

عنوان مقاله:

Genetic Dissection and Half-Sib Progeny Test for Selecting Elite Parents to Develop Drought-Tolerant Varieties of
.Cuminum cyminum L

محل انتشار:

مجله بین المللی علوم و فنون باغبانی، دوره 11، شماره 1 (سال: 1403)

تعداد صفحات اصل مقاله: 14

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خلاصه مقاله:

Cumin (*Cuminum cyminum* L.) is a spicy, annual, outcross plant with medicinal properties from Apiaceae family, which is adapted to cultivation in arid and semi-arid regions of the world. To evaluate genetic parameters such as GCA and genetic distance based on molecular marker and important traits for parent selection among diverse genotypes, ISSR marker and polycross assay were conducted in College of Aburaihan, University of Tehran. Forty-nine half-sib families obtained from the polycross test were evaluated during two years under normal and drought stress conditions, and traits including 1000-seed weight, mechanized harvest height, and seed yield were evaluated. The statistical analysis showed the possibility of choosing elite parents due to the high genetic diversity among half-sib families. Estimation of narrow heritability more than 50 percent for studied traits revealed the contribution of both additive and non-additive effects in genetic control of evaluated traits. According to the general combining ability, drought tolerance indices, and genetic distance of 49 genotypes, the top 10 candidates were selected for the production of drought-tolerant synthetic seeds. In molecular point of view, the banding patterns obtained from ISSR markers showed significant genetic diversity among all genotypes and the proper distance of ten selected parents. The findings of this experiment provide a starting point for breeding program of cumin, which will continue by random mating of ten selected genotypes under controlled conditions to produce high-yield drought-tolerant synthetic variety.

کلمات کلیدی:

Cumin, General combining ability (GCA), Genetic diversity, Half-sib families, ISSR marker, Polycross test

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