

## CONTRIBUTION OF BEEF CATTLE BUSINESS TO THE INCOME OF FARMERS FAMILY IN SIMALUNGUN REGENCY (CASE STUDY: IN SIMALUNGUN DISTRICT)

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### ABSTRACT

The purpose of this study was to determine the beef cattle business income and its contribution in running the beef cattle rearing business in farmer families in Simalungun Regency. The research method was carried out by survey and taking 30 samples by purposive sampling. The data analysis technique used is  $I = TR - TC$  where the cattle breeder business is included in the mix farming category and its contribution can reach 33% of the farmer's family income. In carrying out the research stages carried out such as identification of beef cattle maintenance, analyzing beef cattle business income and identification of business scale. The results of the research show that income from agriculture comes from income from working in agriculture, for example being an employee in a palm oil plantation, from paddy fields, yard and garden products, and those related to agriculture in a broad sense. In this study, most of the breeders were working on oil palm plantations and some came from plantations. The contribution to the total income of the farmer's family is 42%, and it is quite large because the farmer's income comes from beef cattle. This business is included in the category of Mixed Business Scale (Mix farming) income from livestock is 30% -70%, meaning that even though the income is not fully from raising beef cattle, the income of the livestock group is already dominant from beef cattle business activities. Beef Cattle Farming Business in Simalungun has prospects for development based on the contribution obtained by 33% of the total income of the whole farming family.

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### 1. INTRODUCTION

Beef cattle business is a ruminant livestock whose activities can be found throughout Indonesia. As a beef producer, the business of raising beef cattle in Indonesia is very popular and in demand by the public. Most cattle are kept by rural communities on a small scale or part-time, that is, they are sold when they need funds for sudden needs. Ruminants provide the largest contribution in the supply of meat and as savings for the Indonesian livestock community. However, nationally in 2010 the availability of meat was still low and only 62.6% or 259.2 thousand tonnes of national demand was available [1]. Along with the government's invitation to further increase the beef cattle population, currently there are many beef cattle livestock businesses both as breeding and fattening businesses. Raising beef cattle aims to gain significant income compared to raising other livestock. Cattle that are kept are usually males, but do not cover the possibility of females for commercial purposes, both fattening and breeding. The feed used is in addition to forage, rice bran, ilging corn, coconut cake, mineral mix, added with vitamins [2].

Based on this, the potential for the development of ruminants still has great opportunities. However, the problem faced in Indonesia, including in the province of North Sumatra until now, is that there is still a lack of supply of feed in the form of forage forage (HPT), where feed is the biggest factor, which is around 70% in the success of livestock raising businesses. Simalungun Regency, North Sumatra, has available grazing areas and oil palm and rubber plantation areas. The role of the beef cattle business in the income structure is a very important potential, especially in the utilization of agricultural and plantation expanses. The area of plantation land in Simalungun Regency provides an opportunity for the availability of feed for ruminants in the presence of waste produced by plantation crops. Cattle farming business is very easy to work on and has many benefits [3]. The problems that occur in North Sumatra and also in Simalungun Regency, the existence of forage is starting to be threatened by the replacement of grazing areas into residential areas. The conversion of land functions into housing is almost half of the

total land in the districts of North Sumatra. This is exacerbated by the lack of knowledge of breeders to renovate existing grazing areas, so that they become unproductive. In general, breeders want a change in the beef cattle business in a modern way so that it will increase the added value which is quite good [4]

[5] stated that the biggest challenge in all livestock production systems in developing countries is feed, while the main factor in determining livestock productivity is ensuring the availability of quality forage. To meet the demand for forage, various businesses have been carried out, such as the integration of livestock paddy or the utilization of land for oil palm plantations, rubber plantations and food crops. About 80% of the beef cattle rearing system in Indonesia is still managed by small farmers (community farms) in rural areas. Beef cattle business is an important component in rural farming because raising beef cattle, even on a small scale, can help the people's economy in rural areas by utilizing the available natural resources around them. [5] stated that the biggest challenge in all livestock production systems in developing countries is feed, while the main factor in determining the productivity of sheep is ensuring the availability of quality forage. Cattle have wider benefits and greater economic value than other livestock [6]. In food crop commodities, usually what can be used as a source of animal feed are crop residues that have quite good economic value, in addition to rice straw, crop waste from corn, soybeans, peanuts, cassava, sweet potatoes and similar nuts. From the above conditions, it is necessary to conduct a study on the contribution of beef cattle business to the total income of farmer families in Simalungun Regency.

