## عنوان مقاله:

Germination Responses of Ferula assa-foetida and Ferula gummosa Boiss. Seeds to Continuous Cold Stratification

## محل انتشار:

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## خلاصه مقاله:

Asafetida (Ferula assa-foetida L.) and galbanum (Ferula gummosa Boiss.), Apiaceae, are important endemic and endangered forage and medicinal plants of Iran. Survival of the species is threatened by climate change, overexploiting (as the source of oleo-gum resin and forage), and lack of cultivation management. Cultivation of these valuable plants is restricted by insufficient domestication knowledge. Germination characteristics of different accessions of Ferula taxa were studied to describe and compare their responses to continuous cold stratification conditions. Germination cues for the species were complex, with dormancy mechanisms present to restrict germination until cold stratification is fulfilled. Results indicated that a period of ۴ weeks of stratification is sufficient for germination of asafetida, but optimal germination of galbanum requires stratification for periods of ۸ weeks. Both species were able to germinate at very low temperatures (۴ °C). These results indicated that Ferula seeds need to have a winter period of cold moist temperatures to break dormancy. Thus, it is concluded that fall and winter are the best times to sow the seeds. Within-taxon differences in dormancy breaking and seedling emergence may interpret as local adaptations. Pronounced differences occurred within both asafetida and galbanum, even though some studied sites in each taxon were adjacent. Variation within a taxon may depend on genetic differences, local weather during the growth of mother plants and seeds maturation, seed position on the mother plant, soil quality, or other naturally occurring factors.

## کلمات کلیدی:

Asafetida, forage, Galbanum, medicinal plant