International Journal of Agricultural Technology 2021Vol. 17(5):1793-1802
Available online http://www.ijat-aatsea.com
ISSN 2630-0192 (Online)

The comparison of cost and return from raw and ripe Namdokmai mango planting of large plots in Bang Phli District, Samutprakarn Province

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Khermkhan, J., Chepoo, K., Detthamrong, U. and Koprasert, K. (2021). The comparison of cost and return from raw and ripe namdokmai mango planting of large plots in Bang Phli District, Samutprakarn Province. International Journal of Agricultural Technology 17(5):1793-1802.

Abstract The cost and return for growing nam dok mai mango for raw and ripe sales of cultivation large agriculturaliand plot of farmers in Bang Phli district, Samut Prakan province was compared. The result found that most of the agriculturists are females with the ages for more than 60 years old as well as laboring in their households with 4 people members in each family and they had their own invest budgets. However, when considering for the cost, it was found that the planting for raw mango sales with comprising for the cost amount of 8,148 bah/Rai, profit was 6,174 baht/Rai. The planting for mango ripe sales with the totals was 12,836 baht/Rai, profit was 17,584 baht/Rai. It was found that the planting for ripe mango sales was capable to earn the benefits more than the planting for raw mango selling. In addition, the ripe mango selling had the low level of Break Even Point to gain the quick back and high return value (NPV and IRR).

Keywords: Cost and return, Nam Dok Mai Mango, Cultivation large agricultural land plot

Introduction

A mango is an economic important fruit in Thailand with great production and exported potential (Sriariyawat and Sriariyawat, 2016). There was production capability in 2018 of 3 ,122,497 tons from the area approximately for 1,972,518 rai or with 90 percentages for all products to consume in the country. Similarly, the remaining products are passed the export process with no matter of fresh mangoes, frozen mangoes, canned mangoes, dried mangoes and others with the totals export quantities of 117,472 tons or the values more than 4,385 million baht per year. Then, a mango is one of all popular fruits to create incomes to the high valuable country, Office of

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Agricultural Economics, 2018 for the agriculturists to cultivate increasingly and promote to expand the planting area from the government by supporting for the large plots and emphasizing on the quality and safety production (Ministry of Agriculture and Cooperatives, 2016).

Then, the largest mango production source of Thailand is in the Eastern part , and the top five provinces as the most area to plant are Chachoengsao , Chonburi , Sakaew ,Rayong and Samutprakarn provinces, (Department of Agriculture Extension , 2011), especially for Samutprakarn province or the Perimeter area with the high expanding of towns, except for the less agriculture areas. With this case, the mango planting in this area at the edge of the pound has the different pattern and characteristic from other provinces with the brackish soil to differentiate the mango quality. Besides, in Samutprakarn province area mostly they are employing in the industrial factories and doing in the farms, such as shrimp raising, water mimosa planting and gourami raising including of Nam Dok Mai mango planting (Samut Prakan Provincial Office, 2018). Additionally, this area is suitable for planting Nam Dok Mai mango because it is located near the brackish water to have the sweet and delicious tastes with smooth texture ,and according to the planting method around the pound as well as gourami raising or shrimp raising congruently to the information of Samutprakan Provincial Agricultural Extension Office (2017) it was found that the area to plant Nam Dok Mai mango at the most level was in Bang Phli District with 1,272 rai following by Bangsaothong District with 673 rai and Phra Pradaeng District with 361rai ,respectively , and it can be seen that Bang Phli District has the most area of Nam Dok Mai planting.

Although there are a lot of Nam Dok Mai mangoes to be planted in Bang Phli District, most agriculturists still do not take care of them to be the good quality. Moreover, when it is in the mango season they always sell for the raw mangoes with the lower prices than the ripe ones without easily rotten and spending lot of money to take care of. Then, most of them change to sell for the raw ones in spite of the low price with 20-35 baht per kilogram differently from the ripe ones with 60-110 baht per kilogram, (TalaadThai, 2019). With this case, the farming in this area has been done for a long time with the familiarity affecting to the agriculturists do not change their behaviors for doing farms effectively.