The role of the beef cattle business in the income structure is a very important potential, especially in the utilization of agricultural and plantation stretches in Simalungun Regency. The beef cattle rearing system in Simalungun Regency (80%) is still managed by small farmers (community farms) in rural areas. Cattle have wider benefits and greater economic value than other livestock [7] Based on the above, beef cattle play a very important role as a source of income and reduce poverty levels because of the emergence of beef cattle businesses that can support the needs of the community, besides acting as fulfilling the consumption of much-needed animal protein can also cause the genetic quality of sheep to decrease. The farmer's income is affected by the number of livestock kept, the more livestock raised, the more profit the farmer will receive [8] The behavior of breeders who tend to sell quality rams because the price is relatively expensive, is also a factor causing low quality sheep among breeders, causing the next generation of sheep to become less good, which ultimately eliminates the opportunity for breeders to gain better economic benefits. Most of the national beef production comes from smallholder farms, around 90%, the rest comes from companies and government property, estimated at around 10% [9] Beef cattle is one of the livestock that is expected to contribute, as a consumer need, in the form of meat and milk [10]. The more livestock that are kept, the more profits will be received by breeders [11]

According to [12], that beef cattle business is in great demand by small breeders in every rural area, with simple technology and the results can contribute to breeders' income. Mistakes in choosing candidates will make business goals not be achieved (b) Providing adequate feed and having good nutritional value (can be done in rotation) (c) Recording of production from livestock business properly and correctly. It is hoped that with good records, breeders can find out how many are healthy/sick, worth selling, being grazed and several other things (d) Eradication of disease properly and precisely. Disease is an obstacle that often harms breeders because it needs to get more attention (f). In a large-scale livestock business, breeders need to pay attention to the number of consumer demands and the production capacity of the livestock business being run [13]. The potential for raising traditional livestock with the potential carrying capacity of the land, in addition to the main business of food crops. Traditional livestock raising is economically profitable with a B/C ratio of 1.5 each and in Sukmajaya and West Java villages, with a business scale of 6.8 heads and breeders. 3% while young males reach 24.2%. More profitable livestock business in Sukmajaya Village tends to result in a lower allocation of labor compared to grazing [14].

Nationally, the largest supply of beef from beef comes from local cattle by 60%, imports will be around 30% and 10% is imported in the form of frozen meat. The shortage in the supply of feeder cattle is due to the fact that smallholder cattle farming in Indonesia is generally traditional and only part-time. This has an effect on the low productivity of livestock [15]. [16] Forage Plants Fodder is a plant that livestock need for survival. Food substances contained in forage are used by sheep for the process of increasing body weight because forage contains substances needed by sheep as the main food which can be used directly and plays an important role.

Analysis of the income of a farm seen from an individual point of view means that it is not necessary to pay attention to whether the effect or impact on the economy is in a wider scope. However, in the income analysis, what is considered is the total yield or productivity or profits obtained from all

sources used in farming for the community or the economy as a whole, regardless of who provides these sources and who receives the results of the farming [17] dan [18]. [19] defines farm cash receipts as the value of money received from the sale of farm products. Farm cash expenditure (farm payment) as the amount of money paid to purchase goods and services for farming. Farm cash expenditure does not include loan interest and principal loan amount. The difference between farm cash receipts and farm cash outlays is called farm net cash flow. Excess farm cash (farm cash surplus) coupled with household cash receipts such as wages for work obtained from outside the farm is defined as household cash income (household net cash income).

