

Improve Household Income Through Peking Duck Farming

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ABSTRACT

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Background: Community service was carried out to increase household income in the Serdang village, Curug district, Tangerang regency, by breeding and rearing Peking ducks.

Contribution: Peking duck breeding and rearing farming is considered relatively low in maintenance, attainable ducklings, and affordable feed; while the problem of Peking duck breeding and rearing farming is the lack of capital.

Method: The implementation methods consist of: the planning stage, the implementation stage, and the evaluation stage.

Results: The result of this community service is the achievement of total 2,597.9 Kg of ready-to-sell Peking ducks, with the sales profit of Rp 17.950.750 per month. From the total of 1,100 heads initial ducklings reared the mortality rate of 91 occurred at the vulnerable age (5-15 days).

Conclusion: By the end of the second season of community service, 3 (three) participants become self-sufficient Peking duck breeders.

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INTRODUCTION

Serdang village is located in the Curug District of Tangerang Regency. However, there are many vacant potential lots from the gap between resident' houses that can be used. The climate is ideal for farming of Peking Ducks. The succesful of Peking duck provides economic benefits, resulting in an increase in household income. With the support from the head of a community at large and some residents as participants, Peking duck farming of Tangerang Serdang Village is prospective to be developed. Based on these favorable circumstances, the Community

Service team (hereinafter abbreviated PKM Lepisi), ASM Lepisi and STIE Bisma Lepisi approached the community to put PKM into practice, particularly in the field of Peking duck breeding and rearing. Farming of Peking ducks was chosen due to its economic benefits "relatively low in maintenance" [1] suitable as a side project, beside the potential of extensive space and furthermore, the Peking duck waste can be utilized as fertilizer.

The problem faced by the PKM Lepisi team is that Peking duck breeding and rearing has not concerned as the main business yet by the villagers, or in other words, it is still regarded as an irregular project after farming. The impacts of this consideration merge other derivative issues.

The general impact is that the residents tend to be uncommitted, unaware of the duckling shelter sanitation, also less frequently observed health of the duck, which resulted in the inadequate productivity and profit. Duck feed, sanitation, and health must be well programmed and planned to increase duck productivity. In intensive efforts, "feed is the highest cost, it may reach 70% of the total cost" [2]. The cost of feed "occupies a dominant position of 60-70% compared to others" [3][4]. The next problem is the coops of inattentive Peking ducklings that are caused worse smell to the surrounding environment. "Poor hygiene may interfere the health of Peking ducks which then impact the productivity" [5][6]. On this community service, the writer of this article fully funds the initial stage of Peking duck breeding and rearing, with the agreement that the first three harvests' profit are earned primarily to return the investment.

In order to solve the problem in the Peking duck breeding and rearing in Serdang Village Curug District Tangerang Regency, the PKM Lepisi team provides of Peking duck breeding and rearing management, beginning with the construction of the duck open house and ending with the sale of the adult Peking duck. Through this Peking duck breeding and rearing management training aims to increase the household income of Serdang Village residents. The well-managed breeding and rearing of Peking ducks is expected to increase household income in the Tangerang Regency Serdang Village Curug District.

METHOD

Planning Stage

The increase in household income of Tangerang Regency Serdang Village Curug District is requirements of the community that become the main goal of the PKM Lepisi team program. The method of implementation of this activity is "providing direct training on build the duck coop, acquisition of peking duck seedlings, feed, sanitation, enlargement, and sales" [7]. At first, prior to implementation, the PKM Lepisi team determines the stages, which are composed of: 1) conducting a visit or site survey, 2) the implementation of the PKM program, and 3) program evaluation.

Implementation Stage

The stages are essential in order to discover the core issues and the correlation with the PKM Lepisi program to be implemented. The survey to Serdang Village Curug District Tangerang Regency was conducted several times, during April 2021. Including in the survey site, a discussion session was conducted among the team with the head of the community association, entitled the Chairman of RT, RW and several residents. The PKM Lepisi team then analyzed and reviewed the discussion results. The communities along with the PKM Lepisi team determine the steps in the implementation of Peking duck breeding and rearing management training which consists of: space determination, the duck coop set up, obtain Peking ducklings, purchase the Peking duck feed, maintenance sanitation, rear the day old duck, up to the stage of harvest and sale the adult Peking duck.

