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## In Iran’s semi-arid regions, planting primed seeds is an efficient way to provide fodder under severe climatic conditions

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### Abstract

Due to the problems caused by the effects of climate change and excessive exploitation in the past, Iran’s rangelands cannot provide enough animal fodder. Studies show that, in many regions of Iran, especially in arid and semi-arid regions, poor seed establishment is one of the common causes of low fodder plant yields. However, the need to use various techniques for improving and restoring rangeland species is now increasingly apparent due to the fact that a sizeable portion of ranchers in Iran’s arid and semi-arid regions depend on rangeland feed.

*Astragalus squarrosus* Bunge is one of the native and adapted species in the sand fields of Iran, which is of great importance in terms of tolerance to severe climatic conditions and the value of fodder production for livestock, especially camels.

In order to investigate the effects of priming on seed germination and seedling growth, the experiment was conducted in split plots based on a randomised complete block design with five replications at Torud Research Farm in Semnan Province, Iran. This research was done on three ecotypes of *Astragalus squarrosus* and nine treatments. The distilled water was considered as the control treatment. So, seeds of different ecotypes, including Yazd, Kashan, and Semnan ecotypes of *A. squarrosus*, were primed separately under different treatments, including hydropriming, hormone priming (gibberellin hormone: 125 and 250 ppm, salicylic hormone: 100 and 200 mg L<sup>-1</sup>, ascorbic hormone: 100 and 200 mM and osmopriming: potassium nitrate: 0.3 and 0.2%).

According to the findings of the current study, priming significantly affected *A. squarrosus* seed germination and yield. The Yazd ecotype under salicylic acid hormone 100 mg L<sup>-1</sup> had the maximum performance in terms of yield and seed germination. In general, seed priming improves the yield and fodder production of *A. squarrosus*. Therefore, further research under farmer conditions in Iran’s semi-arid regions is necessary.

**Keywords:** Arid and semi-arid regions, *Astragalus squarrosus*