



## **Research Report 2015**

**Cluster of activity: Establish Seed System Platform**

**Reporting Center: ICARDA**

### **Collaborators:**

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**Activity:** Introduction and seed production of new winter wheat variety and barely varies in Sugd, Tajikistan

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Sharma, R.C., J. Turok, E. Saidov, and K. Sultanov. 2015. Introduction and seed production of new winter wheat and barley varieties in Sugd, Tajikistan. Report. ICARDA, Tashkent, Uzbekistan.

## **Introduction**

Wheat is the most important crop in the Sugd Province of Tajikistan which falls within the Fergana Valley Action Site of CRP-DS in Central Asia. Yellow rust is the most important wheat disease in Sugd province of Tajikistan which is controlled by fungicide application every year because all wheat varieties grown by the farmers in the Action Site are susceptible to yellow rust. Application of fungicide increases the cost of wheat production, and is harmful to human health and environment. Tajik wheat improvement program in collaboration with ICARDA, CIMMYT and the International Winter Wheat Program has released a few yellow rust resistant winter wheat varieties. Informal and formal discussion with the farmers and district agricultural offices it was found that there was no information available to the farmers about the yellow rust resistant winter wheat varieties available in other parts of Tajikistan. Further to that there was not enough seed of the yellow rust resistant varieties (Alex and Ormon) available in other parts of the country which could be brought to allow the farmers in Sugd province grow those varieties. Besides, farmers were not sure if the new varieties would be suitable for their farming conditions. Hence an adaptive study was undertaken to plant a number of farmers' field with Alex and Ormon wheat varieties and compare their performance with the widely grown local variety Krasnodar-99. The farmers were also asked not to spray the two new varieties with fungicide because they were resistant to yellow rust in other parts of Tajikistan.

In addition to wheat one barley variety Pulodi was also introduced for cultivation by the farmers with mixed farming of crop and livestock. Pulodi barley was selected and released in Tajikistan from improved germplasm provided by ICARDA.

Forty farmers of the farmers' association in Bobojon Gafurov district participated in the experiment on wheat and barley (Table 1). The objective of the study was to compare relative performance of the two yellow rust resistant new varieties and the farmers' variety. One specific objective was to estimate the saving on input use as the cost of fungicide used only on the farmers' variety. The objective of barley introduction was to provide a drought hardy crop for the farmers with crop and livestock mixed farming system.

## **Experimentation**

Forty participant farmers planted 64.8 ha of wheat and 2.5 ha of barley. The crops were fully managed by the farmers using their own package of practices. None of the farmers sprayed the two new wheat varieties with fungicide to control yellow rust, whereas all farmers used fungicide on the locally grown variety Krasnodar-99. The average cost of chemical spray was around USD 130/ha.

During crop maturity several participant farmers and ICARDA wheat specialist visited a few wheat fields to assess the performance (Figures 1 and 2) of new varieties. It was noticed that there was generally lesser amount of water available for irrigating wheat crop during spring and

summer months in 2015. Hence yields of the wheat varieties were expected to be lower than their yield potential.

## Results

Forty farmers (39 men and 1 women) participated in the seed production activity in 2015. They produced Alex and Ormon on 41.8 ha and 23.0 ha respectively (Table 1). The total seed produced by the farmers was 241 ton. Since the farmers didn't spray fungicide so, they saved on the cost of the inputs. The estimated cost of fungicide spray was USD 130/ha. The farmers reported that yield of Alex and Ormon varieties of was mostly greater than the locally grown varieties, and never lower. Thus, even if the farmers harvested new varieties at the same yield level as the local variety, still they saved on the cost of fungicide.

Additional income for the participants came from higher price of seed compared to that of grain. Seed price is often twice the price of grain. The participant farmers were small farmers who often used to buy seed from the grain market, without being sure about the quality and genetic purity. Thus this activity on seed production helped the small farmers produce and keep their own seed of wheat and barley, as well as sell to the neighboring farmers when seed was in excess of their own need.



Figure 1. Seed multiplication field of Alex wheat variety in Sugd, Tajikistan 2015



Figure 2. A few participant farmers involved in wheat seed production in Sugd, Tajikistan 2015

For barley crop, farmers produced 6.7 ton seed all of which was used for planting in 2015-2016 by themselves by the neighboring farmers. Thus area under barley seed production is going to expand in the following years.

