

F4: Barley Seed systems and Input Markets-Barley: Annual report 2016

1. Introduction

ICARDA is implementing a project entitled '*Deployment of malt barley and faba bean varieties and technologies for sustainable food and nutritional security and market opportunities in the highlands of Ethiopia*' with financial support from USAID in Ethiopia and *Increasing the Productivity of Cereal-based Systems to Enhance Food Security* in Iran (started in 2016-17). In Ethiopia, the project includes scaling-out improved barley varieties and associated crop management technologies in 21 zones and 62 districts of four regional states of Amhara, Oromia, Southern Nations, Nationalities and Peoples (SNNPR), and Tigray. In Iran, the project focuses in rianfed areas of four provinces i.e. East Azerbaijan, Kermanshah, Kurdistan and Lorestan provinces.

The following key areas are covered under CRP and bilateral projects in Ethiopia and Iran:

- Barley seed system study jointly with CRP-DS (including DNA finger printing) to analyze varietal adoption, farmer's perception, seed sources, etc to understand systemic constraints and recommend solutions in Ethiopia
- Accelerated early generation seed (breeder, pre-basic and basic seed) production by NARS in Ethiopia and Iran particularly using off-season production under irrigation where feasible
- Accelerated early generation seed (basic) seed production by NARS (Iran) and with farmer seed producer's cooperatives (Ethiopia). NARS identify and engage farmer groups to produce pre-basic and basic seed under their strict supervision and link them to regional seed certification agencies to ensure quality.
- Large-scale certified seed production by engaging the public/private sector where there is limited interest in barley seed production.
- Small seed pack distribution as part of on-farm quality seed production and scaling-out of barley technologies through revolving seed scheme in Ethiopia
- Popularization and demonstration of new improved malt barley varieties and integrated crop management technologies where farmers hosted both the demonstration and field days in Ethiopia
- Strengthening capacity of NARS partners, stakeholders and farmers for acquiring knowledge and skills for effective project implementation and provision of facilities where feasible
- Characterizations of farm households to establish benchmarks and measure the impact of the project on adoption and impact on food and nutritional security.
- Forging an effective partnership existing public, private and farmer-based actors for effective project implementation.

2. Barley seed multiplication

In order to expedite the availability of and access to seed NARS partners and formal and informal seed producers and suppliers have been supported to engage in seed production of improved barley varieties. In Ethiopia, both federal and regional agricultural research institutes were engaged in several activities including early generation seed (EGS) multiplication, on-farm community seed production and small pack seed distribution for technology out-scaling and variety popularization and integrated crop management (ICM) demonstration.

2.1 Early generation seed multiplication by NARS

Availability of and access to basic of improved varieties remains a stumbling block for barley in most developing countries. Early generation seed (breeder, pre-basic and basic) was produced by NARS through a bilateral project in Ethiopia and Iran (Table 1). In Ethiopia about 7,51, 20.48 and 136.6 ha, respectively and 18.8 t of breeder seed, 51.2 t of pre-basic seed and 341 t of basic seed were produced by EIAR and RARIs in 2016 crop season. While the breeder seed and pre-basic was produced on-station, most of the basic seed production was carried out with farmer seed producer cooperatives or groups. About 10.5 t of seed was provided to 176 farmers (17 female farmers, 9.7%) for basic seed production and an estimated 262.5 t of seed is produced. This is sufficient to plant 26225 ha of certified seed next year.

In Iran, under the Iran-ICARDA bilateral projects, 3.7 ha breeder1, 549.1 ha of breeder 2, 191.7 ha of breeder 3 and 458 ha elite (basic) seed was planted by DARI with a corresponding estimated production of 4.75, 1010, 414.1 and 687 t of seed in 2016/17 crop season.

Table 1. Summary of seed production for barley during 2015/16 cropping season in Ethiopia

Seed class	Seed provided (t)	Area planted (ha)	Expected production (t)	No of farmers benefitted			Remarks
				Male	Female	Total	
Ethiopia							
Breeder	-	7.5	18.8	-	-	-	NARS on-station
Pre-basic	-	20.5	51.2	-	-	-	NARS on station
Basic	-	31.6	79.1	-	-	-	NARS on station
Basic (small pack)	10.5	105	262.5	159	17	176	NARS-on-farm
	10.5	164.6	411.6	159	17	176	
Iran							
Breeder1		3.7	4.75				NARS on station
Breeder2		549.1	1010				NARS on station
Breeder3		191.7	414.1				NARS on station
Elite seed		458	687				NARS on station
		1202.5	2115.85				
Total	10.5	1367.1	2527.45	159	17	176	