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Evaluation of Agricultural Characteristics and Yield of Wheat Germplasm Resources from Turkey

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[Introduction]

Wheat is one of the most important cereal crops all over the world. Wheat breeding for short maturity and high yielding varieties generally leads to reduce genetic diversity that can change gene frequencies of traditional wheat lines. It is important to broaden genetic diversity in wheat breeding program. So we evaluated the characteristics of foreign genetic resources and selected superior accessions.

[Materials and methods]

This study was carried out to examine genotypic variation for 634 accessions of winter wheat from BDIARI (Bahri Dagdas International Agricultural Research Institute) in Turkey. Wheat accessions were sown in Nov. 1st 2018 at upland field by drill seeding in Wanju region. Standard fertilizer level was 91-74-39 kg (N–P_2O_5–K_2O) per hectare. There were arrays of genotypic variation for stem length, spike length, heading date, maturing date, 1,000-grain weight, grain yield and crude protein contents.

[Results and discussion]

During wheat growing, the average temperature was 7.9°C, similar to the average year, and the precipitation was 283 mm, 146 mm less than the average year. Genetic variation is a key to successful crop improvement. Stem length ranged from 52 cm to 123 cm, spike length from 7.0 cm to 34.8 cm. Heading date ranged from April 15 to May 17, and below May 5 had 31 accessions. Maturing date from June 10 to June 23, and below June 15 had 218 accessions. 1,000-seed weight from 30g to 55g, and over 45.1g had 118 accessions. Grain yield from 3 MT to 7 MT per hectare, and over 6 MT had 55 accessions. Crude protein contents was distributed from 9.4% to 18.6%, and over 16.1% had 107 accessions. SDS sedimentation ranged from 35 cm to 76.8 cm, and over 70.1 cm had 9 accessions. We evaluated 634 wheat germplasms and selected few potential accessions and suggested their utilization in wheat improvement program. 11 accessions were significantly high over 7 MT/ha for grain yield, although most of these accessions were late maturing. It was found that heading date was positively and negatively associated with crude protein and grain yield, respectively. Based on analysis using agricultural traits including grain yield, 10 accessions were superior. These accession could be valuable as parents for bread wheat breeding to develop good varieties.

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