Pariwat Numkhang 2012: The Study on Water Requirement and Optimal Water Application to Cassava. Master of Engineering (Irrigation Engineering), Major Field: Irrigation Engineering, Department of Irrigation Engineering. Thesis Advisor: Associate Professor Bancha Kwanyoun, Ph.D. 175 pages.

The main objective of this research was to improve crop production of cassava using irrigation. The optimum crop water requirement and appropriate irrigation method were evaluated in the experimental field. The crop coefficient for cassava would be calculated to be distributed as the standard for the country. The main activities were to review previous study on crop water requirement, to implement the experiment in order to define crop coefficient according to the specific climatic and environmental conditions, to evaluate irrigation efficiency, and to estimate cost, benefit and profit for cultivation of cassava under various irrigation methods. As a result, the crop coefficient and the most promising irrigation technique could be identified.

From the experiment, the results showed that the annual average value of crop coefficient was about 0.61 and the annual crop water requirement was about 592.77 mm. The maximum yield under irrigation was 13.77 ton/rai and the net present value for the benefit on five year period was 17,210.82 bath/rai. This benefit was higher than rainfed cultivation about 81.24% or 3,277.92 bath/rai. The drip irrigation gave the highest irrigation efficiency at 71.42%. The result from this study could be used to identify crop water requirement and to improve cassava cultivation under irrigation. The irrigation methods had been compared and their suitability under water and environmental condition were discussed and analyzed.

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