Abstract:

Global warming is a fact today that unpleasant consequences are evident in many countries.The agricultural sector, as the largest consumer of fresh water in developed and developing one of the main parts of affected by this natural phenomenon. In this study effects of climate change on potato yield and water use efficiency in five stations of Ardabil, Hamedan Nojeh, Isfahan, Kashan, Hamadan Foroudgah by the model plant aquacrop based on different climate change scenarios were investigated.Model LARS-WG, for the production of weather data of temperature and precipitation was used in future period. Validation of the model based on indicators NRMSE (12/76-46/36 for precipitation, 1/70-14/58 for minimum temperature, 1/21-2/31 for maximum temperature) and performance model (values close to one for all variables) indicates the ability of climate models to simulate components in all the stations. Analysis of the data produced in period of 2011 to 2100 showed that the majority of general circulation models of the atmosphere have increased precipitation and temperatures cardinal. By defining various scenarios were simulated planting date delayed 10 days compared with the base period, climate change will increase annual potential evapotranspiration was selected stations. Simulation results indicate that the growth and yield of potatoes regardless of planting date, number of days required to complete the course of growing potatoes compared to the base period decreases. Based on the average output of 15 general circulation models under each of the scenarios, A1B, A2 and B1, climate change stations in Ardebil, Isfahan and Hamedan Nojeh, respectively, 1/2-13/6 %, 3/2-12/8 % and 3/9-13/1 % reduction in water use efficiency as compared with the base period period will result. However, the steady trend was observed in stations and Kashan, Hamadan Foroudgah. Overall, climate change, with the exception of some limited cases, often will be causing 0/12 - 12/3 % reduction in water efficiency compared to base period (2010-1980).

Keywords: Water use efficiency, potato, global warming, AquaCrop model

University of Zabol
Graduate school
Faculty of water and soil
Department of water engineering

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Supervisor:

Dr. Fatemeh Karandish

Advisor:

Dr. Parviz Haghighatjoo

Seyed Saeed Mousavi

By:

Mojtaba Hadizadeh

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