
The Study Cost and Return of Leb Nok Pattani Rice Variety Cultivation : A Case Study in Khuannongkhwa Sub-district, Chulabhorn District, Nakhon Si Thammarat Province

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This research aimed to examine the cost and return of Leb Nok Pattani rice variety cultivation: a case study in Khuannongkhwa sub-district, Chulabhorn district, Nakhon Si Thammarat province. Data were collected using a questionnaire to interview 173 farmers in Khuannongkhwa sub-district, Chulabhorn district, Nakhon Si Thammarat province. Data were analyzed by using descriptive statistics - frequency and percentage. Two methods were used for cost analysis in this research: cost by manufactured product analysis and cost by behavior analysis. Analyzing the return of Leb Nok Pattani rice variety cultivation used quantitative analysis, net profit, and break-even point analysis.

The study cost revealed that the total average cost was 2,212.46 baht/rai/year. Costs of rice based on manufactured product cost analysis included raw material 215.91 baht/rai/year, labor cost 1,318.67 baht/rai/year and manufacturing overhead 677.88 baht/rai/year. The cost based on behavior cost analysis consisted of fixed cost 313.81 baht/rai/year and variable cost 1,898.65 baht/rai/year.

The results of the return showed that the crop yielded 0.24 tons/rai/year. Sales was 3,304.27 baht/rai/year while the average net profit 1,085.34 baht/rai/year. The break-even point was 0.22 tons while the price level at break-even point was 2,469 baht/rai.

Keywords: Cost, Return, Leb Nok Pattani Rice Variety Cultivation

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Introduction

Rice is Thailand's crucial economic plant because most of the country's farmers mainly do rice farming. Apart from being Thai people's main staple, rice is also an export product that created a great amount of income into the country. Leb Nok Pattani is a type of rice that has 15 times more beneficial nutrients for brain and body than brown rice. Furthermore, it has dietary fibres, various types of vitamin, high iron calcium and GABA. Leb Nok Pattani also keeps brain and body balance. It is mostly grown in the southern part of Thailand especially in Phatthalung, Surat Thani, and Nakhon Si Thammarat. (Tiwakorn Thong-In, 2014)

General information of farmers who grow Leb Nok Pattani at Kuan Nongwa, Chulaporn, Nakhon Si Thammarat. There are 898 families (3,244 people) in Kuan Nongwa. The area is 11,970 Rai (Khuannongkhwa Subdistrict Administrative Organization, 2012). Most people are in the agricultural sector, especially in growing rice. Rice can be grown depending on seasonal rain. Moreover, farmers have to use chemical fertilizer, herbicide, machine and labor in every process. According to the interview with farmers, farming problems are expensive owing to expense in chemical fertilizer, herbicide, oil and wage, lack of capital cost and labor. These problems have direct and indirect effect to the cost and net profit of farming.

Leb Nok Pattani is difficult to grow due to sensitivity to sunlight. It cannot receive more than 10-12 hours per day. This rice can be grown only once a year and also is not suitable to grow in farmland areas. Moreover, the expense of farming comprises wage, fertilizer, insecticide, harvest cost and others which tend to be higher nowadays. Therefore, the farmers will get less profit. Finally, this research paper is to explore the cost and return of growing Leb Nok Pattani whether it is worth for cultivation investment. Data derived from the investigation could act as useful information for farmers who are interested in growing Leb Nok Pattani as well as reduce unnecessary costs or allocate more agricultural areas. This will lead to better quality of life and well-being for farmers in this area.

Research Objective

To investigate cost and return of Leb Nok Pattani rice variety cultivation in Khuannongkhwa sub - district, Chulabhorn district, Nakhon Si Thammarat province.

