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Phenotypic Characterization of Amaranth Resources for the Selection of Promising Materials

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[Abstract]

Amaranth is a nutritious and broadly adapted seed crop in high demand around the world. A preliminary approach for understanding the genetics of amaranth resources entails a morphologic characterization, which can provide the basis for breeding the first variety in Korea, leading to satisfying the needs of farmers and consumers. Therefore, this study aimed to evaluate the phenotypic characteristics of ten genetic amaranth accessions for the selection of outstanding accessions in terms of yield and grain quality. A randomized complete block design was used, with fifteen replications for each accession under field conditions. Five quantitative and three qualitative descriptors were evaluated with descriptive analysis. The results showed that the accessions with plant heights smaller than the average (>112.7 cm) presented lower yields and smaller seed sizes, thus decreasing the grain quality. The cluster analyses established groups of accessions with good yields (>30.1 g of seeds per plant) and stable morphological characteristics. Based on yield and morphological descriptors, the proposed selection index indicated four accessions as potential parents for amaranth breeding programs in Korea.

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