ABSTRACT

DETERMINATION OF LAND TO POND RATIO IN RAIN WATER HARVESTING SYSTEM TO SUPPORT RICE-SOYBEAN CROPPING PATTERN

By

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The rain water harvesting system consists of a land area cultivated with rice and soybean cropping pattern annually, and a rainwater collection pond. Surplus water (runoff) in raining season is captured and collected in the pond, and used for irrigation in the following cultivation. The objective of this research was to determine the optimum ratio of the land to pond area. This research was carried out in the Integrated Field Laboratory, Faculty of Agriculture, University of Lampung by using data of soil physical properties (water content, field capacity, permanent wilting point, percolation); rice crop coefficient, soybean crop coefficient and climatological data for 13 years from 1999 to 2011. Data was processed using a simulation program (Visual Simulation) presented in the graphical form. The results showed that the rainwater potential that can be utilized as an alternative irrigation is abundant, about 1500 mm/year - 3000 mm/year with a total of rainwater reaching 314.509,78 m^3 over 13 years. Based on the simulation, the most effective period of planting, for rice is in January and for soybean is in May. In addition, the optimum pond dimension to serve 1 ha cropping land is about 2450 m^2 in with 3 m depth, or the ratio of land to pond is 4:1.

Keywords : Rainwater harvesting, Evapotranspiration, Rice and Soybean