

Profitability of sentul terseleksi (Sensi-1 agrinak) superior local chicken business

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Abstract

The purpose of this study was to determine the profitability of the superior local chicken business SenSi-1 Agrinak in egg production, DOC production, carcass production, and pullet production. The research was conducted in August 2021 at a chicken farm owned by Iwan Setiawan, Lau Village, Dawe District, Kudus Regency, Central Java Province. The study uses a quantitative research approach. The research sample was determined by purposive sampling method. The data analysis employed economic analysis by calculating the revenue cost (R/C) ratio and descriptive analysis. The results showed that the profit earned in one period of production business 1) egg production was Rp. 95,794,363.00 with an R/C ratio of 1.27, 2) DOC production of Rp. 3,217,933.00 with an R/C ratio of 1.52, 3) carcass production of Rp. 5,689,408.00 - with an R/C ratio of 1.36 and 4) pullet production of Rp. 18,316,908.00 with an R/C ratio of 1.49. The conclusion is based on the R/C ratio; the pullet production business unit has a higher profit among the egg, DOC, and carcass production business units.

Keyword: superior local chicken, SenSi-1 Agrinak, economic analysis

Introduction

Local chickens in Indonesia have an important role, namely as a source of animal food and community income [1]. As a source of income, local chickens are not only a side income source but can also be a main source of income by intensively cultivating local chickens [2]. According to [3], c. The advantages of local chicken carcass are its dry and savoury taste and low cholesterol, and whole eggs can increase stamina and vitality. Based on prices in traditional markets, local chicken carcass and eggs are higher and relatively stable than purebred chickens [2][3].

However, meeting the demand for local chicken carcass is constrained by the slow reproduction and growth rate. The growth of local chickens to get a bodyweight of 900-1120 grams requires 90 days of maintenance, while it takes 210 days to produce 38 eggs [5]. One solution to meet the demand for local chickens nationally is the establishment of fine local chicken lines. The results of the research on the formation of pure lines by the Animal Husbandry Research Institute, namely the Selected Sentul chicken (SenSi-1 Agrinak), which has been designated as a local Indonesian broiler chicken by the Minister of Agriculture through the Decree of the Minister of Agriculture

Number 39/Kits/PK.020/1/2017 [6]. The SenSi-1 Agrinak chicken line results from phenotypic selection and body weight at the age of 70 days for six generations from the Sentul chicken family, which has been determined by the Decree of the Minister of Agriculture of the Republic of Indonesia No. 698/Kits/PD.140/2/2013 as a local chicken native to Ciamis Regency, West Java.

There are two types of SenSi-1 Agrinak chickens, namely gray and white spots (pucak). The average body weight of SenSi-1 Agrinak gray and pucak chickens at the age of 70 days was 1000 g/head (male) and 800 g/head (female). At the age of 20 weeks, the average body weight of the gray SenSi-1 Agrinak chicken was 2381 g/head (male) and 1528 g/head (female), while the average weight of the SenSi-1 Agrinak Pucak chicken was 2424 gram/head. tail (male) and 1619 grams/head (female). The average egg production of SenSi-1 Agrinak gray and top chickens was 164 eggs/year with an average egg weight of 44.5 g of gray SenSi-1 Agrinak chicken and 44.8 g of SenSi-1 Agrinak pucak [7]. In adult Sentul chickens, the average body weight is 1960 grams/head (male) and 1280 grams/head. The average egg production per year is 118 eggs [8].

As a superior local chicken released in 2017, SenSi-1 Agrinak chicken is not yet widely known among chicken farmers and the public. The success of technology dissemination in the utilization of new superior lines is determined, among others, by the ability of the livestock seed industry to supply them to the hands of farmers as well as technological innovations in local chicken farming that are profitable so that they can be relied upon as a source of income [9]. Research [10] shows that the production cost of local superior joper chicken in Bangun Harjo Village in one production process is Rp. 13,963,744.00. The average income received is Rp. 22,920,000.00 and the profit received is Rp. 8,956,256.00. The value of the R/C ratio of local chicken farms is 1.64. The superior local chicken business is economically feasible as a small industrial scale business.

This study aims to determine the profitable of superior local chicken farming SenSi-1 Agrinak in business units: egg production, DOC production, carcass production, and pullet production.