Research Framework

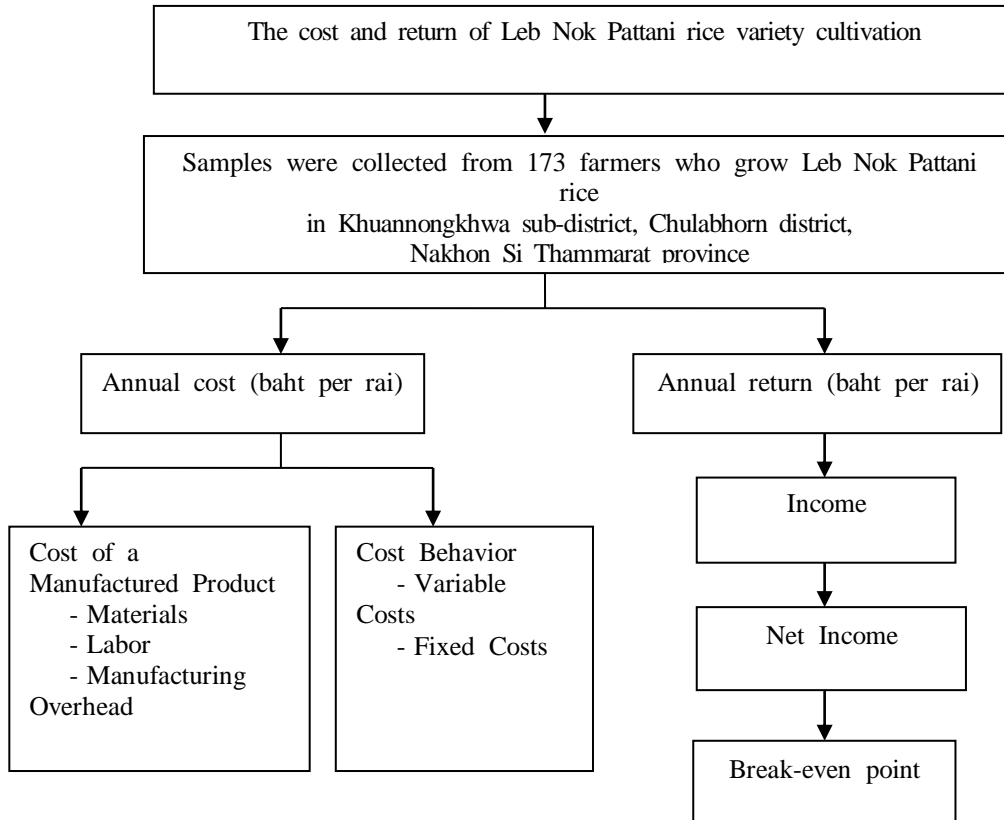


Figure 1 Research Conceptual Framework

Materials and methods

1. Population and Sample in Research

Participants in the study were 304 farmers who grow Leb Nok Pattani rice variety and the total area is 2,939 rai (according to the data of Khuannongkhwa Subdistrict Administrative Organization, 2012). The sample of this research was calculated by using Taro Yamane (Yamane, 1973) formula with 95% confidence level. The sample size is made up of 173 farmers.

2. Research Instrument

After examining the concept related to cost and return, the researchers developed the research instrument. The interview which was

used as the research instrument consisted of open questions. The interview is divided into 4 parts as follows:

Part 1 Status and general information of farmers

Part 2 The data relating to growing Leb Nok Pattani rice variety

Part 3 The data relating to cost and return on Leb Nok Pattani rice

Part 4 Problems and suggestions on cultivation investment of Leb Nok Pattani rice variety

3. Cost and Return Analysis

3.1 Contribution Margin Analysis

A contribution margin can be estimated as output less variable cost. This analysis reveals the income accruable to the farmers in the study area. The variable costs incurred by the farmers include cost incurred on rice seed, sowing rice seeds, applying fertilizer, rice insecticide spurt, ploughing up, rice fertilizer, chemical weed control, harvesting rice and fuel. (Joseph Olumide Oseni, and Adewale Quam Adams, 2013)

Contribution Margin = Total Income – Total Variable Cost

Contribution to Sales Ratio = $\frac{\text{Contribution Margin}}{\text{Total Income}}$

Profitability Analysis

Net Profit = Total Income - Total cost

3.2 Break-even point Analysis

Break-even Point Volume = $\frac{\text{Fixed Cost}}{\text{Contribution Margin}}$

Break-even Income = $\frac{\text{Fixed Cost}}{\text{Contribution to Sales Ratio}}$

Results

1. Leb Nok Pattani rice variety cultivation data of farmers in Khuannongkhwa sub-district, Chulabhorn district, Nakhon Si Thammarat province

Most farmers have an area for growing Leb Nok Pattani rice variety less than 5 rai 69 farmers (39.90%), 5-10 rai 60 farmers (34.70%), 11-20 rai 38 farmers (22.00%) and more than 20 rai 6 farmers (3.50%) as shown in Figure 2.

