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The Study of Temporal Variations of the Cropping Period in North-Khorasan, Iran

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Abstract

Climate change affect crop production. Especially in arid and semi arid regions, the undesirable environmental factors can be intense, inducing a low crop sustainability. The climatological factors, especially temperature affect plant growth and due to climate change, the temperature extremes change. Iran has arid and semi arid climate throughout the country. In order to help the farmers in the North-Khorasan province optimising their cropping period (planting time and harvesting time), this research was carried out.

One of the most important reasons for crop damage in this north-eastern province is chilling. In this study, the dates for the begin and the end of the growth season were obtained by using Growing Degree Days (GDD) and the probability of the first and last freezing date for five synoptic stations (Bojnord, Qochan, Golmakan, Mashad and Sabzevar). The probability levels used were 75% and 95%. For this paper, two main crops were chosen: wheat (*Triticum aestivum* L.) and corn (*Zea mays* L.). The GDD was calculated for wheat and corn on the bases of 5 and 10 centigrade degrees, respectively.

With the calculated GDD the best planting and harvesting time for these two crops were determined and maps drawn using GIS for this province. With this information and the maps, farmers in North-Khorasan can correct their planting and harvesting time. For example, the suggested planting and harvesting dates for wheat and corn in Bognord (main city in the North-Khorasan province) are: Wheat- planting: Sep. 23, harvesting July 20 and Corn: planting: May 28- harvesting: Sep. 3.

Keywords: Cropping period, GIS, growing degree days, maize, wheat