

Production Management Study of Laying Duck Breeding Business Semi-Intensive Cage in Jember

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ABSTRACT : This research aimed to examine the productivity and business performance of laying ducks, namely the percentage of egg production, feed consumption, Feed Eeg Ratio (FER), Income Over Feed Cost (IOFC). The research will be carried out in June - August 2024 at the laying duck people's farm. The laying duck business was kept for hatching eggs using a semi-intensive rearing system at the livestock company. The ducks were UD Putra Jember with the address at, Mojomulyo Village, Puger District, Jember Regency. The research method was a quantitative method and descriptive statistics, namely a field observation approach to obtain primary data which is then analyzed and described according to facts in the field. The research data was a case study of various types of primary and secondary data which helps in identifying, recapitulating data, analyzing and describing and explaining the findings during research in a comprehensive manner related to the production management evaluation of the performance of the breeding system laying duck farming business. Primary data was obtained from direct observations and interviews with duck farm owners. Secondary data to support writing the report. The research results showed that the feed used is manufactured feed, the daily feed consumption obtained during the research was 116.94 g/head/day, the percentage of daily egg production was 80.07%; average egg weight 58.76 g/piece; FER 2.44 and cracked eggs 0.4%, price of egg per egg is IDR 3500, mortality is 0.06%. B/C analysis is 0.4 and R/C is 1.4 and IOFC was 3,092.

Keywords – eeg production, feed production, feed eeg ratio, income over feed cost, laying duck

1. INTRODUCTION

The egg-laying duck farming business is a type of business that has enormous potential for the main income for the community because the results obtained from the livestock business promise large incomes for farmers. Duck farming is very suitable for development because the laying duck business can be used as an effort to meet basic needs and daily income because every day it can produce eggs. According to the Central Statistics Agency in East Java, in 2023 the need for ducks will be 34,122 tons. Meanwhile, the population of laying ducks in 2023 will be 389,378. per head. Laying ducks are a type of livestock that is cultivated for two purposes, namely that they can be used to produce eggs and also to produce meat. The laying duck farming business has good prospects for development because eggs are a cheap source of protein and are easy to process into food. The nutritional content of duck eggs includes 74.70% water; 12.90% protein; 11.20% fat and 0.90% carbohydrates (2).

Egg-laying ducks in Indonesia come from local and cross-breed ducks that are kept for their eggs. Laying ducks are livestock specifically for producing eggs for consumption. There are two types of laying ducks, namely Mojosari ducks and hybrid ducks. The characteristics of Mojosari ducks are that they have a slim and small body shape, clean and brown feathers, and are able to produce more than 200 eggs per year. Meanwhile, the characteristics of hybrid ducks are that they have a body weight that is quite heavy but not too fat, brown in color and have white eggshell shells {2}. The thing that always needs to be considered in the management of laying ducks is achieving good egg production performance.

A laying duck business is said to be a viable business if the profit and productivity aspects are achieved to the maximum. These two aspects can be achieved by maximizing the improvement of duck seeds, feed quality, and rearing management (3 Duck cage models closely determine the comfort conditions of laying ducks so that egg production is optimal (4). Therefore, it is very necessary to pay attention to the duck rearing system in management. Types Housing is a very important factor in duck rearing management (5). The types of duck rearing that are often developed in Indonesia are free-range and semi-intensive rearing, which are cages designed to adapt to the conditions and adaptations of ducks that like the environment outside the cage This cage has advantages such as making it easier to monitor, according to the ducks' original needs and can minimize the percentage of deaths and increase production (6).

Semi-intensive rearing is believed to increase the productivity of laying ducks because keeping laying ducks in semi-intensive cages guarantees safety and makes the ducks feel comfortable. Therefore, research is needed to examine the production performance of breeding laying ducks reared using a semi-intensive system through case studies at UD Putra Jember.

