Narongsak Chaikongsatit 2014: Water Footprint of Rice Cultivation Using Alternate Wet & Dry Irrigation. Master of Engineering (Water Resources Engineering), Major Field: Water Resources Engineering, Department of Water Resources Engineering. Thesis Advisor: Assistant Professor Adichai Pornprommin, D.Eng. 95 pages.

Rice has several important roles to the Thai society as main food and an important exported economic crop of Thailand. Besides, paddy field area is more than half of the cultivated area in the country. There are many methods to grow rice which cause different water consumption. Currently, the introduction of the alternate wet & dry irrigation is widespread in Thailand. Its method is to control water level in paddy field by measuring water level in the designed pipe, to grow Azolla in the field to increase nutrient for rice and prevent unwanted weed by letting Azolla to cover the soil, to remove unwanted weed by rotary weeder and to reduce the use of insecticide. As a result, this method is found to reduce water use and increase production. Water is essential for life and a limited resource. Thus, the study of efficient water consumption is necessary and urgent. Water footprint is an indicator that can reflect on the efficiency of water use in cultivation with water conservation aspect. Therefore, this study is conducted for analyzing water footprints of rice cultivation of both transplanting irrigation and alternate wet & dry irrigation. Using the results from the field experimental study data at the test station of the water management with new technology institute(Vorawut and Nuengruethai, 2013) more over, there are information from the farmer in study case area at Chainat provice, that use to analyse and compare the result from rice planting for 2 methods. Including with field experimental and test station found that water footprint valve for rice cultivation of test station is 1,996.7 m<sup>3</sup>/ton and field experimental is 1,417.1 m<sup>3</sup>/ton. In part of water footprint value for alternate wet & dry irrigation of test station is 1,288.4 m<sup>3</sup>/ton and 965.8 m<sup>3</sup>/ton for field experimental. Comparing shows alternate wet & dry irrigation consume water less than both of test station and field experimental value are 40.90% and 33.40% in order. It can be use the guide line for adjust of water management in land field for reduce rate consume of water, decrease capital production and also increase product at land field.

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