**Conclusion:**

Most of the farmers involved in seed production successfully produced wheat and barley seed. A large amount of the seed produced in 2015 has been planted for 2015-2016 and the trend is likely to continue. Hence, it is expected that within the next three years >50% of the wheat area in the Action Site will be planted with yellow rust resistant wheat varieties, which can help contain the disease epidemics. Cultivation of new varieties are profitable to the farmers in obtaining higher yield and saving on the cost of fungicide.

**Outcome:**

In 2015-2016 more than 500 ha of area has been planted with the two new wheat varieties and around 20 ha planted under improved barley variety.

Table 1. Name of the farmers and area under seed production under two new wheat and one new barley varieties in Bobojon Gafurov district of Sugd province in Tajikistan, 2015

№	Farmer's Name	Gender	Farm Name	Total area (ha)	Wheat						Barley		
					Ormon			Alex			Pulodiy		
					Area (ha)	Yield (t/ha)	Production (t)	Area (ha)	Yield (t/ha)	Production (t)	Area (ha)	Yield (t/ha)	Production (t)
1	Abdualiev Gafurchon	Male	Maradjab	1.5	1.0	2.81	2.81	0.5	2.73	1.36			
2	Abduazimov Rustam	Male	Rasulov	1.0				1.0	5.1	5.1			
3	Abdukhalilov Abdumanon	Male	Abdu	1.0	1.0	3.7	3.7						
4	Akhmedov Bakhodurjon	Male	Bakhodur	1.0				1.0	3.5	3.5			
5	Alamurodov Mansur	Male	Urunkhudja	1.0	1.0	3.1	3.1						
6	Aminov Mubinjon	Male	Khodja	1.0	1.0	3.22	3.22						
7	Aybov Nosir	Male	Aubobo	1.0				1.0	3.2	3.2			
8	Bakhovaddinov Maruf	Male	Bakhoviddin Mahsum	1.0				1.0	4.8	4.8			
9	Bobodjoniva Riski	Female	Bobokhudja	1.0				1.0	4.0	4.0			
10	Bobodjonov Abdushukur	Male	Bobodjon	1.0				1.0	4.2	4.2			
11	Dushaboev Ashur	Male	Kushatov	2.0	0.5	2.83	1.42	1.5	2.79	4.2			
12	Gafurov Ergashboy	Male	Khodjabakirgon	1.0				1.0	3.21	3.2			
13	Ikromov Isoboy	Male	Kosim	1.0				1.0	5.9	5.9			

14	Jumaev Shamsitdin	Male	Djakhongir	0.5							0.5	3.3	1.65
15	Juraev Akram	Male	Rokhbar	1.0				1.0	4.4	4.4			
16	Juraev Komil	Male	Juraev	1.0				1.0	4.8	4.8			
17	Khakimov Ikrom	Male	Istiklol	1.0	1.0	3.9	3.9						
18	Khomidov Valiboy	Male	Vali	1.5				1.5	2.97	4.6			
19	Khuseinkhudjaev Mukhtor	Male	Mukhtor	1.0				1.0	3.7	3.7			
20	Kiikboev Alimardon	Male	Kushatov	1.0				1.0	2.9	2.9			
21	Komilov Tolib	Male	Urunkhudjaev	1.8				1.25	3.27	4.1	0.5	3.3	1.65
22	Kushboev Abdulla	Male	Djabor	4.0	2.0	5.2	10.4	2.0	5.2	10.4			
23	Makhmudov Abdukhafiz	Male	Makhmudkhudja	1.0				1.0	3.3	3.3			
24	Maysupov Rasul	Male	Ch.Rasulov	2.0	1.0	3.7	3.7	1.0	3.7	3.7			
26	Okhunov Djafar	Male	Dj.Okhunov	1.0				1.0	3.5	3.5			
27	Oripov Farkhod	Male	Tochikiston	2.5	2.5	3.6	9.0						
28	Oripov Furkat	Male	Orif	2.5				2.5	3.6	9.0			
29	Otaev Mukhammad	Male	Ustodekhkonov	1.0				1.0	5.0	5.0			
30	Pulatov Valijon	Male	Vali	1.0	1.0	4.4	4.4						
31	Rakhmatov Naimchon	Male	Rakhmatboy	1.0	1.0	6.0	6.0						
32	Ruziev Sharifjon	Male	Ruziev	2.0	1.0	6.0	6.0	1.0	5.5	5.5			
33	Saidov Davronbek	Male	Saidov	1.0				1.0	5.0	5.0			