Aside from the primary goal of the PKM Lepisi program, which is to increase household income, the outcome of this community service is expected to be a model in the breeding and rearing of Peking ducks for the surrounding environment.

The series of PKM Lepisi program activities is described as follows:

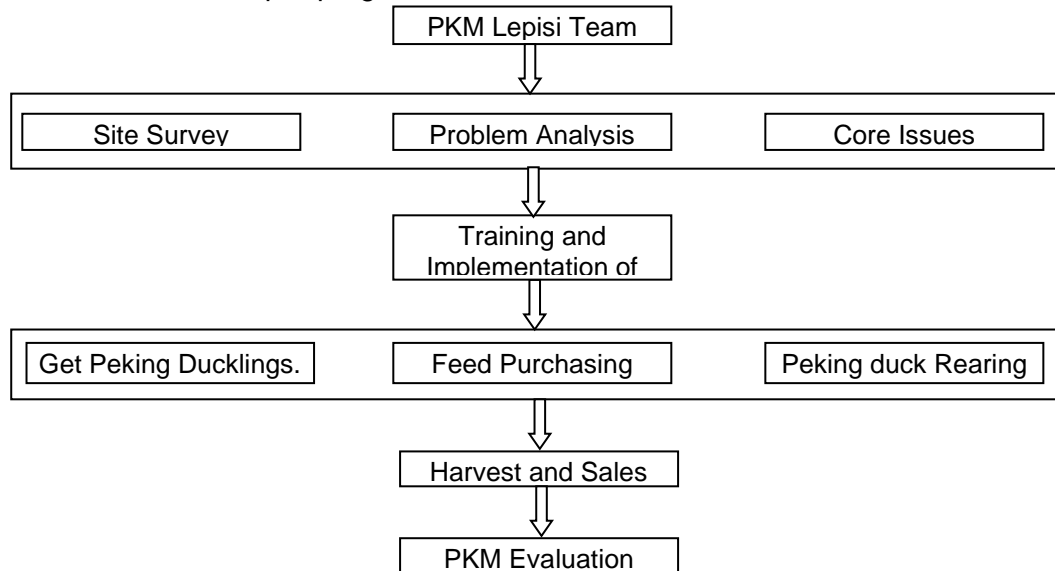


Figure 1. Stages of PKM Lepisi Activities

PKM Evaluation Stage

At the evaluation stage, a thorough assessment of PKM Lepisi activities is conducted. Starting from the evaluation of duck coop build, acquire Peking ducklings, feed acquisition, sanitation and Peking duck rearing, ducklings at a critical age, harvest and sales, also evaluation of income earned in the first Peking duck farming period. The evaluation results will be useful consideration material for the next Peking duck farming period. This is an assessment for the PKM Lepisi team and the community of PKM participants intended to measure the implementation of the Peking duck breeding and rearing among participants and to calculate how much the first period harvest raises the income of households. This evaluation is "a measure in the implementation of each activity in the form of data performance that is very useful for future considerations" [8][9].

RESULTS AND DISCUSSION

Stage of Establish the Postal Duck Coop

Peking duck coop in the implementation of PKM Lepisi refers to the type of battery farm, postal, and duck farming. The Postal type duck coop in the Serdang village. With this type of postal coop, "Peking duck will be placed in a large opened house with the certain number of ducklings, food and water are provided in the coop, so that all the Peking duck farming activities is keep in one particular area" [10][11]. In this type of postal duck coop "it can occupy 10-15 ducks per m² for starter and grower periods" [11]. Coops built in the size of 8 m x 12 m = 96 m². The shape of the postal coop type is shown in the image below:

