

## Analyze Costs and Financial Return of Phoenix Oyster Mushroom Cultivation Process of Farmers in Pakchong Sub-district Chombueng District Ratchaburi Province

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**Abstract:** The objectives of this research were to: 1) investigate the cost and yield of Phoenix Oyster Mushroom cultivation, and 2) use as a guideline for those who were interested in cultivating the Phoenix Oyster Mushroom. The sample of this research was a group of 30 Phoenix Oyster Mushroom cultivators at Pak Chong sub-district, Chom Bueng district, Ratchaburi province. An in-depth interview was used to collect data for this qualitative research. The respondents' opinions towards the Phoenix Oyster Mushroom cultivation were analyzed and synthesized using the content analysis statistics in relevant with the facts of the key issues. The results revealed that the respondents included 20 female and 10 male with an average age of 45 years old. The respondents have been engaging in the Phoenix Oyster Mushroom cultivation business between two to thirteen years. Hungarian and Bhutanese Phoenix Oyster Mushroom were the major types that the respondents cultivated and that of they produced their own mushroom compost. The mushroom cultivation period from the beginning stage until harvesting last around one month or forty-five days. Each household owned four houses of mushroom cultivation. In terms of production, each house could yield around one thousand kilograms which its selling price was between 80 to 120 baht per kilogram. The cost of mushroom cultivation was 34,341.25 baht per house while it yielded worth around 45,125 baht. The production of each house was unequal based on the integrity of the mushroom compost, the weather, and the green mold disease (*Trichoderma harzianum* Rifai).

**Keywords:** Phoenix Oyster Mushroom, Cost, Return, Cultivation Process

### 1. Introduction

Thailand is regarded as an agricultural country where agriculture is the main occupation and is an important occupation of the country. The agricultural sector of Thailand in the past was characterized by production primarily aimed at meeting the needs of the family or was traditional agriculture focused on self-consumption and later agriculture developed to increase the efficiency of production. It is a commercial production that allows farmers to rapidly expand their production. By adopting new agricultural technology to aid production, the Thai agricultural way of life has shifted from high household consumption alone to commercial production. And most of the country's population is still working in agriculture which Thailand has a lot of mushroom consumption. (Center for Business and Foundation Economic Research Government Savings Bank, 2016). It also emphasizes the consumption of mushrooms as a highly nutritious food comparable to meat. Therefore, it can be seen that the mushroom has been a food that has been accepted for a long time in terms of its taste and nutritional value. Experiment, because mushrooms in Thailand in 1937 have studied and developed mushroom cultivation from inoculum resulting in high yield, so mushroom became popular and mushroom production began to expand. Originally for eating within the household and has evolved to be sent for sale in the country and outside the country (Kanawut Worasarn, 2010) It is the straw mushroom that contains up to 70% of the total mushroom quantity. Let's go down and see the fairy with 50 percent of it. It is an important economic mushroom that is more popular than the straw mushroom. Because this type of mushroom can be easily cultivated. It has a short growing time and gives a lot of mushrooming, it is popular to eat the mushroom with a soft texture. Can be processed to cook a variety of food and snacks. Gawley & Hayes, (1985, p.15) such as curry with fairy mushrooms. Tom Yum Kung with Mushrooms Spicy Som Tum with Mushrooms Chicken Galangal Salad with Mushrooms Gold-plated angel mushroom, angel mushroom, and angel mushroom, etc. In addition, there is research and development of mushroom cultivation to be able to cultivate the mushroom that imitates nature. Both domestic and foreign because the mushroom contains various immune stimulants.

Wasser (2002, p. 258) and knowledge was disseminated to farmers and interested people. Thailand has a production of about 30,000 tons of mushrooms per year, which is worth more than 1,580 million baht (Ruengrit Ruangpaisan, 2007, page 48). Nowadays, farmers are turning their attention to mushroom cultivation more and more. In addition, mushroom cultivation has a simple management process and Thailand has suitable weather conditions and suitable for additional occupation for people of all classes in the form of a supplementary profession. And still being able to develop into the main occupation, thus causing a large number of mushroom farmers to grow.

