

DIFFERENCES DETERMINATION BETWEEN SEED CHARACTERISTICS OF NEW SUNFLOWER HYBRID USING HIERARCHICAL CLUSTER ANALYSIS

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ABSTRACT

Sunflower breeders aims to create highly productive hybrids with increased protein content for human and poultry consumption, to create highly productive hybrids with high oil content, hybrids tolerant to dominant diseases and pests, highly productive hybrids with altered oil quality, highly productive hybrids resistant to certain herbicide groups, etc. In this paper, the characterization of the latest sunflower oily hybrids grown on the territory of Serbia and Argentina and the latest confectionery sunflower hybrids grown in Serbia are performed. Seed characterization included examination of seed moisture and oil content, seed dimensions (length, width, thickness), geometric characteristics (equivalent diameter, surface area, seed volume, sphericity), gravimetric characteristics (true density, bulk density, porosity), general characteristics (hull content, thousand seeds mass), firmness and color characteristics. Hierarchical cluster analysis (HCA) was applied to the obtained results in order to determine the differences between the samples. Obtained dendrogram shows two clusters a and b, clear grouping of samples into confectionary and oily hybrids. Within cluster b, two subclusters are observed. Subcluster I includes oil hybrids grown in Argentina while subcluster II includes oil hybrids grown in Serbia. Observing the groups obtained by HCA it was noticed that the greatest similarity was found among oil hybrids grown in Serbia, while the greatest difference was found among confectionery hybrids. Diversity among oily hybrids grown in Serbia obtained by HCA, expressed as the Manhattan distance value, ranged from 3.2 to 9.6. Confectionery hybrids mutually differed significantly, Manhattan distance values ranged from 6.2 to 22.6.

Keywords: sunflower, oily hybrids, confectionery hybrids, hierarchical cluster analysis

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