OPTIMAL CONTROL OF DIVERSIFICATION MODEL RICE AND NON-RICE

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Abstract

Food is a basic necessity for human survival. Food consumption patterns in Indonesia currently relies heavily on rice. An increasing number of residents also caused rice needs each year. On the other hand the production of rice cannot be produced at any time in all areas, so it fought an imbalance between consumption patterns of rice with the provision of rice production. One of the efforts made by the expected food diversification policy can reduce the consumption of rice. Diversification of food can be done by produce of non-rice food that can be produced locally at low cost. In this thesis is presented the problem of optimal control in consumption of rice and non-rice. The dynamical equation is based on Lotka-Volterra Model. The percentage of consumption level rice and non-rice are the control variable and the objective function is minimize the cost. The objective function solved using Pontryagin Minimum principle. The thesis showed that the optimal control can handle the diversification rice and non-rice consumption.

Key-words: Rice and Non-Rice, food diversification, optimal control, Pontryagin Minimum Principle (PMP)