

Profit Comparison of Fertilized Egg Production and Consumption in Laying Hens in Gondangrejo District, Karanganyar

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Abstract

This study aims to compare the profit of fertilized egg production and consumption in layer breeders in Gondangrejo District, Karanganyar Regency. Data was collected at layer chicken farmers in Gondangrejo District, Karanganyar Regency. The study was conducted from October to December 2019. Data were collected using a questionnaire. The method of data collection is done by purposive sampling. Purposive sampling is the taking of data by giving certain considerations or giving conditions to the samples taken. The parameters observed were chicken population, average egg production, percentage of fertilized eggs, percentage of damaged eggs, and percentage of empty eggs. The selling price of Rp. 20,000.00 / kg of consumption eggs, the selling price of fertilized eggs Rp. 2,200.00 / item and the price of empty eggs (after candling 4 days of hatching) Rp. 10,000.00 / kg or half of the price of normal consumption eggs. Respondent B had the largest difference in sales price among all respondents, namely Rp.49,754,585.00 because it had the largest layer of livestock population and the average egg production. Multiple regression analysis obtained $Y = 18,479,449 - 30,251 X_1 + 46,389 X_2$. Production of fertilized eggs and eggs together has a positive influence on the profitability of selling fertile eggs. The conclusion of this study is fertile egg production provides optimal profit when egg production and egg fertility are high.

Keywords: Prices of fertilized eggs, egg production, fertilized egg production, coefficient of determination

Introduction

Eggs are an important commodity in the production of laying poultry (layer chicken). Eggs are excellent because they are easily obtained at affordable prices. Ramdhiani (2008) states that the pattern of household consumption towards the fulfillment of protein needs and the pattern of expenditure for the consumption of the highest purebred chicken eggs by low-income communities, in the order of household expenditure for egg consumption is the highest from low-income communities followed by middle and high-income communities. Therefore, eggs become one

of the animal proteins that are very familiar with the whole society in any social strata.

The price of stable chicken eggs makes people will continue to buy eggs in any condition because the price is affordable. The amount of demand for broiler eggs is more stable or tends to increase due to fluctuations in stable prices of broiler eggs. Saputra et al. (2017) explained that the demand for broiler eggs by the community is stable or will change if the price of broiler eggs changes, but the proportion of changes in the number of requests is not as much as the proportion of changes in price.

Chicken egg production income is quite high. Research Rinto et al. (2017)

shows the results of egg chicken production income is Rp 297,000.00 / 100 head/month. The income is expected to increase when the resulting chicken eggs are made into fertile eggs that are hatched to provide DOC "joper". This study aims to compare the profit of fertilized egg production and consumption in layer chicken farmers in Gondangrejo District, Karanganyar Regency.

Material and Method

Data Collection Places

Data was collected at layer chicken farmers in Gondangrejo District, Karanganyar Regency. When the data is collected is from October to December 2019. Data is collected through a questionnaire consisting of several questions.

Research methods

The method of data collection is done by purposive sampling. Purposive sampling is data retrieval by giving certain considerations or giving conditions to the samples taken (Sugiyono, 2010). Data taken in the form of production data include egg production, fertilized eggs, empty eggs, broken eggs, selling price of consumption eggs, and selling price of fertilized eggs.

Data analysis

Income. Business analysis of layer chicken income for fertilized egg production is calculated based on the difference between total revenue and total expenditure, (Soeharto, 1995).

$$\text{Income} = \text{TR} - \text{TC}$$

$$\text{TC} = \text{FC} + \text{VC}$$

Inf:

TC = Total Cost

TR = Total Revenue

FC = Fix Cost

VC = Variable Cost

Multiple regression analysis.

The Use of Multiple Linear Regression Analysis Multiple Linear Regression Analysis is used to measure the effect of more than one independent variable (the independent variable) on the dependent variable (Algifari, 1997).

