Evaluation for Seed Yield and Seed Components among Accessions of Crested Wheatgrass (*Agropyron desertorum* and *Agropyron cristatum*)

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Introduction Desert wheatgrass (*Agropyron desertorum*) and crested wheatgrass (*Agropyron cristatum*) are belong to genus of *Agropyron* , They naturally grow in temperate pastures and rangelands in northern and western Iran (Rechinger , 1970) . They are being used for sheep grazing and hay production . This research project was conducted to determine contribution of each component for seed yield and the pattern of variation for seed yield and seed components , to identify groups of accessions through a multivariate approach .

Materials and methods The germplasm utilized in this study were 6 and 7 populations of *Ag .cristatum* and *Ag .desertorum* collected from Alborz and Zagroos mountain rangelands in northern and western of Iran . Accessions were sown in irrigated plots using a randomized complete block design with two replications in Karaj , Iran in 2005 . In the first harvest of 2006 , the data were collected and analyzed for panicle emergence date , anthesis date , panicle number , plant height , panicle length , seed weight per panicle , DM yield , harvest index and seed yield . Phenotypic correlations among characteristics were determined for all pair-wise combinations and all variables were used in principal components and cluster analysis using MINITAB15 software . A distance coefficient of 6 .0 was arbitrarily chosen to separate the accessions into four cluster groups in a dendrogram .

Results and discussion The results showed significant differences among genotypes for all of traits except harvest index the estimates of phenotypic correlations showed that seed yield had positive and significant correlation with harvest index , seed weight per panicle , plant height and DM yield (data not shown) . This result was in agreement with Jafari et al (2006) in tall fescue , indicating that selection of higher DM yield , plant height and seed weight per panicle accessions led to increasing both seed yield and DM yield in both species . Using principal component analysis , the first three components determined 80% of the total variation (data not shown) . The relative magnitude of eigenvectors from the first principal component axis indicates that seed yield and seed components were the most important traits for classifying accessions into clusters . From the second principal component axis , phenological stages and panicle number were important . DM yield , plant height and panicle length had high eigenvectors in the third principal component axis .Based on the first two principal component scores genotypes were scattered in Figure 1 . Using ward clustering method the genotypes were grouped into 4 clusters (Figure 2) . All of the accessions *in Ag .cristatum* were allocated in cluster 1 except accession 1550 . They had late panicle emergence and anthesis date with moderate DM yield . The genotypes in cluster 3 (6848 , 7794 and 4051 belong to *Ag .deserorum)* had higher average values for both herbage and seed yield . Accessions in cluster4 (the rest of *Ag .desertorum* accessions) were early heading with average values for DM yield . Distribution of accessions based on the first two principal component scores was in agreement with cluster analysis (Figure 1) . We concluded that there was good variation for all of traits in both species . The results indicated that improvement for both seed and DM yield under irrigated conditions should be possible by selecting genotypes for higher DM yield , plant height couple with early flowering .

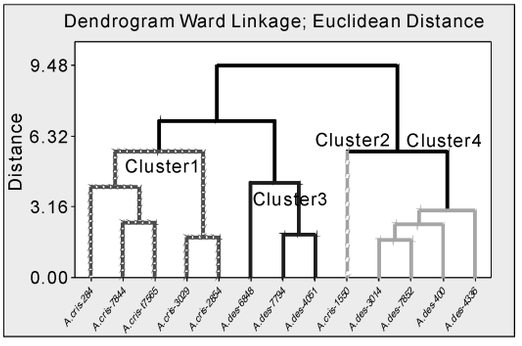

Figure 1 *Dendrogram of 13 accessions using ward cluster analysis method .*

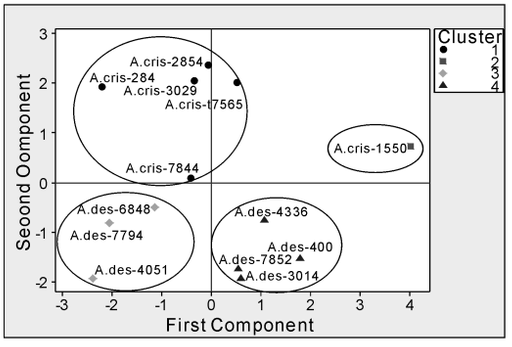

Figure 2 *Scatter plot of 13 accessions for the first two principal components .*

Refrence

Jafari , A . A . , Setavarz , H . and Alizadeh M . A . 2006 . Genetic variation for and correlations among seed yield and seed components in tall fescue , *Journal of New Seeds* **8 :** 47-65 .