

ABSTRACT

APPLICATION OF CROPWAT MODELS TO ESTIMATE THE REFERENCE EVAPOTRANSPIRATION AND COMPOSING THE CROP WATER BALANCE OF SOYBEAN (*Glycine Max (L) Merril*) IN TWO DIFFERENT LOCATION

By

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The objective of this research was to estimate the reference evapotranspiration (ET_o) for composing the crop water balance of soybean and planting schedules recommendation based on CROPWAT in Masgar and Terbanggi Besar area. This research was conducted on November 2014 – January 2015 in Agricultural Engineering Departement of Faculty of Agriculture, Lampung University, Masgar Climate Stations of Pesawaran District in Lampung and Specific Agricultural Meteorological Stations of PT. Great Giant Pineapple in Terbanggi Besar, Centra of Lampung. Climate data from Masgar and Terbanggi Besar area was analyzed by CROPWAT to calculate the ET_o . Value of ET_o , crop coefficient (K_c) and soil physical properties used to compose the crop water balance of soybean by CROPWAT, and than compared with Thornthwite and Mather method. Crop water balance used to determine the plant schedules recommendation of soybean.

Daily ET_o average in Masgar area was 3,7 mm, the monthly average was 111,1 mm and the total annual was 1333,3 mm. While the ET_o daily average in Terbanggi Besar area was 3,4 mm, the monthly average was 102,7 mm and the total annual was 1334,6 mm. Plant schedules of soybean in Masgar area was February – April period with total crop evapotranspiration (ET_c) was 256,1 mm (CROPWAT) and 268,1 mm (Thornthwite and Mather method). As well as in Terbanggi Besar area was February – April period with total ET_c was 227,4 mm (CROPWAT) and 241,2 mm (Thornthwite and Mather method). To utilize the land, it can be combined with other commodities. In Masgar and Terbanggi Besar, corn – soybean can be applied as cropping pattern.

Keywords : cropwat, evapotranspiration, water balance, soybean