Gross farm income (gross farm income) is defined as the value of the total product of farming in a certain period of time, whether sold or not sold. This period is generally a year, and includes all products sold, consumed by household farmers, used in farming for seeds or fodder, stored at the end of the year. [20]. Total farm expenses (total farm expenses) are the value of all inputs that are used up or expended in production, but do not include farm family labor, while variable costs are expenditures used for certain crops or livestock and the amount changes roughly proportional to the amount of crop or livestock production. Total farm expenses (total farm expenses) are the value of all inputs that are used up or expended in production, but do not include farm family labor, while variable costs are expenditures used for certain crops or livestock and the amount changes roughly proportional to the amount of crop or livestock production [19]. The difference between the gross income of farming and the total expenditure of farming is called net farm income. The net income of the farm measures the return earned by the farming family from the use of factors of production, work, management and own capital or loans invested in the farm. Farming net income (net farm earning) is obtained from the net farm income by deducting the interest paid to the loan capital [21].

## 2. METHOD

The research was conducted in Simalungun Regency, North Sumatra. Beef cattle business in the form of individuals and groups. The author took the location in Simalungun Regency because its grazing area is 1,311,159 ha and its oil palm and rubber plantations reach 1,192,172 ha, so the role of the beef cattle business in the income structure is a very important potential, especially in the utilization of agricultural expanses as well as plantations. The method used is a survey to determine research locations by considering 30 respondents who raise beef cattle. Primary data obtained from direct observation of interview techniques regarding the initial price before maintenance, production costs and prices when marketed. Meanwhile, secondary data that supports the research results were obtained from related agencies such as BPS and Simalungun in numbers. These costs can include: puppies, seeds, consumable tools, labor, forage feed, concentrate feed, salt, medicines, vitamins, electricity repair of cages, while fixed costs such as cage shrinkage.

To calculate income using data analysis techniques with income analysis, by calculating income (I) from the formulation  $I = TR - TC$ .  $TR = y \cdot PY$  and  $TC = TFC + TVC$ . To analyze the scale of the livestock business by looking at the % of business income, to indicate whether the business is carried out as a side business or a main business. Where Acceptance (TR) is the average acceptance of beef cattle from 30 respondents. The revenue comes from cattle sales, compost sales, livestock value addition, and additional calves within one year. And Income (I) is obtained from subtracting total revenue with total cost or total cost (TC). Aspects that include costs and aspects that are included in the acceptance category, so that income can be determined. Thus, the sale of livestock should be able to reach 33%. And nationally the largest supply of meat from beef originating from local cattle is 60%, while imports will reach 30% and 10% will be imported in the form of frozen meat.

To find out the scale of the business, whether it is a sideline business or a main business with identification of total receipts from costs so that it can be formulated using a comparison of Revenue (R) with Cost (C). So that the percentage of business scale can be determined. Because the total income of livestock farmers comes from the income of beef cattle plus the income of livestock other than beef cattle, for example goats, sheep, chickens, ducks. While income from agriculture, some have rice fields, some have gardens, some work as garden workers, apart from that they also receive income, some as factory workers, construction workers and others. Where income originating from other than agriculture is income derived from the results of their work outside of the above mentioned and other income that does not come from the livestock farming sector. So to analyze the scale of the livestock business by looking at the % of business income, by indicating whether the business is carried out as a side business or the main business, where the contribution of the beef cattle business is around 33% from raising beef cattle, in

other words they still place beef cattle as a mixed business or mix farming. This mixed business scale (Mix Farming) earns income from breeders in the range of 30% -70%.

### 3. RESULT AND DISCUSSION

The number of respondents consisted of 30 dominant breeders with high school education or around 60%. While around 15% have junior high school education, the remaining 15% have D3/Bachelor degrees and another 10% have elementary school education. Breeders also often receive training from the animal husbandry service. Respondents have different jobs. As breeders and gardeners about 40% while as breeders and employees 15%, breeders and traders about 15%, the rest pure beef cattle 30%. Farming experience - average over 3 years and most of them continue the habits of their parents. Local cows that are kept take feed around the pen by slicing the feed. The average breeder has a total of 7 beef cattle. This shows that the potential for livestock in terms of population is very supportive.