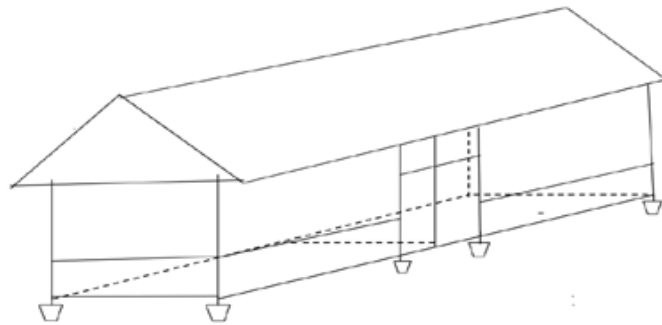


Figure 2. Postal Type Duck Farming Coop

The size of coop area is 96 m² which can accommodate 96 x 10 ducks = 960 ducklings up to 96 x 15 duck = 1.440 Peking ducks. To gain efficiently of the materials, this coop is made of bamboo, hebel, and tarpaulin. Peking duck coop was established in Serdang Village RT / RW: 002 /004 with an area of 96 m². This coop is constructed at a distance of approximately 100 meters from the resident area in order to avoid disturbing the surrounding environment. Training for the establishment of a Peking duck coop began on April 4, 2021 and completed on April 17, 2021, the shape of this postal type coop is seen in the following figure.



Figure 3. Postal Peking Duck Coop Farming

The cost to build a postal type Peking duck coop with the size of 8 m x 12 m is described in the following table.

Table 1. Postal Coop Cost Details

No	Types of Materials	Unit Price(Rp)	Amount(Rp)
1	Bamboo 60 stems	15.000	900.000
2	Tarpaulin 5 rolls	450.000	2.250.000
3	Hebel 500 pieces	7.300	3.650.000
4	Hanging fan 2 units	340.000	680.000
5	125 watt water pump	365.000	365.000
6	Drilling well pumps and installation	2.250.000	2.250.000
7	Wire 5 rolls	90.000	450.000
8	Nail 5 kg	18.000	90.000
9	Wooden beams, 12 rods	125.000	1.500.000
10	Feed container 20 units	20.000	400.000
11	3 inch-pipe with 2 units	66.550	133.100
12	Hanging electric scales	1.060.000	1.060.000
13	ATS Brass Padlock	127.000	127.000
14	Other equipment costs		500.000
	Total		14.355.100

Other equipment that will be available include: "hoe, shovel, spoon, and bucket that will be use for the coop sanitation" [12]. The total cost of Rp 14,355,100 is expected to provide profit for 2 (two) years. The wages of the builder, with a piecework wage of Rp 4,000,000, are another cost in the construction of the postal coop. The total cost of constructing the postal coop is Rp 18,355,100. Thus, the depreciation expense was Rp 18,355,100 divided by 24 months equals Rp 764,796 or Rp 765,000. (rounded up). This depreciation expense figure will be useful in calculating net profit at harvest time.

Within 14 days the postal coop was set up and ready to use for Peking duck farming and is shown in the picture as the following (image below is the correspondent of this article).



Figure 4. Postal Duck Coop after Finished Construction

Additionally, the installation of a fan is carried out. This fan is "useful for livestock to cool down during the day when the weather is very hot" [13]. The fan installation appears as follows:



Figure 5. Cooling Fan Installation

In order to complete the set up of the Peking duck coops, water pumps are also installed "which are useful in sanitation and the provision of enough water to keep the Peking duck health and clean" [14]. The installation of the water pump and its installation appear as follows.



Figure 6. Water Pump

The next job is the finishing of the of Peking duck coops that used coarse bran for approximately 5 (five) sacks and also the installation of feed containers. This coarse bran is stocked throughout the coop land which is useful "to accommodate duck droppings to be easily dried and cleaned, in addition, coarse bran can be used as fertilizer plants" [11]. The following image depicts a duck coop that has been stocked with coarse bran and is already equipped with feed containers.



Figure 7. Postal Enclosures that are Ready to use

Following the installation of the postal coop by the PKM Lepisi team, which takes about 14 days, the next stage for the PKM Lepisi team and the participant is to obtain Peking ducklings that are ready for breeding and rearing.