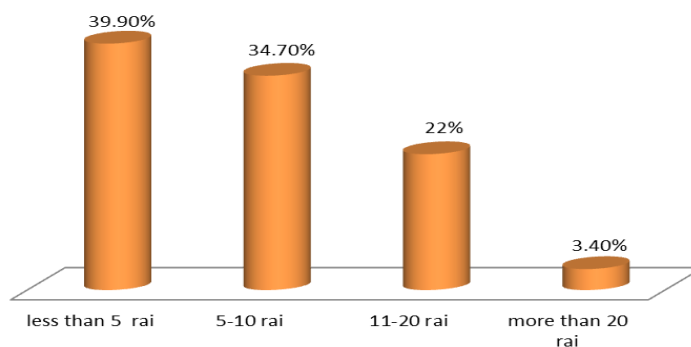


Figure 2 Leb Nok Pattani Rice Variety Cultivation Data

2. Costs of Leb Nok Pattani rice variety cultivation

2.1) Costs of Leb Nok Pattani rice variety cultivation base on cost of a Manufactured Product

Total cost 2,212.46 baht/rai/year, raw materials 215.91 baht/rai/year, 150.89 labor cost 1,318.67 baht/rai/year, and manufacturing overhead 677.88 baht/rai/year are displayed in Table 1.

Table 1 Cost of Rice Cultivation Based on Cost of a Manufactured Product

Cost item	Bath/rai/year	% of
Raw materials		
- Rice seed	215.91	9.76
Total raw materials	215.91	9.76
Labor cost		
- Sowing rice seeds	65.80	2.97
- Applying fertilizers	67.71	3.06
- Rice insecticide spurt	17.38	0.79
- Ploughing up	595.92	26.93
- Harvesting rice	571.86	25.85
Total labor cost	1,318.67	59.60
Manufacturing Overhead		
- Rice fertilizer	334.06	15.10
- Chemical weed control	16.35	0.34

- Fuel	13.66	0.62
- Renting land	302.58	13.68
- Land tax	4.02	0.18
- Equipment Depreciation	7.21	0.33
Total manufacturing overhead	677.88	30.25
Total cost	2,212.46	100.00

Analysis result of cost structure of rice cultivation based on cost of a manufactured product found that cost ratio includes labor cost 59.60%, manufacturing overhead 30.25%, and raw materials 9.76% as summarized in Figure 3

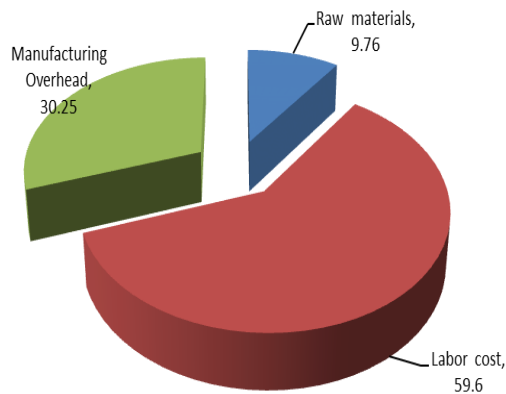


Figure 3 Cost Structure of Rice Cultivation Based on Cost of a Manufactured Product

2.1) Cost of Rice Cultivation Based on Cost Behavior

The cost analysis result of Leb Nok Pattani rice variety cultivation based on cost behavior found that the total cost on cultivation investment of Leb Nok Pattani rice variety by farmers is 2,212.46 baht/rai/year, total variable costs 1,898.65 baht/rai/year and total fixed costs 313.81 baht/rai/year as given in Table 2

Table 2 Cost of Leb Nok Pattani Rice Variety Cultivation Based on Cost Behavior (The area size is 1,391 rai.)

