ABSTRACT

WATER BALANCE ANALYSIS FOR PADDY GOGO CULTIVATION

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The greatest challenge faced by the country with population more than 200 million is about food (Sumodiningrat, 2001). Farm land conversion became nonfarm areal has been realized to couse the declining productivity of rice. Other problem may be the water scarcity for irrigation. Cultivating paddy gogo (the upper land paddy rice) can possibly reduce water consumption and then reduce the water dependency for rice production.

The aims of this research were to analyze water balance in paddy gogo cultivation. The research included analyses of relation between rainfall and surface runoff and percolation, evapotranspiration, and determination of crop constant k_c for paddy gogo.

Field experiment was conducted at the Integrated Field Laboratory College of Agriculture, University of Lampung from August to December 2011. Field observations were carried out on two groups of experimental plots, with plastics liner (plot A) and without plastics liner (plot B). All the plots were equiped with runoff water storage ponds at the downstream.

The results showed that rainfall produce percolation as many as 25,6%; surface runoff 20,8%; and the rest was used for the evapotranspiration process and soil water savings. Total of the whole ET_c paddy gogo at one growing season is about 85,1% by the input. The crop koeficients were k_c init= 1,09 ; k_c mid= 1,77; and k_c end=1,23. Rainfall was found to be not enough to fulfill the crop water requirements, thus irigation was needed. One meter cubic of irrigation water produced 1,79 kg paddy gogo in the plot A and 1,38 kg in the plot B.

Key words : water balance, evapotranspiration, surface runoff, percolation, k_c, paddy gogo

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