In this case, the agriculturists have acknowledged, understood, and accepted for the planting behavior including of leveling up for ripe Nam Dok Mai mangoes to be in the high prices with gaining more incomes and reducing for bargaining power of the middleman. Then, it is essential to study for the cost comparison and return, especially when the agriculturists change to plant mangoes and take care of mangoes for selling with the ripe ones increasingly

from the uniqueness and the high prices. What is it to do more research which becomes as the basic information of the agriculturists, relevant agencies from government and private sector to support for planting Nam Dok Mai mangoes in the area including of publicizing the information to the agriculturists for being informed and promoting to do the farms with gaining more income and the better-quality life in the future.The objective was to make a cost comparison and return from planting the raw and ripe Nam Dok Mai mango in the large plots at Bang Phli District of Samutprakarn province.

Materials and methods

Populations and group sampling

The populations in this research were the agriculturist groups to plant Nam Dok Mai mangoes in the large plots at Bang Phli District from Samutprakarn province with totally 30 people, and it was collected information from twenty-three group samplings or with 76 percentages from all populations. However, some members from the large plots canceled to plant Nam Dok Mai mangoes in this area or someone can not give the information. There were the agriculturists to plant the mangoes by selling with the ripe and raw ones for 8 and 15 peoples.

Tool was the structured interview that the researcher created to classify into four parts:- part 1 was the general information about informants, part 2 was planting cost , how to take care and harvesting , part 3 was return and part 4 was opinions and other recommendations

Tool testing method was involved in the researcher to study for documents and relevant researches by creating the structured interview before using interview to present for three experts with content validity congruently to the objectives by using of Index of Item-objective congruence (IOC).

Data Collection Information were classified into two types. Primary data was the main information for studying with the interview of the agriculturists to plant mangoes in Bang Phli District of Samutprakarn province , and the researcher made the contact to the agriculture office in Bang Phli District by asking the name lists and the telephone numbers before collecting data from 23 populations.

Secondary data was the additional information to support the study to be more complete by gathering from books, documents and reports with relevant agencies, such as Department of Agricultural Extension , Department of Agriculture , Department of Commerce , Office of Agricultural Economics , Provincial and District Agriculture Office and others.

Data analysis was interviewed in general information of agriculturists that the gathered information from interview that was analyzed by using of descriptive statistics consisting of frequency, percentage, mean and standard deviation. Then, the analysis of interview in parts 2 and 3 collected before being analyzed by finding of average cost and predicting the trends with the return analysis by using with three methods of financial tool as payback period method (PBP2 , net present values method (NPV) and internal rate of return method (IRR).

Results

According to the basic condition of economics and social fields from the agriculturists of Nam Dok Mai mangoes, it involved with the status of group members, genders, ages, education levels, main occupations, second occupations, marital statuses, member numbers, experiences and budgets sources.

With this case, according to the agriculturists in the group members to plant Nam Dok Mai mangoes in the large plots, it was found that most of them were females with 60.9 percentages and males with 39.1 percentages in the averaged ages of 50-60 years, and education level of primary school at the most level was 52.2 percentages and followed by the high school level of 34.8 percentages, and the bachelor level was 13.0 percentages as the main occupation of agriculturist of 73.9 percentages, or without additional occupation was 52.2 percentages. Additionally, it had the marital status with 73.9 percentages and the single status was 26.1 percentages ,especially in the most level from more than four members in families was 60.9 percentages and followed by three members in families with 26.1 percentages. The least level for one member in families was 8.7 percentages including of the most level in experiences for planting mangoes was 6-10 years for 43.5 percentages and followed by experiences for planting mangoes with 20-25 years or 21.7 percentages. The least level with experiences for planting mangoes was 11-15 years or 17.4 percentages or from the personal budgets was 95.7 percentages, and the loan budget sources was 4.3 percentages as shown the Table 1.

