

## Planting dates zoning of safflower varieties in Esfahan province

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### Extended abstract

#### 1- Introduction

Timing coincidence of plant growth and development to suitable climatic conditions is one of the main factors for spring safflower increasing yield. Thus determining and zoning of safflower planting dates is very important. The highest planted area of spring safflower is belonged to Esfahan province. Delay in planting of spring safflower cause faster development, earlier flowering and lower photosynthetic area and these consequently lower yield and yield components.

#### 2- Methodology

Spring safflower is an irrigated crop in Esfahan province. For safflower planting dates zoning, thermal data

from 1961-2009 were used. These data obtained from 51 synoptic and climatic stations that located in and near of Esfahan province. Because of low density of station especially in east and north east of province, by using the daily mean temperature of these stations interpolation was done by kriging method with surfer software. Cluster analysis on temperature map cells was done by Ward's method. Thus Esfahan divided to three temperature zones, 1(cold), 2(moderate) and 3(warm). Interpolation was done with Radial Basis Function with Completely Regularized Spline method. Start planting in warm, temperate and cold, respectively, with the average temperature day and night to 7, 9 and 12 degrees Celsius and minimum temperature of zero degrees Celsius higher were considered. For determining of suitable planting dates of spring safflower in different parts of Esfahan province 15-day average daily temperature and minimum temperature from January to October were calculated and maps were drawn by GIS.

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### 3- Discussion

Based on results in the first thermal zone, includes east and north parts of province, suitable planting dates are from January to March 6. In the second thermal zone, includes south eastern and central parts of province, suitable planting dates are from March 7 to April 4. In the third thermal zone, includes other parts of province, suitable planting dates are from April 5 to May 21.

### 4- Conclusion

By considering of thermal requirements of safflower if the crop cultivated in suitable planting date, it shall not face to limited temperature.

**Key words:** safflower, planting date, temperature, zoning

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