

## عنوان مقاله:

AMMI analysis application for explanation of ecotype by sowing date (E×SD) interaction in terms of seed yield in cumin (*Cuminum cyminum* L.) ecotypes

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## نویسندگان:

جلال قنبری - *PhD Student in Agronomy, Young Researcher Society, Shahid Bahonar University of Kerman, Iran.*  
P.O.Box: ۷۶۱۶۹-۱۳۳۳

غلامرضا خواجهویی نژاد - *Department of Agronomy and Plant Breeding, Shahid Bahonar University of Kerman, Iran*

قاسم محمدی نژاد - *Horticultural Research Institute, Shahid Bahonar University of Kerman, Iran*

## خلاصه مقاله:

Different responses of plant genotypes to the change of environmental conditions have been the most important and challenging issue for plant breeders and agronomists for the selection of superior genotypes. Cumin is one of the most important medicinal and aromatic plants in Iran that are strongly affected by varying environmental conditions. This study was aimed to investigate E×SD interaction and also select stable and adaptable ecotypes of cumin in different sowing dates by AMMI analysis. For this purpose different cumin ecotypes were evaluated in five sowing dates in Kerman (a semiarid region in Iran). Accordingly, nine cumin ecotypes were evaluated in a RCBD with three replications in each sowing date during growing season of ۲۰۱۱-۱۲. Seed yield were measured at the end of growing season in each sowing date and the collected data were analyzed using the AMMI model. The AMMI ANOVA showed a significant variation among sowing dates, ecotypes and G×SD interaction for seed yield. For this trait, ۲۶.۹۵% of the total sum of squares was attributable to ecotypes, ۲۶.۱۵% to sowing dates, and ۴۶.۹% to E×SD, indicating high genotypic variation to sowing dates. The first two IPCA explain ۷۲.۳۲% of the E×SD interaction effect (۴۳.۶۵% and ۲۸.۶۷% for IPCA<sub>1</sub> and IPCA<sub>2</sub>, respectively). Rank correlations confirmed a relationship between ASV, AMMI<sub>1</sub>, and YSI and agreement between YSI and yield in ranking ecotypes. Based on the mentioned statistics, Isfahan and Khorasan-Jonoubi were identified as unstable ecotypes. Semnan ecotype with regard to the high yield-stability reaction in different sowing dates is recommended for cultivation in semiarid regions of Iran.

## کلمات کلیدی:

AMMI Model, Adaptability, Rank correlation, Yield stability

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