Procurement of Peking Ducklings

The next activity in the implementation of PKM programme is to select the Peking ducklings. Peking duck is "a broiler duck variety whose weight growth and age are relatively faster than other types" [15]. Within "45 days this Peking duck is ready to harvest with a body weight of 2.2 kg to 3 kg for each" [16]. The intensive assertion method is used to select Peking ducklings, which entails purchasing several ducklings and breeding them for ten days. In "this method is carried out intensive monitoring every day and recorded all the development data" [17]. For the first stage of Peking duck farming, 100 Peking ducklings were purchased for Rp 10,000 each, for a total of Rp 1,000,000 (one million rupiah). However, the writer does not list the name and address of the Peking duckling supplier. During the 10-day trial, intensive monitoring was

conducted and resulted in mortality data of 4 (four) ducklings. The cause of mortality is the ducklings were falling upside down and unable to stand on its own. The falls duckling need help to stand, or it will decease otherwise. The Peking ducks of age 1-15 days is called "Day old Duck" [18]. Other interference during the 10-day trial practically was almost not found, as intensive monitoring is conducted. When the weather is hot, the fan should be turned on to reduce the heat of the air on the duck coop. These phases are conducted from April 19, 2021 to April 28, 2021. After led a trial, on April 30, 2021, the PKM Lepisi team will begin Peking duck farming with the Serdang Curug Tangerang villagers. The practice of monitoring the Peking duck during its vulnerable period conducted alternately with the villagers for 10 days, from April 30, 2021 to May 9, 2021. Furthermore, a total of 1.000 ducklings were purchased for Rp 9,000 each, for a total of Rp 9,000,000 (nine million rupiah). Total expenditure for the procurement phase of this duck is amount to Rp 10,000,000 (ten million rupiah), which consists of Rp 1,000,000(expenditure during the trial period) and Rp 9,000,000 (when Peking duck farming began). Here is a picture of Peking ducklings at its vulnerable age in the beginning stage of Peking duck farming.



Figure 8. Peking Duck Under 10 Days (left) and Under 15 Days (right)

Feed Purchase

There are many brands of Peking duck feed available in the market. Based on the results of the discussion of the PKM Lepisi team with residents and reliable sources, the PKM team decided to use Hi-Pro 11 feed. This feed "contains nutrients that are good enough for Peking ducks under the age of 15 days" [19]. Feeding duck conducted for 3 times per day as much as 4 grams for each. The price of the duck feed is Rp 10,000 for each kg. In order to avoid overfeed ducklings; the feed is given carefully with the right measurement using an electric hanging scale. The food container should be keeping dry, separated from the water container. As seen in figure 8 above, food containers are provided on separate containers, with a water container. Before each feeding session, the food container is cleaned. The needs of duck feed for 1,100 heads, Peking ducklings over ten days are calculated by multiplying the needs per day by ten days and then multiplying by the number of Peking duck livestock, which is 1,100 heads ducklings x 4 grams /each x three times a day x ten days = 132,000 grams or 132 kg. The price of food per kg is Rp 10,000.. The total food expenditure for 10 days amounted to Rp 1,320,000 (one million and three hundred and twenty thousand rupiah). During this vulnerable age, 87 Peking ducklings died during the trial period, while 4 died before. On May 9, 2021, the remaining Peking ducks, numbering up to 1,009 heads were ready to begin rearing.

Peking Duck Rearing

Peking duck rearing will last approximately 30 days, beginning on May 10, 2021 and ending on June 8, 2021. Based on the discussion results among the PKM Lepisi team, participants and reliable sources, the rearing stage used Sreeya duck food (the name and address of the supplier are not mentioned in this article). Sreeya was chosen as it is "contains protein and excellent nutrition that is essentials in the rearing stage" [20][21]. Here are photos of a 25-day-old and a 40-day-old Peking duck..



Figure 9. Peking Duck Age 25 Days (left) and Age 40 Days (right)

At this stage of rearing, the duck was feed for 3 times a day with a measure of 23 grams each. To save costs, the food can be mixed with Japanese papaya leaves (not discussed in detail in this paper). The amount of food required to rear a Peking duck for 30 days is 1,009 heads x 23 grams each x 3 times a day x 30 days, which equals 2,088,630 grams or 2,089 kg.. The cost of feed per kilogram is Rp. 5,300.. During the raising stage, the total cost of food is 2,089 kg x Rp 5,300/kg. =Rp 11,071,700. (eleven million seventy one thousand and seven hundred rupiah).