Variable costs include feeders, seeds, equipment consumables, labour, forage feed, concentrate feed, salt, medicines, vitamins, electricity, cage repairs, while fixed costs include cage depreciation. The total cost is IDR 14,300,000/year.

Table 1. Costs incurred / year

Type	Fees/Prices (IDR)
Feed	1.550.000,-
Drug	350.000,-
IB	270.000,-
Labor	230.000,-
Electricity	230.000,-
Cage Repair	600.000,-
Tool	250.000,-
Cage Shrinkage	500.000,-
Total	14.300.000,-

The average acceptance of beef cattle is from 30 respondents. Revenue comes from cattle sales, compost sales, livestock value added and additional calves in one year. Revenue IDR 26,950,000/year. Revenue is obtained from reducing Total Revenue (TR) with the total cost (TC) incurred for one year. While Total Income is obtained in full in table 2

Table 2. Revenue (TR)

Type	Amount (IDR)
Sale of cattle	12.000.000,-
Sales of Compost	4.250.000,-
Added Livestock value	6.000.000,-
Additional calf	4.700.000,-
Total	26.950.000,-

Table 3. Total income of beef cattle at the research location/IDR/year

Type	Fees/Prices (IDR)
Reception (TR)	26.950.000
Total cost (TC)	14.300.000
Income (TR - TC)	12.650.000

Total Farmer Income comes from beef cattle income plus livestock income other than beef cattle, for example goats, sheep, chickens, ducks. While income from agriculture, some have rice fields, some have gardens, some work in oil palm plantations, and other incomes other than agriculture, such as factory workers, garbage collectors, barbers. In this study the income from cows is IDR 12,650,000/year. Obtained from total revenue (TR) minus total costs (TC). Income from livestock other than cattle consists of income from other livestock such as sheep, goats, chickens, ducks, and other livestock which are obtained and cared for in order to increase the income of farmers in this study, the average total income is IDR 450,000/year.

Income from agriculture comes from income from working in the agricultural sector, for example being an employee in an oil palm plantation, from paddy fields, yard and garden products, and those

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related to agriculture in a broad sense. In this study, most of the breeders were working on oil palm plantations and some came from plantations with an average total income of Rp. 2,407,000/year. Income originating from non-agricultural sources is income derived from the results of their work outside of those mentioned above, for example opening a coffee shop, a shop that sells daily necessities (kede trash) and working as a housemaid and other income that does not come from the livestock-agriculture sector. In this study, the total non-agricultural income averaged IDR 750,000/year.

Table 4. Total Family Income of 30 respondents of Beef Cattle Farmers (IDR / Year)

No	Farmer's Overall Income			
	Income from beef cattle	Trn income other than beef cattle	Income from the Agriculture sector	Income from other than Agriculture
1	14000000	556000	34070000	800000
2	12650000	450000	14070000	0
3	11450000	140000	23070000	950000
4	11650000	480000	27070000	150000
5	12850000	0	14070000	350000
6	10786000	350000	14070000	150000
7	12350000	250000	28070000	1750000
8	12750000	450000	20070000	0
9	12650000	470000	23070000	850000
10	12567890	430000	27070000	880000
11	12640000	480000	34070000	950000
12	12750000	0	25070000	750000
13	13650000	140000	23070000	250000
14	13000000	850000	28070000	850000
15	11650000	450000	24090000	0
16	12650000	650000	18070000	250000
17	15000000	450000	24070000	750000
18	13450000	430000	31070000	350000
19	12000000	350000	24070000	0
20	11600000	470000	24070000	350000
21	12050000	600000	24070000	750000
22	12590000	460000	14070000	900000
23	10047800	650000	14070000	750000
24	11630000	830000	30070000	900000
25	12500000	480000	24070000	0
26	11630000	750000	28070000	850000
27	12070000	470000	21870000	450000
28	20280000	480000	27070000	0
29	10690000	460000	29070000	450000
30	13400000	470000	27070000	705000
J	379481690	13496000	719920000	22480000
Rt	<b>12650000</b>	<b>450000</b>	<b>240770000</b>	<b>750000</b>