2. MATERIALS AND METHODS

2.1 Research Location and Time

The research was carried out from June 1 to August 15 2024 at UD Putra Jember, a semi-intensive laying duck farming company. UD Putra Jember is located in Mojomulyo Village, Puger District, Jember Regency, East Java Province

2.2 Materials and Methods

The tools used in this observation were semi-intensive cages, recording cages, feed containers, drinking water containers, reservoirs, eggtries for storing eggs, feed, and writing utensils. The material used is hybrid duck. Aged 30-32 weeks in one cage of 300 animals. The method used in this observation is a quantitative method and descriptive statistics, namely a field observation approach to obtain primary data which is then analyzed and described according to actual facts.

2.3 Feeding Management

The feed provided is finished feed obtained from factory feed with the nutritional content presented in Table 1. Feeding at UD Putra Jember is given at 07.00 WIB. Drinking water is provided ad libitum

TABLE 1. Quality feed to laying duck

Nutrients	Amount
Water (%)	< 13,00
Crude Protein (%)	> 16,00
Extract Ether (%)	> 3,00
Crude Fiber (%)	> 5,00
Calcium (%)	3,25 - 4,25

2.4 Research Variables

The variables used in this research are described in following sections.

2.4.1 Egg production

Egg production is a way to calculate daily egg production which is usually calculated for one day or one week (4). It can be expressed with the following formula.

$$\text{Egg production} = \frac{\sum \text{total eeg}}{\sum \text{duck population}} \times 100 \% \quad (1)$$

2.4.2 Feed consumption

Feed consumption is the amount of feed given to ducks in a day (10). Feed consumption can be calculated using the following formula (8).

$$\text{Feed consumption} = \text{total feeding} - \text{total remaining feed} \quad (2)$$

2.4.3 Feed Egg Ratio (FER)

Feed egg ratio is calculated based on the amount of feed consumed divided by the weight of eggs produced (10). FER is a parameter to measure the success of a livestock business for laying ducks. FER describes the effectiveness of duck rearing companies. The FER calculation formula is as follows

$$\text{Feed Egg Ratio (FER)} = \frac{\sum \text{feed consumption}}{\sum \text{egg weight}} \times 100 \% \quad (3)$$

2.4.4 Mortality

Mortality is a measure of the death rate in a duck rearing and is one aspect that influences a rearing. It can be calculated using the following formula (11).

$$\text{Mortality} = \frac{\sum \text{duck deads}}{\sum \text{duck population}} \times 100 \% \quad (4)$$

2.4.5 Income Over Feed Cost (IOFC)

Income Over Feed Cost is calculated by comparing the income obtained from selling eggs and the cost of rations during maintenance (12).

$$\text{Income Over Feed Cost (IOFC)} = \frac{\sum \text{egg income}}{\sum \text{feed cost}} \quad (5)$$

2.4.6 Statistical Analysis

Data from the results of research activities are then tabulated, recapitulated, then the data is processed using descriptive quantitative statistical analysis to provide a general explanation of the data obtained for each variable.

3. RESULT AND DISCUSSION

The research results showed that the management of laying duck farms was data processed using quantitative statistical analysis and in the discussion it was explained descriptively to provide a general picture of data on feed consumption, egg production, egg weight, income over feed cost, mortality, the following are the results: The productivity of laying ducks based on the results of observations made at UD Putra Jember was in Table 2.

TABLE 2. Performance and Productivity of Laying Ducks

Duck (weeks)	Age	Variabel				
	Egg (%)	production	Avg egg weight (g/1 egg)	Feed Consumption (g/fish/day)	FER	Mortality (%) IOFC (IDR)
30	85		58,00	119	2,05	0,01 3,043
31	85		58,00	119	2,05	0,01 3,081
32	90		58,02	120	2,06	0,01 3,157
Avg	87		58,01	119,5	2,05	0,01 3,092

Source: Primary data from research

3.1 Duck Day Production (DDP =Duck Day Production)

The results of research at UD Putra Jember showed that the average DDP of laying ducks at the age of 30-32 weeks with a semi-intensive rearing system is 85-90%. The peak production of laying ducks at UD Putra Jember (Table 2) was obtained when the ducks were 32 weeks old with a DDP percentage of 90%. The results obtained in this study were slightly below the standard for hybrid production aged 30-32 weeks, namely around 85-95%. Peak production at UD Putra Jember was also slightly below standard compared to the peak production standard for hybrid laying ducks which reach peak production at 32 weeks of age with a peak production percentage of 92% (13).