Materials and Methods

Research Methods

The research was conducted in August 2021 at a chicken farm owned by Iwan Setiawan, Lau Village, Dawe District, Kudus Regency, Central Java Province. The study uses a quantitative research approach. The research sample was determined by purposive sampling method, namely the method of determining non-probability samples with certain consideration criteria [11]. The criteria determined for sample selection were sensi chicken farms which had egg production business units, DOC, carcasses, and pullet chickens. Data collection methods are open interviews and documentation, collecting notes in the field according to the objectives [12]. The data analyzed in this study are primary data taken directly from farmers and secondary data obtained from relevant agencies. The data analysis employed

economic analysis by calculating the revenue cost (R/C) ratio and descriptive analysis. The R/C ratio analysis [13] utilized the following equation:

$$R/C = PQ.Q / (TFC + TVC)$$

where:

R = egg, doc, carcas, pullet acceptance
 C = cost of egg, doc, carcas, pullet
 PQ = price of egg, doc, carcas, pullet
 Q = egg, doc, carcas, pullet production
 TFC = total fixed cost
 TVC = total variable cost

The R/C ratio criteria are:

R/C ratio > 1 means that the business is efficient and profitable.

R/C ratio = 1 means that the farm is not profitable, not losing.

R/C ratio < 1 means that it is inefficient or detrimental.

Results and Discussion

Profile of Iwan Setiawan's SenSi-1 Agrinak chicken farm

At first, Iwan Setiawan was a broiler breeder and laying hens. In 2016 the type of business changed to superior local chicken SenSi-1 Agrinak. Currently, the number of broodstock is approximately 4000 after six generations, and the number of productive broodstock is approximately 1000. Livestock has upstream to downstream business units, namely egg production, DOC production, carcas production, and pullet production. The results of economic analysis of SenSi-1 Agrinak Iwan Setiawan chicken farms in each business unit can be seen as follows:

Egg Production Unit

The number of parent stock cultivated in the egg production unit is 400 females and 80 males. The cage used was a postal type with 17.5 m² as many as 8 cages with the density of the cage 58 birds. Sex ratio of 1: 5. Egg production produced during the productive period of chickens is 264 eggs per day (65% hen day). The results of the economic analysis in one productive chicken period (22 months) can be seen in Table 2. The total cost incurred in one period is Rp. 361.315.637-. The largest cost components are feed costs (41,82%), labour costs (40.19%) and parent purchase costs (12.18%). The income obtained from the sale of eggs for 22 months plus the sale of male and female rejects is Rp. 457.110.000 -. The profit in one period received is Rp. 95.794.363, - with an R/C ratio of 1.27, which means the egg production business unit is efficient and profitable because the R/C ratio is more than 1. The profit per month received is Rp. 4.354.289.-

Types of local chickens for egg production vary in each region. According to [14], the productivity of local chicken eggs is low. In one year, it only reaches about 25% of the egg production of laying hens. The research results conducted in Purbalingga and Temanggung regencies show that egg

production is a business of great interest to farmers. They argue that by producing consumption eggs, they can generate daily income so that the cost of producing feed and medicines can be met from the sale of the eggs produced [15]. In this study, feed is the largest cost component, revealed by [16] that feed costs are usually the largest in the livestock business, ranging from 60 to 80% of the total cost. The results of the analysis of the costs and benefits of laying hens in East Java show that the operational cost of 1,000 birds is Rp. 261 million per year, with the largest proportion of costs used for production facilities of 89.57%, including feed 87.74%. Net profit per year is Rp 55,211,693,- with an R/C ratio of 1.2 [17].

Table 2. Business Analysis of Superior Local Chicken Egg Production Unit SenSi-1 Agrinak for One Period (22 Months)

Variable	Vol	Unit	Cost (IDR)	Total (IDR)	Percentage (%)
Outcome					
A Fixed Cost					
Cage equipment costs	15	years	1,728,395	1,728,395	0.48
Cage tools equipment costs					
- bucket	3	years	40,123	40,123	0.01
- hoe	5	years	6,852	6,852	0.002
- battle box	15	years	172,840	172,840	0.05
- egg tray	15	years	493,827	493,827	0.14
Sub Total				2,442,037	0.68
B Variable Cost					
Hen	400	birds	110,000	44,000,000	12.18
Rooster	80	birds	150,000	2,000,000	3.32
Feed costs (0,09 kg/day)	28.512	kg/period	5300	151,113,600	41.82
Vaccin costs	480	birds	4,000	1.920,000	0.53
Medication & vitamins costs	480	birds	500	240,000	0.07
Electricity costs	22	months	180,000	3,960,000	1.10
Water costs	22	months	20,000	440,000	0.12
Labour costs	22	months	300,000	145,200,000	40.19
Sub Total				358,873,600	99.32
Total Cost				361,315,637	100.00