The income contribution from beef cattle can be calculated through the income from beef cattle (PD) divided by the total income of the farmer, namely income from livestock other than cattle (PTSD), income from agriculture (PP) and income from other than agriculture (PSP) in the form of a percentage (%).

$$\text{Contribution} = \frac{\text{PD}}{\text{PD} + \text{PTSD} + \text{PP} + \text{PSP Ket.}} \times 100 \%$$

Ket :

- PD : Income from Beef Cattle
- PTSD : Livestock income other than beef cattle
- PP : Income from agriculture
- PSP : Income other than Agriculture

In this study, the average income from beef cattle was IDR 12,650,000, livestock income other than beef cattle is 450,000 while income from the agricultural sector is IDR 24,070,000 and non-agriculture is IDR 750,000. This income is calculated from the average for a year of 30 sample farmers. The contribution of the sheep farming business to the overall income of farmers can be calculated as follows:

$$\text{Contribution} = \frac{12.650.000}{12650000 + 450000 + 24.070.000 + 750000} \times 100 \% = 33 \%$$

The contribution of income from beef cattle is 33%, and it is quite large because as much as 33% of the farmer's family income comes from beef cattle. The remaining 67% comes from income other than beef cattle, income from agriculture and non-agriculture.

To analyze the scale of livestock business by looking at the % of business income, to indicate whether the business is carried out as a side business or main business. The contribution of the beef cattle business is around 33% from raising beef cattle, in other words they still place beef cattle as a mixed business or mix farming [22] Side Business Scale Animal Husbandry is still considered a part-time business, only self-sufficient, less than 30% of the total farm income. Mixed Business Scale (Mix farming) income from livestock 30% - 70 %. Main Business Scale Animal Husbandry as the main business and is already commercial in nature is the main income of 90 - 100%. Business Scale of the Livestock Industry as an industrial business where livestock is already a form of commercial and specialized business and has economic goals and certainty. The contribution to the total income of the farmer's family is 42%, and it is quite large because as much as 42% of the farmer's income comes from beef cattle. This business is included in the category of Mixed Business Scale (Mix farming) income from livestock is 30% - 70%, meaning that even though the income is not fully from raising beef cattle, the income of the livestock group is already dominant from beef cattle business activities.. The strategy and implementation of beef cattle development patterns methodologically must pay attention to the characteristics of the production system [23]; [24]; [25]; [26]

The results of this study are different from the research conducted [27] regarding the contribution of livestock business income to family income in Sumedang which explains the contribution of sheep farming is only 14, 14 %. In contrast to research conducted by [28] The research was conducted in Sukolilo Village, Jabung District, Malang Regency. This research was conducted in January 2014. This study aims to determine the household income of beef cattle breeders; the contribution of income from the beef cattle business to the income of farmers and the factors that influence the income of beef cattle farmers. 36 breeders were selected by purposive sampling method. Household income in Sukolilo is IDR 19,401,055/year. Small - scale beef cattle business contributes around 6.8% to total household income. Both of these studies were due to their small number of livestock.

Almost the same research was carried out [29] in Cinta Rakyat Village, Deli Serdang. This research was conducted with the aim of knowing the implementation of the beef cattle rearing system and knowing the amount of beef cattle business income in the study area, as well as the constraints that exist in running a beef cattle business. The research method used is purposive. The results of this study show that the net income of beef cattle business is IDR 22,573,523 per breeder / year, the income contribution is 69.3 %, while the problems faced by beef cattle breeders in the study area in general are the lack of public knowledge about better (intensive) beef cattle rearing systems and the lack of availability capital to improve the beef cattle business system.

