Assesment of Turkey's Hazelnut Yield in the Future Climate Conditions: Projected Changes in the Growing Degree Days and Chilling Hours

Nazan An (1,2), Kamil Collu (1,2), M. Levent Kurnaz (2,3)

(1) Department of Environmental Sciences, Institute of Environmental Sciences, Boğaziçi University, Istanbul, Turkey (nazan.an@boun.edu.tr) , (2) Centre for Climate Change and Policy Studies, Boğaziçi University, Istanbul, Turkey (kamil.collu@boun.edu.tr), (3) Department of Physics, Faculty of Arts and Sciences, Boğaziçi University, Istanbul, Turkey (levent.kurnaz@boun.edu.tr)

Climate is a crucial factor in agricultural production. Therefore, there are direct and indirect effects on human life. Changes in the climatic parameters have impacts on the agricultural productivity. The planting dates and phenological periods of the crops are affected by climate conditions. Depending on the changes in phenological structure of crops, production quantity and crop quality are affected, which is especially significant in terms of commercial value crops. Although merely the Black Sea Region and the eastern part of the Marmara Region have natural habitat characteristics for the growing of hazelnut, it is the most exported product of Turkey and its production is the first in the world ranking. Hence, its economic value is very high. This study focuses on how hazelnut production will be affected by climate change for the next period of 2021-2050 in terms of two key parameters, namely chilling hours and growing degree-days. In the analysis, a regional climate model called RegCM is used to obtain climate data and calculate the growing degree-days and the chilling hours under the RCP8.5 scenario. According to the results of the analysis, it is observed that the climate change that will occur in this region during the next period will be effective on hazelnut.