CRP Dryland Systems

Technical report – 2014

Cluster of activity

Identify and introduce stress tolerant, high-yielding and improved quality varieties of cereals, potato, vegetable, horticultural, fodder crops through on-farm adaptive trials.

Reporting Center: ICARDA

Action site: Aral Sea Region

Objective:

Identify high yielding salinity tolerant and heat tolerant chickpea varieties for Aral Sea region.

Problem addressed:

Salinity and terminal heat are two important perennial abiotic constraints to successful chickpea cultivation in Aral Sea region. Chickpea is planted in spring and matures through hot months in June and July.

Outputs:

1. Eight experimental genotypes and two commercial cultivars of chickpea evaluated.

Outcomes:

1. Two superior experimental lines of chickpea identified.

Partners:

- Khorezm Rurual Advisory Support Services (KRASS), Urgench, Uzbekistan
- Tashkent State Agrarian University, Tashkent, Uzbekistan

Experimental details:
Number of genotypes evaluated: 10 (in Urgench) and 9 (in Tashkent)

- 8 experimental line
- 2 checks (Uzbekistan 32 and Khalima) in Urgench and 1 check (Khalima in Tashkent)

Experimental set up: RCBD in three reps
Planting time: April 4, 2014 in Urgench and October 20, 2013 in Tashkent
Plot size: 3 m^2

Results:

- Genotypic performance is given in Tables 1 and 2.
- FLIP 03-74 and FLIP 06-124 were identified as promising genotypes for Aral Sea (Table 1). These lines also performed well Tashkent when planted in autumn (Table 2).
- Autumn planting in Tashkent produced much higher yield than spring planting in Urgench. Autumn planting in Urgench is not possible due to low temperatures (up to -25 □C) and frost in winter months.

Table 1. Performance of chickpea under terminal heat stress in Urgench, Uzbekistan, 2014

Genotype number	Name	Grain yield (t/ha)	1000-grain weight (g)	Field selection
1	FLIP 06-102	1.428	294	
2	FLIP 06-66	1.403	274	
3	FLIP 03-074	1.528	305	√
4	Khalima (new variety)	1.341	293	
5	FLIP 03-27	1.320	305	
6	FLIP 06-155	1.593	307	
7	FLIP 06-124	1.425	310	√
8	FLIP 05-69	1.424	311	
9	FLIP 03-102	1.476	313	
10	Uzbekistan 32 (Local Check)	1.414	275	
$LSD_{0.05}$		0.264	21	
CV(%)		10.6	4.1	

Table 2. Performance of autumn planted chickpea in Tashkent, Uzbekistan, 2013-2014

№	Variety	Weight of one dry plant (g)	One plant pods number	One plant pods weight (g)	One plant beans number	One plant beans weight (g)	1000 – kernel weight (g)	Yield, (t/ha)
1	Jahangir	24.3	33.2	18.4	382	14.4	376.9	2.75
2	Flip-06-102	34.1	42.2	23.6	45.8	18.2	396.5	3.54
3	Flip-03-102	27.5	36.4	21.9	42.5	17.1	402.3	3.23
4	Flip-06-66	23.9	40.1	19.2	43.2	13.4	312.5	2.24
5	Flip-03-74	31.3	38.6	20.8	41.8	15.4	370.4	3.01
6	Flip-05-69C	21.9	34.2	18.5	40.6	14.3	353.1	2.61
7	Flip-06-124	25.3	35.0	19.7	39.9	15.7	395.3	2.94
8	Flip-03-27	20.5	30.2	16.6	34.5	12.6	365.3	2.29
9	Flip-06-155	28.2	39.8	21.9	44.8	17.5	409.9	3.15