J Genet Resour 2024; 10(1):46-56 *Homepage: http://sc.journals.umz.ac.ir/*

RESEARCH ARTICLE *DOI: 10.22080/jgr.2024.26730.1383*

Supplement 1. The registration or ancestry information of the selected varieties.

Genotype No	Variety Name	Release date	Origin	Ancestry/Registry
1	Bezostaya*	1968	Kazakhstan	Imported
2	Pishgam*	2008	Iran	Crossed: Zhong 87 x Barekat 90
3	Sissons*	1994	France	Imported
4	Gascogne*	1994	Russia	Imported
5	Shahpasand*	1942	Iran	The first registered variety in Iran
6	Mehan*	2010	Iran	Crossed: Zhg. 87 x BKT 90
7	Omid*	1956	Iran	Native population No: 11085-29-1
8	Navid*	1968	Iran	79 Kirkpinar (63-7C*2-66/112
9	Roshan Backcross*	1998	Iran	Roshan x Foreign line
10	Zare*	2010	Turkey	Lira/3/Ymh/Tob//Mcd/4/Mo73/F35.70//130L1.11 CIT925080-OSE-0YC-7YC-0YC-1YC-0YC-3YC-0YC
11	Sorkh tokhm*	1957	Iran	Native to Khorasan Province
12	Shahreyar*	2002	Iran	Kvz/Ti71/3/Maga"s"//Bb/Inia/4/Karaj2/5/Anza/3/Pi/Nor//Mgs
13	Toos**	1994	Iran	Spn//McdlCamda/3lNz
14	Alvand**	1995	Iran	Native to Ardebil X Foreign line in Karaj

Supplement 2. Map of Iran. The location of the experimental farm is marked with a blue color.

Supplement 3. The monthly precipitation rate at the experiment location.

Months	Precipitation mm
Sept/Oct	0
Oct/Nov	2.5
Nov/Dec	18.3
Dec/Jan	93
Jan/Feb	102
Feb/Mar	81
Mar/Apr	122
Apr/May	18
May/Jun	2
Jun/Jul	0
Jul/Aug	0
Aug/Sep	0

Supplement 4. Details about the applied methods and measurements.

No	Studied trait	Reference or details
1	Seed Yield under Stress (YS) and Yield Potential (YP)	Plants of an area of 1 square meter was taken from the two inner rows and placed in the relevant bags and transferred to the laboratory. After separating the grain from the straw, the maximum grain yield was obtained by measering the weight.
2	Number of Seed Per Spike (NSPS)	To measure this trait, five plants were randomly selected from each plot and the number of seeds in each spike was counted and the average number of seeds in five spikes was recorded as the number of seeds in a spike.
3	Spike Length (PL)	To measure this trait, five spikes were selected from each plot and the length of the spike cluster was measured in centimeters.
4	Flag Leaf Length (FLL)	To measure this trait, five flag leaves were selected from each plot and their length from the ligule membrane to the tip of the leaf was measured in centimeters.
5	Flag Leaf Width (FLW)	To measure this trait, five flag leaves were selected from each plot and their width was measured in centimeters.
6	100 Kernel Weight (KW)	To measure this trait, after harvesting, the seed mass was recorded from each plot, and then one hundred seeds of each genotype were counted for each repetition, and then the weight of 100 seeds was obtained using an analytical scale.
7	Plant Height (PH)	The plant height in centimeters were measured in each cultivar from the randomly selected replication of five plants.
8	Relative Water Content (RWC)	Calculated according to Barrs and Weatherley, 1962
9	SPAD (and other growth stages of the plant by the SPAD device)	Calculated according to Yeater et al., 2004
10	Flag Leaf Area (FLA)	Recorded according to Rawson et al., 1988
11	Single Seed Weight (SSW)	To measure this trait, five seeds were selected from each plot (from five selected plants) and their average was used as the weight of a single seed in grams.
12	Heading Percentage (HP)	To study this trait, it was done by visiting the farm on a certain date.
13	Biomass (Bio.)	The weight of the whole seed along with its plants on the surface of 1 square meter was used to measure the senescence of this trait.
14	Seed Weight of one Spike (SWS)	To measure this trait, five plants in each plot were randomly selected and the weight of seeds in each spike was weighed and the average weight of seeds in five spikes was recorded as the weight of seeds in one spike.
15	The Length of the Second Internode (LSI)	To measure this trait, five plants from each plot of each variety were selected and their length was measured in centimeters.
16	Beard Length (BL)	To measure this trait, five plants from each plot of each variety were selected and their length was measured in centimeters.
17	Harvest Index (HI)	It was calculated by dividing the grain yield per square meter by the biomass per square meter.
18	Spike Height (SH)	The length of this trait in cm from each variety, in each replication, five plants were randomly selected.

Supplement 5. Eigenvalues and cumulative variance of the 5 factors and 4 factors of wheat cultivars under control and drought stress conditions.

	Control drought stress conditions					Drought stress conditions			
	Factor1	Factor2	Factor3	Factor4	Factor5	Factor1	Factor2	Factor3	Factor4
Eigenvalues	32.626	16.175	15.887	11.261	10.103	35.981	18.577	15.803	8.679
Cumulative variance (%)	32.626	48.801	64.688	75.949	86.052	35.981	54.557	70.361	79.039

Supplement 6. Distance between the centers of the clusters in control plants

Total	Predicted groups			Groups resulting from cluster analysis	Percent
	3.00	2.00	1.00		
10	0	0	10	1.00	
1	0	1	0	2.00	
3	3	0	0	3.00	
100	0	0	100	1.00	**100%**
100	0	100	0	2.00	
100	100	0	0	3.00	

Supplement 7. Discriminant function for grouping based on studied traits in stressed plants.

Total	Predicted groups			Groups resulting from cluster analysis	Percent
	3.00	2.00	1.00		
8	0	0	8	1.00	
4	0	4	0	2.00	
2	2	0	0	3.00	
100	0	0	100	1.00	100%
100	0	100	0	2.00	
100	100	0	0	3.00	

Supplement 8. The distance between the centers of the clusters in under control and stressed plants

	Control and stressed plants			Stressed plants		
	Cluster1	**Cluster2**	**Cluster3**	**Cluster1**	**Cluster2**	**Cluster3**
Cluster1	0.0000	29.4621	28.5662	0.0000	8830.51	8416.70
Cluster2	29.4621	0.0000	20.4349	8830.51	0.0000	2866.72
Cluster3	28.5662	20.4349	0.0000	8416.70	2866.72	0.0000