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YUPA KHUNNARONG: REDUCTION OF CHEMICAL FERTILIZER APPLICATION IN INTEGRATED FARMING: A CASE STUDY OF RICE FISH CULTURE IN BANGPLAMA DISTRICT SUPHANBURI PROVINCE. THESIS ADVISORS: SANSANEE CHOOWAEW, Ph.D., CHUMLONG ARUNLERTAREE, Ph.D., WANCHAI CHANDRACHAI, M.Sc. 111 P. ISBN 974-664-075-5

Reduction of chemical fertilizer application in integrated farming: a case study of rice fish culture in Bangplama District Suphanburi Province was an experimental research on a farm under different rates of chemical fertilizer applications in order to compare rice productivity, fish productivity, soil properties, and water quality after rice fish culture. The randomized complete block design with 5 treatments, three replicates, and 25 m² experimental plots was used. Khao Jao Hom Klong Luang 1 was planted, Nile tilapia (11 cm, 25-30 gm/fish) was released at the density of 4 fish/m². Rice bran was used as fish food and rice pests were controlled by neem extract.

The results indicated that rice productivities of the rice plot without fish and of rice fish plot under 100% chemical fertilizer application were not significantly different. Rice productivity of rice fish plots under 75% chemical fertilizer application was not significantly different from under 100%, but was significantly different from under 50% and 25% chemical fertilizer application. At the rate of 50% and 25% chemical fertilizer application, rice productivities were not significantly different.

Fish productivities under different rates of fertilizer application were not significantly different. Fish growth rate, coefficient of condition and fish survival rate were not significantly affected by reduction of chemical fertilizer application.

All water quality parameters were within the acceptable limit for fish survival. Soil properties after the experiment were improved; total nitrogen increased in all treatments, especially in rice fish plots with 100% chemical fertilizer application. Rice fish plots had a higher content of available phosphorus but rice plots without fish had lower available phosphorus. The amount of potassium decreased in both rice plots and rice fish plots. Rice fish plots also had higher organic matter than rice plots without fish. Rice fish culture did not affect soil acidity.