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***The Changes Assessment of Growth Season Length and Freezing
due to climate Fluctuation-
Case-study: Khorasan Razavi Province***

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Extended Abstract

Introduction

Climate change is expected to affect agriculture very differently in various parts of the world. The resulting effects depend on current climatic and soil conditions, the direction of change and the availability of resources and infrastructure to cope with change. Biological systems are based primarily upon photosynthesis and are thus dependent on incoming radiation. However, the potential for production set by the radiation is greatly modified by temperature and rainfall. The main effect of temperature is to control the duration of the period when growth is possible in each year. Using statistical downscaling models in climate change studies provides possibility to generate the weather data on time and place appropriate scales. Increasing of Publication and human activities increase green house gases and carbon dioxide. This situation leads to the temperature increased to 0.6 Centigrade. Scientists believe that the extreme phenomenon is the main climatic index. This possibility is an important help in the climate change studying in local and regional scale. Intensity of extreme phenomenon must know as climate changes main branch.

Materials and methods

Extreme meteorological events, such as spells of high temperature, heavy storms, or droughts, can severely disrupt crop production. Recent studies have considered possible changes in the variability, as well as in the mean values of climatic variables. Where certain varieties of crops

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are grown near their limits of maximum temperature tolerance, heat spells can be particularly.

In this research, growth season and freezing season length have been investigated as climate changes indices. Using statistical data for each station, the daily data bank including minimum and maximum temperature were marked in the Access software. Then these data in the various years using growth season length and freezing period length were extracted in the past and future period in the LARS-WG software. In the next step, Spearman's correlation coefficient has been used for testing the hypothesis of the research. In definition, the first six daily period after latest freezing is as the starting of season period that means temperature is above of 5°C and the final six daily period is as the end of season period that the average temperature is below of 5°C . The interval between the first freezing in autumn and the final freezing in the spring is as freezing period. The changes assessment of indices have been done during two climate periods including the past (1976-2005) and the future (2010-2039) in three synoptically stations: Mashad, Torbat Heydarieh and Sabzevar in Khorasan Razavi province, in Iran.

Results and Discussion

Results showed that growth season length increases in Mashad and Sabzevar stations Results also showed that growth season length decreases in Torbat Heydarieh station. These changes in freezing season length indices are greater than the others. In three stations. We will observe that freezing season length decreases between 15-16 days as a result of global warming. Results of hypothesis test showed that there is no correlation between observed growth season length and estimated growth season length and also observed freezing season length and estimated freezing season length using Spearman's correlation coefficient.

Conclusion

In this paper, with regarding to phenomenon including growth season length and freezing period length, the climatic fluctuations were estimated. The comparative of the past and future periods shows that growth season period will be increased and freezing period length will be decreased in the area under study. According to table 2, grow season length would have been increased in Mashad and Sabzevar stations. Also freezing period length would have been decreased in Torbat-e Heydarieh station. In the other words, premature freezing and late freezing would have been decreased in the area under study. The obtain results of this research emphasis the results of the other researches such as Sedaghat Kerdar and Rahimzadeh (2006), Hino et al (1999) and Bonsal (2000).

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