Cost item	Total cost (bath/year)	Bath/rai/year	% of cost
Total Variable Costs	2,641,024.50	1,898.65	85.82
Rice seed	300,331.00	215.91	9.76
- Sowing rice seeds	91,523.00	65.80	2.97
- Applying fertilizers	94,179.50	67.71	3.06
- Rice insecticide spurt	24,175.00	17.38	0.79
- Ploughing up	828,928.00	595.92	26.93
- Rice fertilizers	464,680.00	334.06	15.10
- Chemical weed control	22,745.00	16.35	0.74
- Harvesting rice	795,463.00	571.86	25.85
- Fuel	19,000.00	13.66	0.62
Total Fixed Costs	436,519.00	313.81	14.18
- Renting land	420,900.00	302.58	13.68
- Land tax	5,585.00	4.02	0.17
- Equipment Depreciation	10,034.00	7.21	0.33
Total cost	3,077,543.50	2,212.46	100.00

Analysis of cost structure of rice cultivation based on cost behavior found that variable cost rate is 85.82% and fixed cost is 14.18% of the total cost as seen in Figure 4

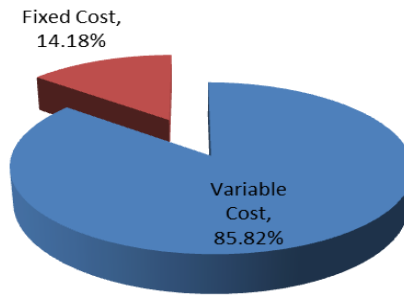


Figure 4 Cost Structure of Rice Cultivation Based on Cost Behavior

3. Return on investment Leb Nok Pattani rice variety cultivation

3.1 Average income per rai

Results indicated that yield on investment Leb Nok Pattani rice variety cultivation of farmers are 0.24 ton per rai per year and total income 3,304.27 baht per rai per year as shown in Table 3.

Table 3 Yield and income on investment Leb Nok Pattani rice variety cultivation of the farmer (The area size 1,391 rai)

Item	number
Yield (Ton)	331.78
Average price (Baht/Ton)	13,846.60
Total income (Baht)	4,597,070.00
Yield (Ton/Rai)	0.24
Average income (Baht/Rai)	3,304.27
Average price per kilogram (Baht)	13.85

3.1 Net income

Net income analysis result from growing Leb Nok Pattani rice variety showed that the average net income is 1,085.34 baht per rai per year as displayed in Table 4.

Table 4 Net income per rai per year on investment Leb Nok Pattani rice variety cultivation of farmers

	Bath	%
Income	3,304.27	100.00
Less Variable costs	1,898.65	57.46
Contribution margin	1,405.62	42.54
Less Fixed costs	313.81	9.50
Operating income	1,091.81	33.04
Less Interest expense	6.47	0.20
Net income	1,085.34	32.85

3.3 Break-even point of Leb Nok Pattani Rice Variety Cultivation

Product level of Leb Nok Pattani rice variety cultivation at break-even point is 0.22 ton per rai per year and price level is 2,469 baht per rai per year.

Problems and Suggestions

This study found that the number of product was low when compared to costs as most farmers have no knowledge about the increase in efficiency of rice cultivation to have more yield. Most farmers outsource the rice cultivation process more than do it themselves such as sowing rice seeds, applying fertilizer, rice insecticide spurt, ploughing up and harvesting rice therefore, there are also high costs.

Discussions

1. Analysis result of cost structure of rice cultivation based on cost of a manufactured product found that cost ratio includes labor cost 59.60%, manufacturing overhead 30.25% and raw materials 9.76%. Investment on Leb Nok Pattani rice of farmers in Khuannongkhwa sub-district, Chulabhorn district, Nakhon Si Thammarat province has the most labor cost ratio. Farmers need to hire workers from outside because most farmers are old. Therefore the cost of production is higher. The highest wage is the harvesting rice wage 38.34% of all labor cost.

2. Return on investment in rice farming has an average yield of 0.24 tonnes/rai/year, average income per year is 3304.27 baht/rai and net

income is 1085.34 baht/rai/year. When comparing the net income with the cost, it is low because most farmers have no knowledge to enhance rice production to yield more produce. Besides, natural disasters have an effect on low yield.

Acknowledgement

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References

- ACORN Professional tutor. Break-even analysis (CVP analysis). Available from: <http://ageconsearch.umn.edu> (Accessed:9 November 2014).
- Joseph Olumide Oseni, and Adewale Quam Adams. (2013). Cost Benefit Analysis of Certified Cocoa Production in Ondo State, Nigeria. Available from: <http://ageconsearch.umn.edu> (Accessed:13 October 2014).
- Khuannongkhwa Subdistrict Administrative Organization. (2012). Rice Cultivation data report of farmer in Khuannongkhwa Subdistrict.
- Tiwakorn Thong-In. Leb-Nok rice. Available from: www.thesiamtherawalai.com (Accessed:13 October 2014)