ABSTRACT

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THE ECONOMIC ANALYSIS OF POTATO PRODUCTION FOR PROCESSING IN SANSAI DISTRICT, CHIANG MAI, IN THE 1998/99 CROP YEAR

By

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The production of potatoes for processing in Sansai District, Chiang Mai, first began in 1992. The project was an initiative of the Sansai District Agricultural Extension Office in cooperation with a processor of potato products. The planting of potato seedlings is carried out during November through December and the crop is harvested in February through March. The potatoes are planted as a second crop after rice.

The economic analysis of the production of potatoes in the present study, on the 1998/99 crop year data, is for the purpose of evaluating efficiency in the use of factor inputs of the farmers. The analysis was based on field data from an interview with a sample of 89 farmers. In the course of analysis two types of production function were experimented with: the linear form production function and the Cobb-Douglas production function. The inputs were measured both in terms of physical units and in terms of value. Results of the study can be presented as follows.

In the 1998/99 crop year, the farmers in the sample began planting in the middle of December after their rice harvest. The average planted area was 3.45 rai per household, the land used for this purpose was largely rented from nearby farms. The potatoes planted were the

Atlantic variety. Most of the farmers in the sample had an average of 8.87 years of cultivation experience. The sources of production credit were commercial credit institutions and the potato processors who supplied seeds and other inputs under a contractual farming arrangement.

Results of the experiment with the two types of production function showed that the Cobb-Douglas type of function was better able to explain the relationship between the dependent and independent variables than the linear form type. The factor inputs, namely labour, seeds, fertilizers and other chemicals were able to explain variations in output with statistically significant regression coefficients.

The technical efficiency implication of the regression results is that the inputs that have strong impact on output consist of labour, seeds and chemicals. An increase in application of these inputs would lead to a positive change in output, either measured in terms of quantitative units or in terms of value. The size of the successive increments would eventually decline according the law of diminishing marginal productivity. In terms of economic efficiency this result also indicates that farmers in the sample were using less than optimal amounts of the inputs as the value of the increments in output still exceeded the unit price of each of the inputs. That is, a further increase in the use of each of the inputs will yield a net increase to the income of the farm.

When the regression equation using inputs measured in terms of quantity was compared with the one using value unit it appeared that the measuring of inputs in physical units was more appropriate. This method does not need additional assumptions regarding the degree of competition and the possible variations of input prices paid by individual farmers.

Problems and risks associated with potato cultivation are the late planting, deterioration of seeds, pests and diseases and variations in temperature. As for suggestion for further research, the use of Cobb-Douglas production function on farm survey data to estimate the marginal productivity of inputs is not by itself adequate for a policy recommendation for an optimal input use. The method should be supplemented by a field experiment on the application of inputs under controlled conditions to get a full profile of marginal productivity of each of the inputs.