From a survey in Ratchaburi Province, it is considered one of the largest mushroom production sites in Thailand. Especially mushroom and oyster genus the mushroom production spread from the production sites in

Mueang District, Photharam District and Bang Phae District to the outskirts of the city namely Paktho District, Chombueng District, Suan Phueng District, Ban Pong District Bankha District and Chombueng District there are more mushrooms cultivated than other sub-districts. And a large number of cultivated mushrooms are angel mushrooms because most farmers in Ratchaburi Province who work in mushroom cultivation prefer to make mushroom cubes for sale and open their own flowers, which many farmers work in full-cycle mushroom cultivation by making mushroom cubes and open flowers, ready to be packed and sold. Due to the increasing number of mushroom cultivators the following problem was the lack of academic knowledge in mushroom cultivation. Most of them have the knowledge gained from inquiries from people who have experience in cultivating phoenix oyster mushrooms before. Therefore, the researcher is interested in studying the cost and yield of phoenix oyster mushroom cultivation of the group of phoenix oyster mushroom farmers at Pakchong Sub-district Chombueng District Ratchaburi Province. Is it worthwhile and correct? Because these factors can be used to guide teaching planning at higher education levels and to guide communities in further planning for mushroom cultivation or processing.

## **2. Research Objectives**

1. To study the cost and yield of phoenix oyster mushroom cultivation.
2. To be used as a guideline for phoenix oyster mushroom cultivation for those interested in further study.

## **3. Research Methods**

### **3.1. Research Design**

This is a qualitative research by conducting research from secondary sources from documents, publications, theses, research papers, articles, textbooks and other information. Involved and conduct an in-depth interview. A group of farmers who cultivate mushrooms Pak Chong sub-district Chombueng district Ratchaburi province. There are 30 population groups number of households cultivating phoenix oyster mushrooms Pakchong Subdistrict Chombueng District Ratchaburi Province (2019)

Using Purposive Sampling method to provide data by collecting data on the analysis of production costs. In order to see the actual cost price and correct from the beginning of the production until the end of the sales process, which is a course that students have to apply their knowledge to further enhance their courses.

The researcher used an In-depth Interview, divided into 4 parts: general information of the respondents. Information on costs and expenses for cultivating mushrooms information about the return from cultivating mushrooms.

Collect research data by conducting an interview with informants. Summarize the results, analyze the qualitative data by Content Analysis, and classify the wording or text of the sample's opinions and interpret it. Synthetic by reason Build inductive conclusions (Induction Analysis) discuss facts found based on circumstances phenomena relationships and key points to answer study questions.

