Kansinee Panwanitdumrong 2009: Studies on Factors Effecting Growth of Wolffia (*Wolffia arrhiza* (L.) Wimm.) and Methodology for Mass Production Culture. Master of Science (Fishery Management), Major Field: Fishery Management, Department of Fishery Management. Thesis Advisor: Associate Professor Sukhoom Rowchai, D.Agr. 97 pages.

Wolffia (*Wolffia arrhiza* (L.) Wimm.) is a kind of aquatic plant that human have been eating in Burma, Laos and Thailand. In Thailand, it is well-known in the North and the Northeast. It has high nutrition especially proteins, essential amino acids and minerals. Wolffia yield came from natural waters; therefore, its production were not sufficient and continuously. Beside, there is a limitation in consumer acceptance, in term of wolffia sanitary in nature. In order to eradicate the limitation, The study on factors effecting growth of wolffia and methodology for mass production culture was conducted for human food and aquaculture industries.

In the study, wolffia was cultured in both a laboratory and an opened building. The results showing the highest growth rate of wolffiia were found in tap water, added with the 16-16-16 , N-P-K fertilizer formula, at 100 milligrams per liter. Suitable water quality for wolffiia culture was pH 5-6 and water hardness must be lower than 100 milligrams per liter as Calciumcarbonate .Light intensity was 5,000-10,000 luxs. Average growing time of wolffia was 15 days. At the culture period of 30 days, the average production of cultured wolffia was about 2.2 kilograms wet weight per square meter and Beta carotene concentration in wolffia was found around 600 milligrams per Kilogram dry weight at 24 days culture. Next experiment was the partition culture to increase wolffia production per unit area. Wolffia was cultured in tanks which vertically placed in three layers .Light intensity in each layer was different. At the culture period of 28 days, the total productions of wolffia were about 4.6 kilograms wet weight. In the last experiment, adding calcium mineral to wolffia culture, cultured water enriched with calcium dihydrogen phosphate ($CaH_4O_8P_2H_2O$) 500 milligrams per liter and chapleted EDTA 0.5 millimoles for 10 days can increase average calcium concentration in wolffia tissue at the level of 873 milligrams per 100 grams dry weight. Calcium concentration was 40 percent higher than calcium concentration in natural wolffia.

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