

ABSTRACT

EFFECT OF DEFICIT EVAPOTRANSPIRATION ON THE GROWTH AND CROP WATER PRODUCTIVITY OF SOYBEAN PLANT (*Glycine Max L. Merrill*)

By

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The purpose of research is to calculate and compare the magnitude of crop water productivity and growth of three varieties of soybean plants in each treatment evapotranspiration deficit. Research was conducted in September 2014 - December 2014 in the Greenhouse of Integrated Field Laboratory and Laboratory of Water Resources and Land Department of Agriculture, University of Lampung. The experiment was conducted using a factorial in completely randomized design (CRD) with two factors that is soybean varieties which consists of three varieties: Kaba, Tanggamus, and Willis and deficit ET_C which consists of three levels: $1 \times ET_C$, $0.8 \times ET_C$, and $0.6 \times ET_C$. Data were analyzed with Analysis of Variance (Test F), then continued by LSD test at the significance level of 5% and 1%. Results showed that (1) Based on the total leaf area, Kaba and Wilis varieties of soybean plants have started stress at week 2nd in the treatment ET_2 ($0.8 \times ET_C$), varieties Tanggamus began stress on the 3rd week of the treatment ET_3 ($0.6 \times ET_C$). Eventually based on the production of soybeans plant, varieties Tanggamus and Kaba remains stress in treatment ET_2 ($0.8 \times ET_C$) except varieties Willis on ET_3 ($0.6 \times ET_C$), (2) the crop water productivity was not significantly different between treatments except treatment Tanggamus varieties ET_3 deficit ($0.6 \times ET_C$), (3) kaba varieties have the highest production in the amount of 20.22 grams, while the crop water productivity of the highest of the Wilis varieties is equal to 0.5 kg.m^{-3} .

Keywords: evapotranspiration, deficit irrigation, Soybeans