Table 1. Basic economics and social information for Nam Dok Mai Mango Agriculturists

Main List	Minor List	Number	Percentage
Gender	Man	9	39.1
	Female	14	60.9
Age	Less than 40 years old	1	8.7
	41-50 years old	3	13.0

Table 1. Basic economics and social information for Nam Dok Mai Mango Agriculturists

Main List	Minor List	Number	Percentage
	51-60 years old	8	34.8
	61-70 years old	7	30.4
	More than 70 years old	3	13.0
Education	Primary school	12	52.2
	High school	8	34.8
	Bachelor	3	13.0
Main career	Government service officer	2	8.7
	Farmers	17	73.9
	Private employees	2	8.7
	Workers	1	4.3
	Merchants	1	4.3
Second career	Own business	2	8.7
	Workers	1	4.3
	Farmers	6	26.1
	Trader	2	8.7
	No Second career	12	52.2
Status	Single	6	26.1
	Marriage	17	73.9
Number of Family	1 person	2	8.7
	2 persons	1	4.3
	3 persons	6	26.1
	More than 4 persons	14	60.9
Experience	6-10 years	10	43.5
	11-15 years	4	17.4
	20-25 years	5	21.7
	26-30 years	2	8.7
	More than 30 years	2	8.7
Budget Source	Personal Investment	22	95.7
	Loan	1	4.3

Investment

The investment consisted of expenditures from initial investment for planting mangoes with breeding fees, tool cost and agricultural equipment in the average area of 3.08 rai with the detail is shown in Table 2.

The agriculturist group to plant Nam Dok Mai mangoes had the investment with totals of 24,479 baht, and mostly were from the soil preparation cost of 12 ,000 baht and followed by the equipment cost, such as lawn mowers was 4,400 baht, inhaler was 1,875 baht and electric was 1,460 baht etc. The investment on mango breeds was2,306 baht that had the depreciation for equipment of 1,516 baht per year (Table 2).

Table 2. Detail representation from the initial investment of agriculturist group to grow Nam Dok Mai Mangoes

List/Equipment	Number	Price/Unit	Total	Carcass Price	Age	Depreciation/Year
Labor cost	77	25	1,922	-	-	-
Mango breeds	77	30	2,306	-	-	-
Soil preparation cost	1	12,000	12,000	-	-	-
Water sucker	1	1,000	1,000	800	25	8
Inhaler	1	1,875	1,875	300	5	315
Lawn mower	1	4,400	4,400	300	10	410
Saw	1	135	135	-	2	68
Electric saw	1	1,460	1,460	200	5	252
Scissors	1	300	300	-	2	150
Weed knifes	1	400	400	-	3	133
Shove	1	90	90	-	6	15
Spade	1	275	275	-	6	46
Fruit picking basket	1	238	238	-	2	119
Total			24,479			1,516

Cost comparison and incentives of raw and ripe mango growers

According to the investment, it considered with two patterns that were variable cost and fixed cost. Besides, the variable cost was the production cost with the output of the expenditures, such as fertilizer cost, pesticide cost , hormone values , gas cost , electricity bills , mobile phone bills , watering cost, mowing bills , fertilizer cost , nebulization cost , cutting cost and labor charge while the fixed cost was the production cost without changing the output which consisted of agriculturist labor cost, land rent ,land tax and equipment depreciation as ahown in Table 3.

It showed the cost comparison and incentives of mango planting for raw and ripe selling in Table 3. Besides , it was found that there was the average raw mango production per rai more than the average ripe mango production for 175 kilograms or 25.65 percentages including of the ripe selling prices for more than the raw selling prices was 44 baht per kilogram or 209.52 percentages. Then, the agriculturists for ripe selling had more incomes than raw selling which was 16,098 per rai or 112.4 percentages. However, when considering about the cost, it was found that the raw mango planting had more investment of 4,688 baht per rai, and mostly variable cost was 4,560.55 baht per rai with the differences of fixed cost for only 127 baht per rai. Although the ripe mango planting had higher cost than raw mango growers. It was compared with the incentives that showed of the benefits more than the raw mango planting with 11,410 baht per rai or 184.80 percentages.

Financial possibility analysis and break even point of ripe and raw Nam Dok Mai Mango Planting is shown in Table 4.