3.2. Research Process

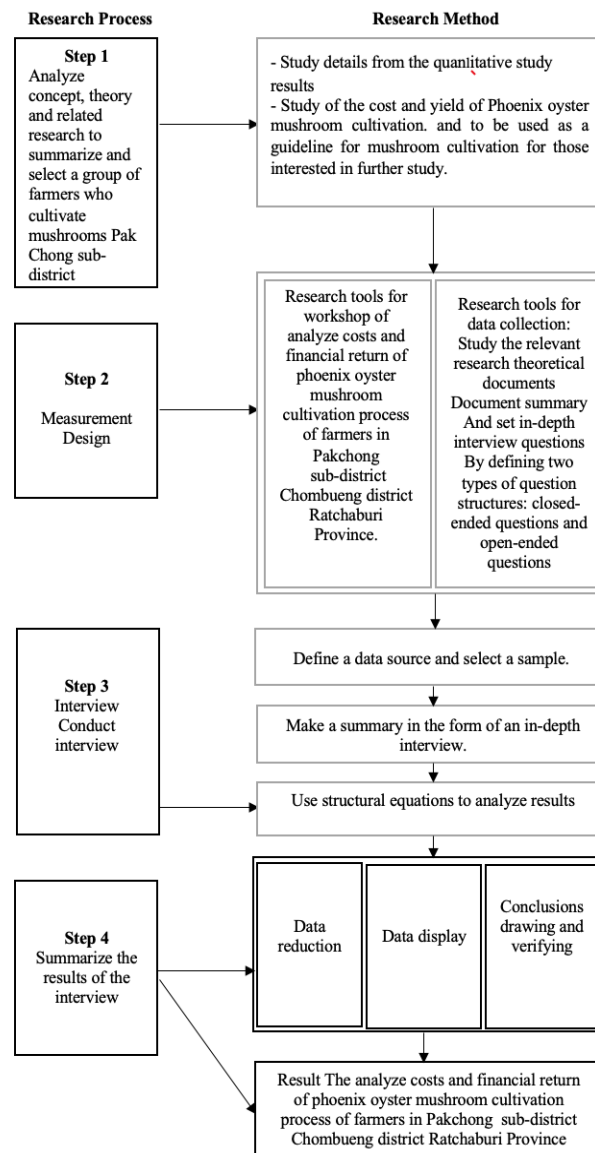


Fig.1. Research process for a Analyze Costs and Financial Return of Phoenix Oyster Mushroom Cultivation Process of Farmers in Pakchong Sub-district Chombueng District Ratchaburi Province

4. Results

Results of the study can be presented by Part 1 General information of the interviewee. The results of the general information study of the interviewees in the cultivation of the mushroom were mostly male, 10 persons, 20 females, aged between 21 - 62 years. Occupation of farming, horticulture and general contractor. Most of them have started their mushroom farming business for 2 - 13 years. Hungarian mushroom and the Phuthan mushroom. The production method can produce Phoenix Oyster Mushroom by itself including the production period until harvest is approximately 1 month - 45 days.

From entrepreneurs of phoenix oyster mushroom farm business who have previously operated and researched on the internet Mushroom cultivation per household is 4 sheds. Productivity per house is about 1,000 kilograms. Selling price is 80-120 baht per kilogram. The product obtained. Including the fungi of the mushroom as for the mushroom fungi, customers came to buy it themselves. The phoenix oyster mushrooms are good in winter. Because the mushroom likes moist air. Most farmers spend about 40,000 - 50,000 baht in growing phoenix oyster mushrooms and most of them are personal funds. As for the oyster mushroom, there are dealers who buy it for further distribution and may sometimes be sold at the local market or someone asks to buy it at home.

Part 2 The results of data analysis on the cost of mushroom cultivation are divided as follows.

2.1 Data Analysis of Initial, Costs of Fermented Mushrooms. The initial cost of cultivating mushrooms is 100,000 baht of land a cube mill 120,000 baht, a mushroom house 20,000 baht, a sieve 50 baht a milling machine 23,000 baht, a steaming stove 27,000 baht, a water pump motor 4,500 baht, a trolley 1,000 baht and a water tank 100 baht. 295,650 baht.

2.2 Analysis of cost data for preparing fairy mushroom loaf cost of preparing mushroom cubes consists of 3 types:

1) Raw materials per house: sawdust, rubber 7,500 baht, mushroom seed 455 baht, bran 750 baht, flour 200 baht, lime 100 baht, including all raw materials 9,005 baht.

2) Labor cost per house including the cost of hammering people 2,500 baht. Cost of people mixing sawdust and steaming cubes 500 baht mushroom sterilization and closing paper 500 baht, total labor cost 3,500 baht.

3) The cost of producing cubes per house, including electricity costs 500 baht, bags with cubes 1,700 baht, mushroom neck 750 baht. Paper 35 baht, rubber band 50 baht, cotton swabs 40 baht, alcohol 35 baht, depreciation of the cube mill 1,250 baht, depreciation of mushroom coop, 1,666.67 baht, sieve depreciation 93.75 baht, milling machine depreciation 479.17 baht, stove depreciation depreciation. Steaming 1,125 baht, water pump motor depreciation 281.25 baht, cart depreciation fee 83.33 baht and water tank depreciation 8.33 baht, total cost 8,097.50 baht.

2.3 Analysis of the cost and maintenance of mushroom. Maintenance costs in respect of labor costs consist of wages for people to open the mouth of the mushroom 300 baht and the wages for hormone injection 1,200 baht, including the total labor cost 1,500 baht for the cost of maintenance per house, consisting of maintenance hormones 1,600 baht, water costs 195 baht, electricity costs 100 baht, depreciated. The hormone injection tank is 27.08 baht, the hose depreciation is 10.42 baht, the knife depreciation is 2.08 baht, the large basket is 7.5 baht, the spoon depreciation is 0.42 baht, including the total maintenance expenses 1,942.50 baht.

