

ABSTRACT

Abstract of thesis submitted to the Graduate School of Maejo University in partial fulfillment of the requirements for the degree of Master of Science in Cooperative Economics

**ECONOMIC ANALYSIS OF SOYBEAN PRODUCTION IN DRY SEASON BY
MEMBERS OF MAETANG AGRICULTURAL COOPERATIVE, LTD.,
MAETANG DISTRICT, CHIANGMAI PROVINCE,
CROP YEAR 1996/1997**

By

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August 1998

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The objectives of this research were to determine (1) economic and social conditions of the members of Maetang Agricultural Cooperative, Ltd.; (2) factors influencing the members' soybean production; and (3) the member's costs and returns from soybean production during the 1996/1997 crop year.

The data was collected from 80 members of the Maetang Agricultural Co-operative, who cultivated dry season soybeans (CM 60). These 80 people represented 16 groups of co-operative members from 5 subdistricts (Intakin, Maetang, Kee-leak, Sopperng, and San-Payang). Questionnaires and personal interviews were used in data collection and the collected data was analyzed by using SPSS/PC⁺ as well as various statistical techniques such as percentage, arithmetic mean, and linear regression to determine the production function and the co-operative members' efficiency in utilizing dry season production factors. The results revealed that 82.50 percent of the members were male and 17.50 percent female. The members' average age was 46.68 years; 83.75 percent were married, 75.00 percent had completed a primary level of education, 66.25 percent had two household members working on the farms and 75.00 percent had off-farm jobs to earn additional incomes. Only 46.25 percent of the members possessed less than 3 rai of land, their average land holding was 4.86 rai and 66.25 percent of the members planted soybean in less than 3 rai. In the aspect of soil preparation, 91.25 percent of the members did not plow their land, 98.75 percent dug furrows, 90.00 percent planted their soybean crops in rows, and 48.75 percent bought their seed from local merchants. For the use of Rhyzobium, 62.50 percent of the members did not use rhyzobium in their soybean cultivation. In the aspect of crop harvest, 93.80 percent of the members hired labor, 95.00 percent rented milling machines to mill their soybeans, and 36.25 percent obtained soybean yields of 301-320 kg/rai, an average being 326.76 kg/rai.

The results of the data analysis showed that the production function was linear. The production factors including labor, seed, fertilizer, pesticide, and land as a fixed factor could significantly explain the changes in production returns at the 99 percent confidence

level, and it was also found that seed was the most important factor in soybean production, followed by fertilizer, labor, and pesticide respectively. These four factors could explain 61.27 percent of the relationship of the equation, the remaining 38.73 percent was the result of other factors not specified in the equation.

The data analysis also showed that the production factor that produced the highest marginal return was seed, followed by fertilizer. An increase in seed usage by 1 kg/rai increased the output by 2.09 kg/rai and an increase in fertilizer usage by 1 kg/rai increased the output by 0.85 kg/rai. The results of the economic efficiency analysis indicated that the members used these two economic production factors inefficiently because they used them to increase the marginal return to soybean production more than the cost of the use of these production factors. This means that it was possible to increase the production factor utilization (seed and fertilizers) in the soybean production system until the increased value was 1 and the increment of cost would equal the increment of production. The members should decrease the use of labor and agricultural equipment to obtain a greater return from increasing the other production factors by 1 increment.

The analysis of the costs and returns of soybean production revealed that the total cost was 2,609.83 baht/rai : the total variable cost of 2,336.96 baht/rai and the total fixed cost of 272.87 baht/rai. The members had the net income over the total cost of 569.54 baht/rai and the net income over the total variable cost of 842.41 baht/rai. If only the real payment in cash of the variable cost was considered, the members would gain a profit of 1,408.02 baht/rai.