Impacts of Climate Change on Watermelon and Cucumber Agriculture in Hormozgan Province and Prediction of Long-Term Pattern

ABSTRACT

Introduction and Background The agricultural sector is one of the most important economic sectors due to extensive interaction with the environment. The agricultural sector affects climate change and is also affected by climate change. Climate change, on the one hand, affects agricultural performance and, on the other hand, affects the price of products, supply, demand and welfare of consumers and producers. The purpose of this study was to assess climate change and predict its effects on yield, cropping and production of watermelon and cucumber.

Methodology Data were gathered in the form of Panel data for cucumber and watermelon product during the years 2005-2017. Using predicted weather scenarios, yields, cropping levels, and harvesting products from 2025 to 2100 were predicted. Finally, consumer welfare, producer welfare and overall welfare were calculated using nonlinear programming model. During the years 2025 to 2100 to predict the welfare of partial equilibrium method was used.

Findings In order to estimate the precise function of horticultural crop yield response to climate factors, indicators of climatic zonation region of the province were divided into two. Changes in performance under the weather scenarios for the cucumber product are increasing and the watermelon product follows a decreasing trend. The results showed that temperature had a positive impact on cucumber and had a negative impact on watermelon. Rainfall only had a negative impact on cucumber in the first region and in other cases had a direct impact on product performance. Amon uncontrollable factors, humidity had a reverse impact on both products in the first region. Technology had a positive impact and management had a negative impact.

Conclusion The overall welfare show a decreasing trend in the coming years. Meaning that consumers experience less loss than producers.

Keywords Climate Factors; Performance Reaction Function; Panel Data; Welfare; Climate Prediction Scenario