2.4 Data analysis on the cost of collecting angel mushrooms. The cost of collecting fairy mushrooms for labor consisted of Wages for collectors 1,050 baht, wages for pack mushrooms 5,250 baht, including labor costs for collecting all mushrooms 6,300 baht for the cost of collecting and packing fairy mushrooms consisting of foam 2,090 baht, film 200 baht, bag 160 baht depreciated.

The price of the pack 833.33 baht, the depreciation of the pack is 75 baht, the depreciation of the table and chair is 291.67 baht, the depreciation knife is 2.08 baht, the depreciation of the large basket is 7.5 baht, the big fan depreciation is 156.25 baht. The scale depreciation is 79.17 baht, the small basket depreciation is 52.08 baht, the large basket depreciation is 56.25 bath, and the scissors depreciation 2.50 baht, including the total storage and packing costs 3,996.25 baht.

Part 3 Analysis of the yields from the cultivation of phoenix oyster mushrooms.

1. The wholesale price is 8.5 baht per pack.
2. Return from the sale of angel mushrooms 44,625 baht (5,250 kg x 8.5 baht)
3. By-products from the sale of 1,000 phoenix oyster mushroom cubes is equal to 100 baht.

Part 4 Results of analysis of data on finding net profit. The calculation of the return for cultivation of mushrooms less the cost of cultivating mushrooms. Revenue from the sale of angel mushrooms 44,625.00 baht. Plus income from the sale of 500.00 baht. Total income 45,125.00 baht Deduct cost from mushroom mushrooms 34,341.25 baht. Profit from sales of 10,783.75 baht.

## 5. Discussions

The results of the review of the community in the field of conservation indicated that Part 1 General information of the informant about the cultivation of angel mushrooms. Most of the informants were female, 20 in total, aged between 21 and 62 years. Has started the business of cultivation for the maximum of 13 years, the mushroom varieties that are cultivated in the greenhouses are hungarian mushroom and mushroom. The period of production to harvest is not less than 1 month and not more than 45 days by obtaining knowledge and participating in phoenix oyster mushroom cultivation training from entrepreneurs who have operated phoenix oyster mushroom farm business before and from studies. Researching internet Mushroom house cultivation per house hold not less than 3 houses and not more than 5 houses. Selling price is 80-120 baht per kilogram. The yield obtained per 1 house is approximately 1,000 kilograms. With customers to buy by themselves mushrooms work well in winter. Because the mushroom likes moist air. Most farmers spend not less than 40,000 baht and 50,000 baht in the cultivation of

phoenix oyster mushrooms as personal funds, the same as Pimwipa Thajaiuoon (2014, p.43). It was found that shiitake and phoenix oyster mushroom cultivation in Chiang Mai was 25-35 days using rice straw

Part 2 Information on costs and expenses for cultivating angel mushrooms Side1: Initial costs for cultivating phoenix oyster mushrooms consisted of land, greenhouses, machinery and equipment for the production of oyster fungi, which was consistent with Chonticha KoPrakon (2016,p.47). The initial investment in mushroom cultivation requires 35,470.00 baht per house and total machinery cost 69,000.00 baht. Comparing the investment in cultivating angel mushrooms, 1 house, 3 houses and 6 houses, found that growing 1 fairy mushroom will cost a high investment. The value for mushroom cultivation was consistent with Pornphan Chaiyachumpon (2014, p.27). The cost and return of the mushroom farming business in Lampang Province found that the initial cost of land and houses had the same investment in land. 240,000 baht and a house for making mushroom fungi mushroom Infection cube. And root fungus is 25,000 baht, a house for holding phoenix oyster mushroom infection that has already been removed is 6,500 baht, a house for opening fairy mushroom is 28,000 baht. The total housing price was 11,900 baht, the same as Fanadzo et al. (2010, p. 227). Mushroom culture was studied using the substrate compared with wheat straw.

Grow mushrooms with a five day substrate under the same growing conditions. The loss of substrate drying material after mushroom growth varied from 30.1% to 44.3%, indicating that fungal fermentation did not improve feed values.