Harvest and Adult Duck for Sale

Harvesting Peking duck farming can be conducted according to the age of Peking ducks reaches 45 days with an average weight of 2.2 kg to 2.8 kg for each. Here's a picture of a Peking duck at the age of 45 days:



Figure 10. Peking Duck at Harvest Age of 45 Days

Collectors will typically pay visits to harvest-aged Peking ducks, but the PKM Lepisi team remains consistent to the collectors who participated in helping the cultivation of Peking ducks. Harvest is completed 2 (two) times, because there are still about 170 ducks whose body weight is still 2.2 kg. Collectors only want to buy adult Peking ducks weighing 2.5 kg for each. Here, the PKM team and the participants had difficulty sorting ducks whose body weight was 2.5 kg more

for each. But with sincerity it can be implemented. In the first sale, June 11, 2021 the total scale of Peking duck a maximum of 2181.4 kg and on the second weighing of June 18, 2021 as much as 416.5 kg. Thus the total yield of Peking ducks in the first period is 2597.9 kg. The selling price of Peking duck in the first period reached Rp 28,000 per kg. From the first harvest, as many as 20 Peking ducks were distributed to the head of the region, local residents and the PKM Lepisi team.

The question is whether the Peking ducks farming can increase the income of citizens who carry out Peking duck farming. To answer and explain the question, the calculation of profit or loss calculation is as follows:

Table 2. The Calculation of Profit-Loss Cultivation One Harvest Season

Description	Amount(Rp)
Sales (2 597.9 kg x Rp 28 000)	72.741.200
Operating expenses:	
Peking duck seedlings in the first 10 days trial period (100 tails)	1.000.000
Peking duck seedlings in the first period (1 000 tails)	9.000.000
Feed during the trial period (12 kg)	120.000
Feeding at a young age (age 10-15 days)	1.320.000
Feed at the time of enlargement	11.071.700
45-day maintenance fee	3.500.000
Night security fee (45 days)	2.500.000
Electricity costs	328.000
Postal coop depreciation cost (2 months)	1.530.000
2 months' rent on the land	3.000.000
Dues to the environment (RT/ RW)	200.000
Distributed as many as 20 heads @ Rp 28,000	560.000
Consumption of PKM and teams in the first season of cultivation	900.000
Consumption at sales	250.000
Other expenses	1.560.000
Total operating expenses	36.839.700
Profit	35.901.500

Based on the calculation table of profit and loss above can be seen that Peking duck farming can actually increase the household income, which profit was made during duck farming for 45 days or 2 (two) months is Rp 35,901,500 or $Rp\ 35,901,500/2 = Rp\ 17,950,750$ for each month. Profits are made because many Peking ducks are successfully grown until harvest time. This situation and the conditions under which it is applied may differ from one territory to the next.

The total operational cost of Rp 36,839,700 is including: Rp 1,000,000 for the purchase of 100 Peking ducklings for trials; and Rp 9,000,000, for the purchase of 1,000 Peking ducklings for the first duck farming season.

The cost of purchasing Hi-Pro duck feed during the trial period is amounted to Rp 120,000; while the cost of the duck feed during the first farming period for the age of 10-15 days is amounted to Rp 1,320,000. The total cost of Sreeya duck food during the 30-day rearing period is Rp11,071,700.

The total expenditure for wages of 45 days of Peking duck farming, especially during the vulnerable age is amounted to Rp 3.500.000 and the cost of duck coop security at night is amounted to Rp 2.500.000. In addition, There is an electricity cost of Rp328,00 that is channeled from the nearest house. In addition, the cost of constructing "Peking duck postal coop is not charged all at once as an operating expense, but is calculated using a straight line method with

the duck coop estimated useful life of two years". Therefore, the cost of duck postal coop depreciation is calculated for 2 months amounting to Rp 1.530.000. The cost of leasing land for two months was Rp 3.000.000; and the payment of dues to the local environment or RT / RW for 2 months is amounted to Rp.200.000. During the harvest season, for about 20 Peking ducks were distributed to the community which is estimated worth for Rp 560.000, while this item is included as an opportunity cost.