Rumus:

$$Y = a + b_1X_1 + b_2X_2 + \dots + b_nX_n$$

explanation: Y = dependent variable/selling price of fertilized eggs

a = Constanta

b_1, b_2 = regression coefficient

X_1, X_2 = independent variable (independent), namely egg production and price of fertilized eggs

Furthermore, in correlation analysis there is a number called the coefficient of determination (R^2). This coefficient is called the deciding coefficient, because the value contained in the dependent variable can be explained through the value contained in the independent variable.

Results and Discussion

Income

Layer chicken business income can be seen from the results of the profit analysis shown in Table 1.

Table 1. Analysis of the profit of layer chickens (100 birds)

No	Fixed Cost	Cost (Rp)	No	Variabel Cost	Cost (Rp)
1	Depreciation Costs for enclosure equipment	80.000	1	Feed	14.000
2	Employee salary	3.000.000	2	Water and electricity cost	500
3	Purchase of chicken 100 @Rp 63000	6.300.000	3	IB staff	500
4	Rent a cage	1.000.000	4	Medication and Vaccines	500
5	Cage equipment	800.000		TVC	15.500
	TFC /year	11.180.000			
	TFC /kg	1.200			
	TC	16.700			
	Price per kg	20.000			
	Income (per kg of eggs)	3300			
	BEP Price (Rp)	49.688.889			
	BEP in Unit (Kg)	2.484			
	R/C ratio			1,07	

Source = Primary data 2019

Production costs are divided into two namely fixed costs (TFC) and variable costs (TVC). Based on Table 1 shows the TFC of Rp. 11,180,000.00. Fixed costs consist of costs for depreciation of cage equipment, employee salaries, purchase of chickens, rental of cages, and cage equipment. Fixed costs in the layer chicken business will be more static. this is in accordance with the opinion of Sukirno (2002) that fixed costs will be static because they are not influenced by many aspects. The variable costs in Table 1 are Rp. 15,500.00. Variable costs consist of

feed, water, electricity, IB energy, medicine, and vaccines.

Table 1. shows that the income (per kg of eggs) was 3,300 and the price per kg was Rp. 20,000.00. Income is determined by the amount of revenue which is determined by the amount of egg production and the selling price. Pambudi et al. (2013) state that the greater the profits obtained by a business, the more efficient the business will be, and the more feasible it will be developed.

BEP value determination is used to plan how much profit you want to obtain.

The Break-Even Point (BEP) layer chicken unit is 2,484 kg. Price BEP Value is IDR 49,688,889.00. This shows that the layer chicken business is profitable because the product income is above the BEP value in the unit. Hastuti et al. (2018) state that the BEP analysis guides the minimum number of products that must be produced or sold and at what selling price is not profitable and not a loss.

R/C Ratio is the ratio between income and costs incurred. Table 1. shows that the R/C ratio of layer chicken is 1.07. This shows that layer chicken production is feasible to proceed to the

next period. This is in accordance with Soekartawi (2003) that a business is said to be profitable if it has a ratio between Revenue and Cost (R/ C) of greater than one.

Production Data

The parameters observed were chicken population, average egg production, percentage of fertilized eggs, percentage of damaged eggs, and percentage of empty eggs. Production data on layer chicken business is shown in Table 2.

Table 2. Production data of layer chicken

Description	Respondent					Average
	A	B	C	D	E	
Population (head)	90	320	192	180	170	190
Average egg production (%)	63,54	84,06	80,19	62,03	84,67	74,89
Percentage of fertile eggs (%)	57,5	78,1	83,94	60,11	58,68	67,66
Percentage of broken eggs (%)	7,66	4,92	7,84	6,13	4,81	6,27
Percentage of empty eggs (%)	34,84	16,98	8,21	33,76	36,51	26,06

Source = Primary data 2019

The average number of layer chicken populations maintained by respondents (Table 2) is 190. The most populous population was respondent B with 320 individuals while the least was respondent A with 90 individuals. The average egg production in this study was 74.89%. Egg production varies, this can be caused by feed and environmental factors. This is in accordance with Haryuni et al. (2017) that the factors that influence the amount of egg production are seeds, protein in feed, phosphorus, level of maturity,

medicine, animal health, feed nutrition in accordance with livestock needs, environment and maintenance patterns. Mampioer et al. (2008) add that deficiency of amino acids in feed can result in decreased egg production and size.

