

## عنوان مقاله:

Impact of Climate Change Scenarios on Growth and Yield of Wheat and Rice in Punjab, India

## محل انتشار:

اولین کارگاه مشترک ایران و کره در مدلسازی اقلیم (سال: 1384)

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## خلاصه مقاله:

Potential impacts of climate change on agricultural crop production in a region can be predicted using dynamic crop growth simulation models. The present study was undertaken to assess impact of changes in temperature (maximum and minimum) and solar radiation and CO<sub>2</sub> on wheat and rice crops under non-limiting water (assured irrigation) and nitrogen availability. Dynamic crop growth simulation models CERES-Rice for rice and CERES-Wheat for wheat were calibrated and validated for use in the study. Historical meteorological data for Ludhiana station for a period of past 30 years was analysed and daily normals for maximum and minimum temperature, solar radiation and rainfall were obtained. Using daily normal weather data, growth and yield of crops were simulated under future probabilistic climate change scenarios expected in the region. In general with an increase in temperature above normal, the phenological development of rabi season wheat was advanced and vice versa but the phenological development of kharif season rice was not significantly affected. With an increase in temperature unto 1.0 °C above normal the yield of rice and wheat decreased by 3 and 10 0/0, respectively, and with further increase in temperature the yields also revealed a progressive decrease. On the other hand, crop yield increased with an increase in radiation levels above the normal values and vice-versa. The interaction effects of increasing minimum temperature, decreasing maximum temperature or increasing CO<sub>2</sub> were also simulated. The growth and yield of crops was adversely affected by increasing minimum temperatures, however, the decreasing maximum temperatures were able to partially counteract this adverse effect only upto a certain limit. Similarly, the adverse effects of increasing temperature on productivity of rice were also compensated by increasing levels of CO<sub>2</sub> up to a certain limiting temperature beyond which further temperature increase had a over-riding negative effect on crop productivity.

## کلمات کلیدی:

Climate change, Simulation models, Temperature, Wheat, Rice

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/14151>