Side 2 Cost of preparation of mushroom culture mass There are raw materials for preparing the cubes, namely sawdust, rubber, talc, mushroom bran, lime, the amount of 9,005 baht, the labor cost of preparing the loaf 3,500 baht, and the cost of preparing the loaf 6,951.66 baht, which is in line with the research of Chonticha Koprakone. (2559, p.34) investment study in mushroom cultivation. The production cost per house in a period of 1 year was 95,470 baht, in line with Pornphan Chaiyachumpon (2014, p. 31). To study the costs and returns of the mushroom farming business in Lampang Province. It was found that the production cost of the fungi, which consisted of Direct raw material was 174,688 baht, direct labor was 30,000 baht, production cost was 11,040 baht, and found that in the first year, the cost of production of oyster fungi had production costs equal to 5.39 baht per bale, or 215,728 baht per year. This is the base year and will increase by 3%, in line with Pimwipa Thai Jai-un (2014, p. 46). Comparative studies were conducted on the yield of mushroom cultivated with rubber wood sawdust under different bran ratios. It was found that the first experiment using 100 kg rubber wood sawdust formula yielded the highest mean of the width of the mushroom, 7.75 cm / flower, the fruit of the mushroom cultivar type on the physical quality of the flower. Straw mushrooms on fresh weight (G) It was found that the mushroom count of all six subjects were statistically significant ( $P \leq 0.05$ ). (G) is in the range of 52.11-91.69 g. Mushrooms using 100% New Paraplegic (T1) mushroom has the highest weight. The highest (g) was 91.69 g, followed by the yeast (T6), which was 84.26 g, which from this effect, because the mushroom nodule is an important food source for the growth of the oyster mushroom. Mushrooms normally have the same needs for nutrients, minerals and vitamins as other plants, only the difference in their form of nutrients. The mushroom lumps with the ratio of 100% rubber wood sawdust have a high feed content, resulting in the highest weight (g), the same as Nongnuch Thammakitak (2011). Study the results of using fermented rice husk as a replacement for rubber wood sawdust for culture It was found that the experiment method using 100 kg of rubber wood sawdust fermented with 1 liter of expanded microorganism EM gave the highest yield weight, the average of 249.00 g per bag.

## 6. Recommendations

### 6.1. Recommendations for Practices

1. On the productivity of the mushroom cultivation, it was found that the yield per rai was uneven, resulting in the farmers' income somewhat unstable. From the data of mushroom cultivation for 1 house, the yield of mushroom cultivation is about 750 kg. If farmers find ways to increase the yield per house to higher, it will increase the net profit.

2. Documentation of expenses information and the income that has been fully generated will result in farmers to know the information of various expenses. Used in investment and cultivation of phoenix oyster mushrooms and real income in full, and used to plan to develop phoenix oyster mushroom cultivation for higher profit.

3. Public relations since angel mushroom is an agricultural product that is nowadays health-conscious and therefore is more interested in mushroom consumption, therefore, there should be more searching for markets or promoting the benefits of mushroom because nowadays most of them are the same customers who have been here. Buying products and have been told to the next, so the mushroom cultivation may have more distribution channels. Internet to become more famous.

## 6.2. Recommendations for Further Research

This study was to collect data on the cultivation of phoenix oyster mushrooms. By the study of the main elements are raw materials, labor and production expenses only. For the next study, there should be a study of other mushroom businesses. And other types of agricultural businesses for diversity and efficient cost management or calculating the cost payback period by using each step of the production process as a guideline for calculating costs in order to obtain truthful and effective information for decision-making of business operators.

## 7. Conclusion

A study of cost and yield of phoenix oyster mushroom cultivation of a group of phoenix oyster mushroom farmers at Pakchong Subdistrict, Chombueng District, Ratchaburi Province, found that 20 female and 10 male respondents with an average age of 45 years, the maximum age of 62 and the youngest of 21 years has started a mushroom farming business for 2-13 years.

Phoenix oyster mushroom cultivations are Hungarian mushrooms. And the phutan mushroom production method can produce its own fungi total production period to harvest is about 1 month to 45 days, there are 4 houses for cultivating mushrooms per household about 1,000 kilograms of yield per house, the selling price of 80-120 baht per kilogram. And a yield equal to 45,125 baht. The cultivation period for 5 months per crop one time. And the net profit of 10,783.75 baht, which yields different mushrooms in each house, depending on the integrity of the fungus, weather and green mold.

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