Variable	Vol	Unit	Cost (IDR)	Total (IDR)	Percentage (%)
Income					
Egg production (65% hen day)	264	item/day			
	174,240	item/period	2,500	435.600.000	
Reject hen	400		40,000	16,000,000	
Reject rooster	80		40,000	3,200,000	
C Total Revenue				457,110,000	
D Profit				95,794,363	
E R/C ratio				1.27	

DOC Production Unit

In the DOC production unit, as many as 1,400 eggs are hatched in one period. The incubator as many as 4 units. The success rate is only 90% because there is no egg selection. The results of the business analysis of the DOC production unit can be seen (Table 3.). The largest percentage of costs was in hatching eggs (72.79%), followed by depreciation in incubators (13.62%). Total income per hatching period with a selling price per DOC of Rp. 7,500, - which is Rp. 9,450,000.-. The profit received is Rp. 2,717,933.- per period. The value of the R/C ratio in the DOC production unit is 1.40, meaning that this unit is efficient and profitable because the R/C value is > 1.

One strategy for developing local chickens is to increase the supply of day-old chicks (DOC) [18]. The investment required for the production of hatching eggs is to build a cage along with equipment and clean water facilities as a fixed cost. The study results [19] showed that the hatchability of SenSi-1 Agrinak eggs was $72.24 \pm 3.69\%$. Unhatched eggs can be caused by the inability of the embryo/chicken inside the egg to break the shell so that the chicken dies inside the egg or if the shell breaks, then its survival is low. According to [20], This was caused by a) the negligence of the breeder in carrying out the hatching procedure, b) the hatching machine factor that could not reach the optimal lag of 70% prematurely. The results of the income analysis in the hatching egg production unit resulted in a DOC profit received by the parent stock of Rp. 80,439,725,- or Rp. 6,703,310,- /month, the profit rate of production costs was 26.74% /period or 2.23% /month, and the efficiency level was R/ C 1.38 [9]. Superior local chicken hatcheries operated by core breeders are economically feasible as a small industrial scale business.

Table 3. Business Analysis of Superior Local Chicken DOC Production Unit SenSi-1 Agrinak for One Period (21 Days)

Variable	Volume	Unit	Cost (IDR)	Jumlah (IDR)	Persentase (%)
Outcome					
A Fixed Cost					

Incubator equipmant costs (1 unit)	10	years	166,667	166,667	2.48
Incubator equipment costs (3 unit)			250,000	750,000	11.14
Cage equipment costs	15	years	50,000	50,000	0.74
Cage tools equipment costs					
- brooder	1	years	35,000	35,000	0.52
Sub Total				1,001,667	14.88
B Variable Cost					
Egg costs	1400	items	3.500	4,900,000	72.79
Vaccin cost	1260	birds	90	113,400	1.68
Box DOC	13		2.500	32,500	3.67
Electricity costs	1	months	400.000	400,000	5.94
Labour cost	1	months	70.000	70,000	1.04
Sub Total				5,730,400	85.12
Total Cost				6,732,067	100.00
Income					
C DOC revenue	1260		7500	9,450,000	
D Profit				2,792,433	
E R/C ratio				1.40	

Carrcas Production Unit

In the carrcas production unit, the number of chickens cultivated is 500 male. The type of cage used is a box-type with a caged area of 1.3 m² and cage density of 8-10 birds/cage. The length of maintenance is approximately 10 weeks or up to a bodyweight of 1 – 1.3 kg per head. The results of the business analysis on the superior local chicken production unit SenSi-1 Agrinak for carrcas production can be seen in Table 4. The largest percentage of costs in broiler chicken units is the cost of feed at 43.16%, followed by purchasing DOC (23.41%) and cage equipment costs (23.41%). Total income Rp. 21,710,000- which comes from the sale of chickens and the sale of manure. The selling price of chicken pieces for traders is Rp. 40,000, - while for direct to consumers Rp. 43,000,-. The profit received in one production period is Rp. 5,689,408, - or Rp. 2,275,763, - per month with an R/C ratio of 1.36. The business for the chicken carrcas unit is still feasible.

