This was mostly due to the persistent strategy of favoring intensive on-farm interaction with farmers, provide the needed inputs (varieties, IPM packages, FFS capacity building, interactive field days) to ensure efficient dissemination of project technologies and build up impact.

The research capabilities of both NARS countries have been strengthened with the well focused project capacity building activities of researchers and support staff to better serve research and farmers in an already practices “Research for Development” environment the strategy advocated in used in this project.

IV. Unexpected Outputs, Outcomes and or Impact

Serious national initiative in Tunisia to boost durum wheat chickpea and faba bean small (a feed crop) promotion with the project produced technology packages. Morocco has serious backing from farming communities, national seed company and the OCP foundation to further promoting varieties of durum, chickpea and lentil technologies. Algeria would embark into a national rural rehabilitation program with increasing food legumes cultivation, productivity and production as a major component objective. Lebanon and Jordan would seek donors to continue their success story with the promotion of durum, chickpea and conservation agriculture technologies.

b. NAWA/ Irrigated (Egypt, Sudan)

I. Progress towards outputs (2 pages)

Main accomplishments were:

For Egypt: -Technology dissemination of faba bean varieties tolerant to orobanche, the major constraint, dissemination of IDM (foliar diseases) and IPM packages to control orobanche and weeds, -Seed increase of these varieties to reach a bigger number of farmers in Dakhalia, Sharkia and Nubaria Governorate, -Promotion of bed planting to decrease orobanche and weed infestations and save (reduce) irrigation water, -Capacity building of farmers through FFS classes, field days/harvest days and on-farm focused training sessions, -Capacity building of research scientists and support staff with relevant national and regional training courses and support to degree research of young graduate students, -Constraints and assets identification with baseline surveys, -Cost/benefit, gaps studies and assessment of adoption of promoted technologies.

For Sudan: -Technology dissemination of faba bean and chickpea new varieties, -IPM packages on weed, viruses and insect control, -seed increase and distribution of new varieties varieties, -seed sector strengthening with the establishment of the first Village-based Seed Enterprise (the project contributed a seed processing machine and training on technical aspects and business planning) to further promote chickpea cultivation in the Gezira Schem and Northern State, -Promotion of bed planting in faba bean and chickpea to reduce water use and infestations from weeds, Capacity building of farmers through FFS classes, field days/harvest days and on-farm focused training sessions, -Capacity building of research scientists and support staff with relevant national and regional training courses and support to degree research of young graduate, -Cost/benefit, gaps studies and assessment of adoption of chickpea technologies adoption in the Gezira Scheme, assessment (survey) of the evolution in gender role in agriculture.

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III. Progress towards Impact (1/2 page)

In Egypt, faba bean acreage started increasing again and a national initiative on the rehabilitation of faba bean cultivation has been officially established.

IFAD and the EC are very much attracted by the Egyptian success story. A working mission visited the project area, evaluated and acknowledged the success of the Egyptian strategy and results obtained.

In Sudan, strong progress made in chickpea cultivation in the Gezira Scheme, the most potential agricultural area in Sudan.

In both countries national policy makers would be backing the continuation of activities after the end of the project.

The research capabilities of both NARS countries have been strengthened with the well focused project capacity building activities of researchers and support staff to better serve research and farmers in an already practices “Research for Development” environment the strategy advocated in used in this project.

IV. Unexpected Outputs, Outcomes and or Impact

In Egypt, at the national level, one of the most important unexpected outcome was the start of a national rehabilitation of faba bean cultivation program to meet the ever increase need, particularly of rural populations. Another important outcome related to the promotion of faba technologies package with more than 3000 farmers is the increase of in the curves of area, productivity and production well acknowledged by policy makers.

In Sudan: chickpea technology packages is impacting livelihoods of farmers in the Gezira scheme and contributing to the increase in chickpea in the national market and reduction of difficult imports.

Significant research achievements in all 8 project countries

- New varieties released, increased, promoted and used by farmers in durum, bread wheat, faba bean chickpea and lentil,
- More efficient IPM packages transferred and used by farmers to control orobanche in Egypt, Sudan and Tunisia, weeds (all countries) and ascochyta blight of chickpea, Algeria, Tunisia, Morocco, Turkey, Lebanon, Jordan and Sudan
- Promotion of CA and supplemental irrigation and their use by farmers in countries where direct drill planters and irrigation water available (Algeria, Morocco, Lebanon, Jordan, Turkey, Tunisia),
- Promotion of bed planting in irrigated agriculture (Egypt Sudan)

- New sources of resistance to disease of wheat and food legumes identified.
- Several PhD and MSc accomplished
- Several ISI publications and several, impact briefs, flyers and brochures produced.
- Guide Book on Conservation agriculture and its translation to French and Arabic to benefit and ample demanding audience.
- Interactive capacity building with over 20 000 farmers and extension staff across the 3 years of the project.
- Capacity building : training courses national and regional (450 beneficiaries) and support to graduate student (1 8 PhD and MSc students)

External Review Assessment of Major output Achievements (PY1 +PY2+PY3: 2013-2015)

Output	Unit	Achievements
Variety release of food legume: F. bean, chickpea, lentil	Number of variety	58
Variety release of Durum and bread wheat	Number of variety	45
Seed production of new varieties of food legumes	Ton	189
Seed production of new varieties of wheat	Ton	11 517
On farm demonstrations for technology transfer	Demonstration	1 060
Farmer participatory selection of new varieties	Variety selected	45
Conservation agriculture demonstrations	Demonstration	106
Supplemental irrigation demonstrations	Demonstration	57
Integrated pest and disease management demonstration	Demonstration	136
Breeding and variety selection of food legumes	Line tested	5 813
Breeding and Variety selection of wheat	Cross and trial	224
Screening of biotic and abiotic stresses	Line tested	5 952
Training of research and support staff	Staff member	467
Degree training for PhD. and MSc.	Member	18
Farmers and extension staff trained in new technologies	Participant	21 710



RESEARCH
PROGRAM ON
Dryland Systems

The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas.

Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centers and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

The program is led by the International Center for Agricultural Research in the Dry Areas (ICARDA), a member of the CGIAR Consortium. CGIAR is a global agriculture research partnership for a food secure future.

For more information, please visit
drylandsystems.cgiar.org

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