Table 2. shows that the average percentage of fertilized eggs is 67.66%. The percentage is best shown in respondent E while the lowest is respondent A. Indrawati et al. (2015) states that egg fertility is influenced by inheritance factors such as

nation, strain, environmental factors and management.

The average percentage of broken eggs in this study based on Table 2 is 6.27%. Broken eggs are eggs in which there are embryos but die or have blood spots, so these eggs cannot be used. The percentage of damaged eggs in this study is low, below 10%. Wulandari (2002) states that high temperatures can cause death or abnormalities of the embryo while humidity affects the normal growth of the embryo and preserves the fluid in the egg and dissolves the eggshell.

Empty eggs are eggs that are not fertile, there are no embryo candidates in them. Empty eggs can still be used as consumption eggs, but the price is half the price of normal consumption eggs. The average percentage of empty eggs in this study was 26.06%.

Difference in profit from fertilized egg production and consumption

Based on Table 3. the difference between fertile egg production and consumption is shown.

Table 3. Difference in profit from fertile egg sales and consumption (Rp)

Description	Respondent					Average
	A	B	C	D	E	
Average fertile egg sales	21.507	29.210	31.395	22.480	21.945	25.307
	-	-	-	-	-	-
	1.475.31	49.754.5	8.664.6	2.039.91	3.196.38	10.341.5
Difference in profit	6	85	09	2	9	15

Source = Primary data 2019

Based on data obtained from respondents that the selling price of consumption eggs is Rp. 20,000.00 / kg, the selling price of fertilized eggs is Rp. 2,200.00 / item and the price of empty eggs (after candling 4 days of hatching) Rp. 10,000.00 / kg or half of the price egg consumption normally. Table 3. explains the differences in selling prices of fertilized eggs for each respondent. Respondent C had the highest selling price of fertilized eggs at Rp 31,395.00 / kg of fertilized eggs. Respondent A has the lowest selling price of fertilized eggs at Rp. 21,50.00.00 / kg of fertilized eggs. Respondent B had the

biggest difference in sales price among all respondents, namely Rp.49,754,585.00, although the sale price of fertilized eggs was less than respondent C, this was because respondent B had layer population and the largest average egg production among other respondents was 320. and the average egg production was 84.06 and the percentage of fertilized eggs was also the second-highest 78.1% (see Table 2.). Therefore, what determines the difference in profit between consumption eggs and fertilized eggs is the number of livestock, the percentage of egg production and the percentage of fertilized eggs.

Effect of production of fertilized eggs and eggs on the sale price of fertilized eggs

The effect of fertilized egg and egg production on the sale price of fertilized eggs is shown in Table 4.

Table 4. Results of Multiples Regression Analysis (Multiple)

Variable	Regression Coefficient	t _{cal}	Sig
Constant	18479,449	7,715	0,000
X ₁ (Egg production)	-30,251	-4,505	0,000
X ₂ (Fertile Eggs)	46,389	6,207	0,000
F _{cal}	34,907		
R ²	0,451		

Source = Primary data 2019

Multiple regression analysis obtained $Y = 18,479,449 - 30,251 X_1 + 46,389 X_2$. Production of fertilized eggs and eggs together has a positive influence on the profitability of selling fertile eggs. Based on the equations obtained from Table 4. it can be explained that the lower or reduced egg production, the selling profit of fertilized eggs will increase because the selling price of fertilized eggs increases. Furthermore, the percentage of fertilized eggs (X₂) increases, the profit of selling fertilized eggs also increases.

R² or the coefficient of determination in Table 4. obtained a value of 0.451 explains that 45.1% determination of the selling price of fertilized eggs is determined by both factors X₁ and X₂ while the rest is determined by other external factors.

Conclusion

Based on the results of research that fertilized egg production provides optimal

profit when egg production and egg fertility is high.

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