Evaluation of relationship between grain yield and yield components and some phenotypic characteristics in barley lines using multivariate statistical methods

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Abstract
In order to investigate the relationship between different traits and characteristics with grain yield, 42 barley lines including 41 new hybrids and Makui cultivar, which are cultivated in the region, were studied in a randomized complete block design with 3 replications. These genotypes Including Makui variety and 41 imported foreign cultivars were studied in the field of Ardebil Research Center located in Alaroog village of Ardebil during 2016-2017. In this experiment, different traits including grain yield, peduncle length, flag leaf length, main spike weight, 1000 seed weight, seed number per plant, seed length, seed width, grain weight per main spike, seed number per spike, total grain weight in the plant was measured and examined. Correlation analysis showed that there was a significant correlation between grain yield with seed number, main spike weight, 1000 seed weight and seed number per main spike, seed weight in main spike and total grain weight per plant. Factor analysis showed that these traits can be summarized in four factors: these factors can justify 79.612 percent of the variation. The first, second and third factors were respectively the yield, morphological characteristics and seed characteristics. Cluster analysis was done by ward method and classified the lines into three main groups.

Key words: Line, Barley, Hybrid, Morphological traits, Peduncle length,