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## Studying the Possibility of Replacing Common Crop Plants with Medicinal Plants in Arid and Semi-Arid Areas: A Case Study in South Khorasan Province, Iran

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### Abstract

Arid and semi-arid regions of the world are generally noted for their low primary productivity due to low and unpredictable water supply as well as soil infertility. Problems caused by weather conditions in arid and semi-arid regions have reduced yield of most crop plant in these areas. The climate change, on the other hand, has exacerbated environmental conditions in these areas. Thus, any changes in cropping systems leading to higher farm revenues could be useful in terms of income and job creation, and thus improve rural development. The cultivation of medicinal and aromatic plants is gaining interest because of increasing demand for these products. A high number of medicinal plants are adapted to arid and semi-arid regions. South Khorasan province in eastern Iran has been affected by climate change and drought for more than 15 years. This province is habitat of many important medicinal plants. Some of these, due to their adaptability to drought, have been considered as suitable replacement for common crops. In order to find appropriate replacement for common crops in this region, several experiments were conducted over the last decade, to test water stress effect on different medicinal plants. Based on these experiments, cumin (*Cuminum cyminum*), ajowan (*Carum copticum*), chicory (*Cichorium intybus*), roselle (*Hibiscus sabdariffa*), marigold (*Calendula officinalis*) and purslane (*Portulaca oleracea*) have been selected. Taking into account the production costs, marketable product, as well as market revenues, chicory showed the best economic result. The highest water productivity was found for chicory, cumin and roselle, respectively. The results also showed that, sugar beet and cotton cultivation in South Khorasan is unjustified.

**Keywords:** Job creation, net profit, production costs, water productivity