Quantification the Impact of Climate Change on Paddy Field Yield Production in Subang, Indonesia

I Putu Santikayasa[1*], Wilham Amdan[2], Perdinan[3], Yon Sugiarto[4]

[1,2,3,4]*Department of Geophysic and Meteorology, Bogor Agricultural University, Indonesia*

[*)]Corresponding author: psantika@gmail.com

ABSTRACT

Paddy field production is impacted by the climate and water resources, which is driven by environmental condition and also water management. It is required to evaluate the impact of climate change and water management to plan the future management strategies as the adaptation of climate change. This paper evaluate the potential impact of climate change on paddy field production and water resources using Aquacrop crop simulation model for Subang District in Indonesia. The crop phenology information was obtained from the field survey and applied to set up and validate the Aquacrop model. The historical paddy field production and irrigation water requirement was calculated based on history data and the future paddy field production and irrigation water management was calculated based on future climatic condition. The output of five global climate models (CSIRO, GFDL,GISS, MIROC,NCAR) under RCP 8.5 scenario was applied to the crop simulation model. The simulation outputs show the increasing of the precipitation by average of 27% and impact to the increasing of the paddy filed productivity by 19% in the period of 2021 – 2050. The result also indicates the increasing of the flood and plant diseases and influence to the paddy production in the future. These findings suggest that the good water management on flood impact is required to mitigate the negative impact of the future climate and secure the future paddy field production.

***Keywords*:** Climate change, Crop modeling, Rice production, Aquacrop