The study results [21] on the selling value of Kampung Unggul Balitbangtan (KUB) chickens aged 8 weeks obtained a net profit of Rp. 623,750,-/breeder with R/C approach 1.17. In a study conducted [22], a superior domesticated chicken business for broilers in one period (45 days) with average maintenance of 350 tails can generate a net income of Rp. 1,574,585,-. or in one month can generate income of Rp. 1,049,723,- with an R/C ratio of 1.35. From several local chicken farming businesses that are superior for chicken production, it is feasible to cultivate.

Table 4. Business Analysis of Superior Local Chicken Carrcas Production Unit SenSi-1 Agrinak for One Period (2,5 Months)

Variable	Volume	Unit	Cost (IDR)	Total (IDR)	Percentage (%)
Outcome					
A Fixed Cost					
Cage equipment costs	15	years	250.000	3.750.000	23.41
Cage tools equipment cost					
- hoe	5	years	5.417	5.417	0.03
- bucket	3	years	925	925	0.01
Sub Total				3.756.342	23.45
B Biaya Variable					
DOC cost	500		7.500	3,750,000	23.41
Feed cost					
Starter feed (0,015 kg/days)	158	kg/period	4,000	630,000	3.93
Grower feed (0,045 kg/days)	1103	kg/period	5,700	6,284,250	39.23
Vaccine costs	500	birds	300	150,000	0.94
Medication & vitamins costs	500	birds	500	250,000	1.56
Electricity costs	2,5	month s	450.000	450,000	2.81
Labour cost	2,5	month s	300,000	750,000	4.68
Sub Total				12,264,250	
				0	76.24
Total Cost				16,020,592	100
Income					
Caracas production	500		43.000	21.500.000	
Fertilizer	30		7.000	210.000	
Total Revenue				21.710.000	
Profit				5.689.408	
R/C ratio				1,36	

Pullet Production Unit

In the analysis of the production unit of pullet, it is assumed that SenSi-1 Agrinak chickens used for carrcas production are converted to pullet production. In the business analysis of the pullet production unit, the cost component is added to the cost of feed for the finisher phase, and the cultivation time is 4.5 months. The results of the economic analysis of the four business units on Iwan Setiawan's farm show that the pullet production

unit is the most profitable (Table 5). The profit received is Rp. 18,316,908 - in one maintenance period (4.5 months) or Rp. 4,070,423,- per month. The selling price of the pullet is Rp. 110,000 - and a rooster Rp. 150.000,-. The R/C ratio of the chicken production unit is higher than other production units, namely 1.49, which means it is very efficient and profitable to cultivate.

The study results [19] from the sale of pullet as many as 570 SenSi-1 Agrinak chickens ready for production aged 24 weeks and sales of roosters aged 10 weeks, with a price of Rp. 100,000/head and Rp. 34,000/head generates an income of Rp.69,920,000 with a profit of Rp. 4.160.000 or Rp.693.333/month R/C efficiency level 1.06.

Table 5. Business Analysis of Superior Local Chicken Pullet Production Unit SenSi-1 Agrinak for One Period (4,5 Months)

	Variable	Volume	Unit	Cost (IDR)	Total (IDR)	Percentage (%)
Outcome						
A	Fixed Cost					
	Cage equipment costs	15	years	250,000	3,750,000	10.08
	Cage tools equipment cost					
	- hoe	5	years	5,417	5,417	0.01
	- bucket	3	years	925	925	0.002
	Sub Total				3,756,342	10.10
B	Variable Cost					
	DOC cost	500		7,500	3,750,000	10.08
	Feed Cost					
	Starter feed	500	birds	6,000	3,000,000	1.69
	Grower feed	500	birds	8,550	4,275,000	16.89
	Finisher feed	500	birds	10,600	5,300,000	41.66
	Vaccine cost	500	birds	300	150,000	0.40
	Medication & vitamins costs	500	birds	500	250,000	0.67
	Electricity costs	4.5	month	810.000	810,000	2.18
	Labour cost	500	birds	2.500	5,625,000	16.33
					23,160,000	
	Sub Total				0	89.90
					26,916,342	
	Total Biaya				2	100
Income						
	Pullet production	500		110.000	55.000.000	
	fertilizer	75		7.000	525.000	
					55.525.000	
C	Total Revenue				0	
					18.316.908	
D	Profit				8	
E	R/C ratio				1,49	

Conclusion

The results of the economic analysis by calculating the Revenue Cost (R/C) ratio carried out on the SenSi-1 Agrinak chicken farm owned by Iwan Setiawan showed that the egg, doc, carcass, and pullet production units were efficient and profitable. The pullet production business unit has higher profits compared to doc, egg, and carcass production business unit.

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