The difference in the research above lies in the regional conditions and different feed. Research in the Sumatra area generally does not experience difficulties with forage feed, while in the Java area they buy feed at a higher price. The average age of farmers is 30 - 40 years, with elementary - junior high school education, plus informal education in animal husbandry and plantation courses. Livestock experience - average over 3 years with the aim of maintenance as savings, provision for school children. They raise livestock mostly using the family kindergarten. This study is in accordance with research [30] The contribution of income from beef cattle is 33%. The remaining 67% comes from other livestock income and income from agriculture and non-agriculture [31] Income that comes from other than beef cattle can also be from other livestock and from agricultural products, which is income derived from the results of those who work outside of the above mentioned, for example opening a coffee shop, a shop that sells daily necessities (trash shop) and working as a housemaid and other income that does not come from the livestock farming sector.

#### 4. CONCLUSION

Beef Cattle Farming Business in Simalungun has prospects for development based on the contribution obtained by 33 % of the total income of the Farmer family. The scale of the livestock business is included in the category of mix farming or a mixture wherever the Simalungun Regency Government can increase production through the Siweb program. Further research is needed with respect to the potential analysis of livestock in Simalungun district

#### REFERENCES

- [1] N. Ilham, "Reformulasi kebijakan pengembangan sentra produksi sapi potong berbasis sumber daya pakan." IAARD Press.
- [2] A. . Pasaribu, *Pengantar Ekonomi Pertanian*. Yogyakarta: Penerbit ANDI, 2012.
- [3] S. Sanjaya, "Modal sosial sistem bagi hasil dalam beternak sapi pada masyarakat desa Purwosari Atas, kecamatan Dolok Batu Nanggar kabupaten Simalungun," *Perspekt. Sociol.*, vol. 3, no. 1, p. 156643, 2015.
- [4] S. Rusdiana, "Program Siwab untuk meningkatkan populasi sapi potong dan nilai ekonomi usaha ternak," 2017.
- [5] D. D. N. A. Purnomoadi and L. K. Nuswantara, "Penampilan produksi sapi bali yang diberi pakan dengan berbagai level pelepah sawit," *AGROMEDIA Berk. Ilm. Ilmu-ilmu Pertan.*, vol. 32, no. 2, 2014.
- [6] G. Siregar, "Analisis kelayakan dan strategi pengembangan usaha ternak sapi potong," *AGRIUM J. Ilmu Pertan.*, vol. 17, no. 3, 2015.
- [7] S. Rusdiana, U. Adiati, and R. Hutasoit, "Analisis ekonomi usaha ternak sapi potong berbasis agroekosistem di Indonesia," *Agriekonomika*, vol. 5, no. 2, pp. 137–149, 2016.
- [8] P. U. Hadi and N. Ilham, "Problem dan prospek pengembangan usaha pembibitan sapi potong di Indonesia," *J. Litbang Pertan.*, vol. 21, no. 4, pp. 148–157, 2002.
- [9] J. Atmakusuma and R. Winandi, "Mungkinkah Swasembada Daging Terwujud?," *Risal. Kebijak. Pertan. DAN Lingkungan. Rumusan Kaji. Strateg. Bid. Pertan. dan Lingkungan.*, vol. 1, no. 2, pp. 105–109, 2014.
- [10] P. Simatupang and P. U. Hadi, "Daya saing usaha peternakan menuju 2020," *Wartazoa*, vol. 14, no. 2, pp. 45–57, 2004.
- [11] L. J. Riszqina, E. R. Isbandi, and S. SI, "Analisis pendapatan peternak sapi potong dan sapi bakalan karapan di pulau sapudi Kabupaten Sumenep," *JITP*, vol. 1, no. 3, pp. 188–192, 2011.
- [12] A. R. Lubis, "Prospek pengembangan ternak sapi dalam rangka mendukung program swasembada daging sapi di Provinsi Sumatera Utara," *Wartazoa*, vol. 20, no. 2, pp. 85–92, 2010.
- [13] S. P. Erickson and W. D. Downey, *Agribusiness management*, no. HD 9000.5. A37 2002. 2002.
- [14] S. Rusdiana and D. Priyanto, "Analisis Pendapatan Usaha Ternak Domba Tradisional di Kabupaten Sukabumi. Pros," in *Seminar Nasional Teknologi Peternakan dan Veteriner. Bogor*, 2008, pp. 538–544.
- [15] H. Saragih and A. Tarigan, "STUDI PERBANDINGAN ASPEK PRODUKSI DAN EKONOMI USAHA PENGEMUKAN SAPI POTONG DENGAN MENGGUNAKAN DUA FORMULA RANSUM DI CV. RISKI TERNAK MANDIRI, BERASTAGI KABUPATEN KARO."
- [16] R. Anggorodi, "Ilmu Makanan Ternak Umum. Cetakan kelima," Penerbit PT. Gramedia. Jakarta, 1995.
- [17] L. K. Kadariah and C. Gray, "Pengantar evaluasi proyek," *Jakarta Fak. Ekon. Univ. Indones.*, vol. 181, 1999.
- [18] A. M. Pasaribu, "Perencanaan dan evaluasi proyek agribisnis (konsep dan aplikasi)," *Yogyakarta Lily Publ.*, 2012.
- [19] S. Soekartawi, "E-Agribisnis: Teori dan Aplikasinya," in *Seminar nasional aplikasi teknologi informasi (SNATI)*, 2007.
- [20] R. Hanafie, *Pengantar ekonomi pertanian*. Penerbit andi, 2010.
- [21] S. (Prof. Dr.), *Agribisnis: teori dan aplikasinya*. PT RajaGrafindo Persada, 2003.
- [22] A. Sudono, "Ilmu produksi ternak perah," *Fak. Peternakan. Inst. Pertan. Bogor, Bogor*, 1999.
- [23] C. Devendra, "Food production from animals in Asia: priority for expanding the development frontiers," *Acad. Sci. Malaysia Sci. J.*, vol. 4, pp. 173–184, 2010.
- [24] A. Sodiq and N. A. Setianto, "Kajian Pengembangan Sapi Potong Nasional," *Lap. Penelitian. Kerjasama Fak. Peternak. Unsoed dengan Direktorat Jenderal Peternakan, Jakarta*, 2005.
- [25] A. Sodiq and N. Hidayat, "Kinerja dan perbaikan sistim produksi peternakan sapi potong berbasis kelompok di pedesaan," *J. Agripet*, vol. 14, no. 1, pp. 56–64, 2014.