Table 3. Production cost comparison and incentives of raw and ripe mango growers

List	Raw Mango	Ripe Mango	Comparison	
			Kilogram/Baht	Percentage Change
	(1)	(2)	(3)=(2)-(1)	(4)=((3)/(1))/100
Yield/rai (*Kg./Rai*)	682	507	-175	-25.65
Price (*Baht/Kg.)*	21	65	44	209.52
Income (*Baht /Kg.*)	14,322	30,420	16,098	112.40
Total Cost (*Baht/Kg.*)	8,148	12,836	4,688	57.53
Fit Cost (*Baht/Rai*)	1,256	1,383	127	10.11
Variable cost (*Baht/Rai*)	6,892.58	11,453.13	4,560.55	66.16
Profi*t* (*Baht/Rai*)	6,174	17,584	11,410	184.80

Note: 1 hectare = 6.25 Rai

Table 4. Financial possibility comparison and break even point of ripe and raw Nam Dok Mai Mango Planting

Selling Pattern	Break Even Point	Break-Even Period	NPV10%	IRR
Raw Mango	242.06	1.36	59,594.97	57%
Ripe Mango	60.29	0.39	212,281.19	123%

According to the raw mango planting pattern, it should sell Nam Dok Mai mangoes with the break-even point for 242.06 kilogram per year or the break-even period calculation was 1.36 or within one year and three months. Besides, according to the investment plan in 10 years, it had the net presented values or equal to 59,594.97 baht and the internal rate of return was 57 percentages. However, when considering for each measurement, it was found that NPV had the positive values with more incentives than the investment cost including the internal rate of return values with the higher values than the investment. In addition, it had the internal rate of return or IRR with 57

percentages. It was found that the net presented values had the positive values with the incentives more than the investment and the internal rate of return with the higher level than the discount rate and the expected incentives. As the result, the raw Nam Dok Mai mango planting with the investment had break-even pointed to the investment decision.

According to the mango planting pattern with ripe selling, it showed the break-even point of Nam Dok Mai to sell with 60.29 kilogram per year, and with the break-even point period was equal to 0.39 or within three months. Besides, according to the ten years investment plan, it had net presented values for 212,281.19 baht with the internal rate of return was 123. The NPV values had the positive values with the incentives more than the investment including internal rate of return with the higher level than the discount rate and the expected incentives.

As the result, it showed that Nam Dok Mai plant investment for ripe selling had the break-even point to the investment decision. The two-pattern comparison, it was found that the mango planting for ripe selling had low break-even point with fast return. However, it found that the incentive values with considering of NPV and IRR values for ripe selling, and according to the above detail the mango planting for ripe selling had the incentives and break-even point, especially for the agriculturists to plant mangoes with ripe selling increasingly to gain more incomes.

Discussion

According to the study of cost and incentives from Nam Dok Mai mango planting in the large plot of Bang Phli District in Samutprakarn province, it was found that most agriculturists were female with more than 60 years old. Besides, most mango agriculturists used the labor in household with more than four members in families which congruently to the research of Tasuk (2013) with having their own investment. In addition, the popular mango breed is Nam Dok Mai mango congruently to the research of Panchroen (2012) and when considering to the cost, it was found that the mango planting for raw selling had the values was 8,148 baht or in the higher level than the values in the research of Phantun (2010) and Russamiputi (2007). Besides, it was found that the average mango production cost was approximately for 8,000-4,000baht per rai or with not too high level of the cost proportion. However, when considering to the mango planting cost with ripe selling, it had the high cost for

12,836 baht to essential for employing the laborers with more investment on mango wrapping.

In addition, when comparing to the break-even point analysis with the investment, it was found that the mango planting for ripe selling had low break-even point with fast return. Then, the incentive value found that NPV and IRR values with the higher level than the mango planting for ripe selling. It showed that the mango planting for ripe selling had the high incentives with the break-even point. The agriculturists can alter to grow mangoes with ripe for increasingly sales to gain more incomes.

Acknowledgements

It should be grateful for the income budget fund of Faculty in Agricultural Technology of King Mongkut's Institute of Technology Ladkrabang.

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(Received: 22 June 2021, accepted: 30 August 2021)