The other operational duck farming expenses are the consumption expenditure of PKM teams and participants during the implementation period of community service which amount of Rp 900,000 and the consumption expenditure costs during harvest and sales time which amount of Rp 250,000. Beside, other expenses Rp1.560.000 is additional expenditure during rearing period such as the purchase of Japanese papaya leaves and vegetables for additional feed.

Evaluation

By the end of the first harvest period, the PKM Lepisi team and participants evaluated the results of Peking duck farming. As a result of the evaluation and discussion, data on supportive factors for the implementation of this PKM program, such as: 1) there is enough land for farming of Peking ducks., 2) the farmers' profit from sales revenue, 3) the community's assistance in farming of Peking ducks, 4) Peking ducklings are available at reasonable prices, 5) Duck feed is available in the Tangerang area at reasonable prices, 6) a plethora of extra feed sources such as Japanese papaya leaves and vegetables, 7) as a harvest collector, you will receive assistance from other entrepreneurs.

Besides, "there are issues that have arisen, such as: 1) considerable capital, 2) some villagers are opposed to the introduction of Peking duck farming into their communities, 3) negative assumptions considered the Peking duck farming is troublesome and difficult". The Lepisi PKM team has been working hard to overcome these challenges. The author of this article has covered the entire cost of the initial stage of Peking duck farming. In addition, the PKM team has also successfully convince the "koperasi" institutions lending capital in the local area for 2 (two) household participants of Peking duck farming. By the end of June 2021, Three (three) households have already committed to starting their own Peking duck farming business (including the correspondent of this article). The PKM team has also asked Tangerang's animal husbandry department for assistance with Peking duck farming in Curug Village, as well as the company's long-term viability requires serious attitude of management. Toward the disagreement from the community, the PKM team keeps on providing counseling and explanation, that Peking duck farming is a long-term viable business that can contribute to the increase in household income in Curug Serdang Village Tangerang.

The evaluation of the implementation of PKM and the duration during one season of Peking duck farming can be seen in the following table.

Table 3. Duration of a Peking Duck Farming Season (in days)

Description	Day
Postal coop establishment (4 april-17 April 2021)	14
Trial Period (April 19-April 28, 2021)	10
First farming of 1 000 ducklings (30 april-9 May 2021)	10
Rearing (10 May-8 June 2021)	30
First harvest (11 June 2021)	3
Second harvest (June 18 2021)	7
Total	74

Theoretically, the harvest period was estimated for 45 days, however, the actual implementation time starting from the beginning of Peking duck farming (April 30, 2021) until the first harvest and the second harvest time is in total, $10+30+3+7=50$ days. In other words, there is a five-day difference. There are three days, calculated from June 8 to June 11, 2021, and the other 7 days are calculated from June 12 to June 18, 2021. The period of establishment the postal duck coops and the trial period of Peking duck farming are not included in the evaluation of the length of time for Peking duck farming.

CONCLUSION

PKM is completed. Peking duck farming lasts 50 days, for a total of 74 days. PKM implementation is a manifestation of lecturers' obligation to the Three Pillars of Higher Education. "The time frame of Peking duck farming is considered short, lasting only 50 days, whereas the profit from Peking duck farming sales revenue can increase household income by Rp 35,901,500, in 74 days or Rp 17,950,750, in a month". However, the outcomes in other Serdang Curug Tangerang areas may differ depending on the situation and conditions. As a result, Peking duck farming can be viewed as a potential long-term business. According to the evaluation results, there are some obstacles revealed, such as lack of capital, as well as unsupported community attitudes. To address the emerging issues, the author proposes establishing a community group as a forum for those interested in Peking duck farming. This group will help the community along with the head of the local community to associate with financial institutions such as Koperasi. In addition, The Livestock Office approached the community by providing advice on how to increase household income through Peking duck farming.

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