- [26] J. M. King, "Livestock Production System in the Tropics and Subtropics," *Integr. Agric. Syst. Univ. Georg. Ger.*, 1997.
- [27] M. C. Arifin, *BUKU KAMUS DAN RUMUS PETERNAKAN & KESEHATAN HEWAN: Indonesia*. GITA Pustaka, 2018.
- [28] M. N. Muhaemin, "Analisis Pendapatan Dan Karakteristik Sosial Ekonomi Pada Pengusaha Ternak Sapi Serta Perspektif Islam Terhadap Peternakan," *J. Asy-Syarikah J. Lemb. Keuangan, Ekon. dan Bisnis Islam*, vol. 1, no. 1, pp. 1-11, 2019.
- [29] M. Damayanti, "Sistem Usaha Ternak Sapi Potong dan Kontribusinya terhadap Pendapatan Keluarga (Studi Kasus: Desa Cinta Rakyat, Kecamatan Percut Sei Tuan, Kabupaten Deli Serdang)." Universitas Sumatera Utara, 2010.
- [30] H. Setiawan, "Kontribusi Pendapatan Usahaternak Sapi Potong Terhadap Pendapatan Rumahtangga Petenak Studi Kasus Di Desa Sukolilo Kecamatan Jabung Kabupaten Malang." Universitas Brawijaya, 2014.
- [31] K. Suratiyah, "Ilmu Usahatani. Penebar Swadaya. Jakarta. 2002. Analisa Usaha Tani." Universitas Indonesia Press Jakarta, 2015.