The DDP value is below standard, possibly due to hot environmental conditions and a short roof, as well as fluctuations in environmental temperature and humidity around the cage, and possibly causing stress and stress to the ducks. This causes egg production to decrease. Egg production in laying ducks according to (15) was influenced by many factors that influence egg production, including duck seeds, age, health condition, housing system used, lighting, feed and environmental temperature.

3.2 Egg Weight

The average egg weight of laying ducks aged 30-32 weeks using a semi-intensive rearing system is 59 g/duck egg. The highest egg weight obtained in this study was 65 g/egg when the ducks were 32 weeks old, while the lowest weight was 55 g/egg at 30 weeks old. Egg weight (BT) Ducks could be grouped into 3 types, namely small eggs (BT < 50 g/piece), medium eggs (BT 50-60 g/piece) and large eggs (BT > 60 g/piece) (16). Duck eggs were classified as medium eggs and the weight of duck eggs will naturally increase as the age of the duck increases. Important factors that can influence duck egg weight include livestock health, nutrient absorption, duck strain, duck age, stress level, and environmental temperature (17).

3.3 Feed Consumption

The research results showed that feeding management was provided once a day with feed from brand Feed consumption increases as the age of the ducks increases with the average feed consumption obtained when the ducks are 30 weeks old, namely 119 g/head/day, 31 weeks, namely 119 g/head/day, 32 weeks, namely 120 g/head/day. The feed consumption for laying ducks at UD Putra Jember was in accordance with the consumption standards for laying ducks aged 30-32 weeks. This is because the semi-intensive rearing system for ducks provides comfortable temperature and humidity

3.4 Feed Egg Ratio (FER)

The research results showed that the average FER of laying ducks aged 30-32 weeks with a semi-intensive rearing system was 2.05-2.06. FER is the ratio between the rations consumed by laying ducks to be able to produce a number of eggs. The FER value can be calculated by calculating the amount of feed consumed divided by the weight of eggs produced (14). The FER value obtained in this study was included in the normal category. given in producing eggs. Cage environmental conditions and maintenance management including feed consumption can affect egg production (15).

3.5 Mortality

The research results showed that the average mortality of laying ducks at the age of 30-32 weeks with a closed house rearing system was 0.06%. Mortality was the number of duck deaths that occur during maintenance and is generally expressed as a percentage (17). Stress and increasing age in ducks is one of the factors causing death in ducks (13). Mortality or death rate in laying ducks could be caused by several factors, namely disease, inappropriate feeding, unsuitable environment, and stress.

3.6 Income Over Feed Cost (IOFC)

The results of the Income over feed cost calculation aim to determine the level of profit from the income received from raising laying ducks. The IOFC value is obtained from comparing the average income obtained from selling duck eggs with the cost of duck rations. From the calculation results, the IOFC value obtained is an average of 3,092. The higher the IOFC value, the better it will be because of the income obtained from the sale of eggs within one month. At different ages of ducks, namely 30 weeks of age, the average IOFC was 3,043 while duck day at 32 weeks of age was 3,157

4. CONCLUSION

Evaluation of the production performance of laying ducks carried out through case studies at UD Putra Jember can be concluded that semi-intensive laying duck rearing can be used as an effort to maximize the productivity of laying ducks which can be measured from optimal feed consumption, egg production (DDP), egg weight and feed conversion on eggs (FER) and low mortality rates for ducks and the resulting income over feed costs was almost efficient and optimal. Optimal productivity with a semi-intensive system is of course supported by the owner's farming experience in raising laying ducks.

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