

Climatic conditions and Rice cultivation in Khuzestan province

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Abstract:

Khuzestan Province in the southwest of Iran from thousands years ago has been as an agricultural pole in Iran that have been cultivated cereals and especially rice there. In this research, by studying the situations of rice cultivation and climatic characteristics of Khuzestan province has been investigated the suitability or unsuitability of this cultivation in this region. The average temperature of the period of cultivation (June-October) in different regions of the province is between 33 and 37° c, with a maximum of 50° c in most days. In addition, the study of temperature and precipitation variations shows that the temperature is increasing and precipitation is decreasing in all provinces. Decreasing of precipitation and increasing evaporation will reduce the water needed to farms. So to provide the food needs, it's necessary either use the species and methods of low-water or use alternative crops.

Data and methodology:

Khuzestan province is located in the southwest of Iran with an area of 64057 km². This province is situated between 29° 58' –33° 4' N latitude and 47° 41' – E50° 39' E longitude. The cultivated area, production and yield of rice of Khuzestan province were taken from the agricultural organization. Temperature and precipitation data was collected from Iran's Meteorological Organization. Temperature and precipitation changes in the province were investigated by using regression method.

Introduction:

Rice cultivation in Asia is the main source of employment and income in the agricultural sector but there isn't enough land (singh et al, 2008) and there is one hectare of land for every 27 people (Hibberd, 2008). Drought stress is one of the major factors limiting the rice production in 40 million hectares of rice cultivated land in Asia. Based on the results of studies by Africare and Oxfam (2010), from the %25 of the world's fresh water, %70 of it is consumed in the agricultural sector, that 25 to 30 percent is related to rice cultivation. Khuzestan Province is the agricultural pole of Iran, where rice is traditionally cultivated. Except limited regions in the north and northeast, in other areas, due to low altitude, establishment of subtropical high pressure and proximity to vast deserts in the west and southwest, the annual average temperature in most areas is more than 25 ° C. The rice cultivation period in Khuzestan province is from early June to late October. In this period, the maximum temperature in most areas of the province reaches about 50 ° C. However, the arrival rivers from north and northeast and fertile soils has provided a suitable field for rice cultivation, but in recent decades with the occurrence of climate change has decreased the amount of precipitation and also has increased temperature. Therefore there isn't enough water to extensive rice fields. After three north provinces of Iran on the southern shores of the Caspian Sea (Gilan, Mazandaran and Golestan) Khuzestan province has the largest area of rice cultivation in Iran. The rice cultivation area in the study region is more than 57000 hectares that produces more than 230000 tons of crops. Rice yield in Khuzestan province is much lower than in northern provinces, and in the best condition it is less than 4400 kg per hectare. Whereas, in northern provinces, has been achieved up to 8-9 tons per hectare. Soil studies have shown that soils of Khuzestan province, especially in the northern regions, are among the best and fertile soils in Iran. Cultivation Conditions and new methods of agriculture are also carried out in rice cultivation in Khuzestan province. The average temperature of the rice should be between 22-30° c. When the environment temperature is lower than 13° c, rice is exposed to cold. Also, if the temperature exceeds 40° c, it will disrupt the growth of the root and destroy the plant. Therefore, adverse climate conditions have decreased the yield in Khuzestan. So to provide the food needs, it's necessary either use the species and methods of low-water or use alternative crops.

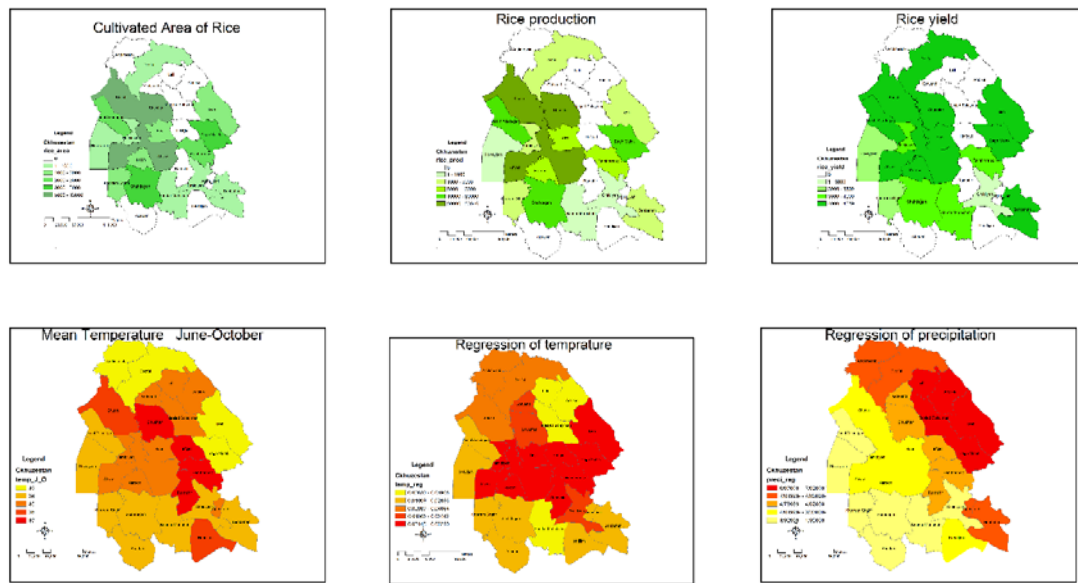


Figure 1: Area, production and yield of rice cultivation (up): mean temperature in cultivation period, regression of temperature and precipitation (down) in Khuzestan province

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