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The Role of Beef Cattle against Household Economies in Rural Areas in Kamang Baru Subdistrict Sijunjung Regency

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Abstract | **Original Research Article**

The beef cattle maintenance business in the household economy in the Kamang Baru sub-district plays a role in various things, namely; a) maintenance of beef cattle for employment, b) maintenance of beef cattle in increasing the benefits /added value of resources owned by farmers, c) maintenance of beef cattle as a source of capital for productive business and d) contribution of beef cattle to household income of farmers. The outpouring of labor in the maintenance of beef cattle is still low at 0.42 MDH. While the outpouring of family labor available is 3 MDH. This means that 2.58 MDH is used by farmers for other jobs rather than raising beef cattle. The aspect of resource utilization view owned by farmers, farmers tend to use forage in plantation areas and use vacant land to grow forage. While the utilization of palm leaf wasted was only carried out by 34 respondents (37%). The role of beef cattle as different business capital, depends on the needs of the farmer itself, namely 48 respondents (52%) are utilizing livestock as savings, 36 respondents (39%) are utilizing livestock as savings and income sources, 1 respondent (1%) is utilizing livestock as labor and source of income, and 8 respondents (9%) use livestock as labor and savings. The contribution of beef cattle maintenance business to farmers' income in the study area is still low at 5.54%.
Keywords: Beef Cattle, Household Economies, Rural Areas.

INTRODUCTION

The implementation of overall development aims to improve the welfare of the people of a nation being one of the indicators is increasing the nation's economy. Poverty is one of the conditions that has become a problem in development both in urban and in rural areas. It can only be said that development in Indonesia is successful if the development reaches a large part of the population in the countryside, and the reason why is because there are still many poor people living in rural areas [1]. In Indonesia, there are still 27.77 million people (10.64% of the total population) who are categorized as poor [2]. Nugroho and Dahuri [12] explained that. There are three main elements/reasons that cause poverty, namely; 1) geographic (condition of the region where he is), 2) culture or habits, including the habit of working from the population itself, 3) the result of the development policy itself. Nationally, rural areas are still pockets of the poor. The number of poor people living in rural areas reached 17.28 million (62.2%) from 27.77 million poor people in Indonesia in September 2016 [2].

The basic problems in the countryside that need to be dealt with more seriously include: (1) low labor productivity; (2) the narrower area of land controlled by agricultural households; (3) The number of smallholder households increases; (4) household income in agriculture is low and the economic situation is stagnant; (5) low wages of farm laborers; and (6) the majority of the poor. Poor people in rural areas, get the main income from the agricultural sector in general. Therefore, improvements in the agricultural sector are seen as one of the solutions to alleviate poverty in rural areas. Livestock is an integral part of the non-land-based agricultural sector which is one alternative to increase the income of the farmer households in rural areas. Thus, to increase the role of the livestock sector is expected to be able to improve people's welfare, and further reduce poverty in rural areas.

Kamang Baru is one of the sub-districts in Sijunjung Regency, West Sumatra Province. In Kamang Baru Subdistrict, most of the population makes a living as farmers. Employment in the sub-district of Kamang Baru is dominated by the agricultural sub-sector, namely food crops, plantations and livestock. Based on 2016 statistical statistics

on Sijunjung district, the number of family heads who maintain beef cattle in Kamang Baru sub-district is 1,366 households. Maintenance of beef cattle is an important part of the farming system. By getting a number of farmers and a relatively large beef cattle population in Kamang Baru sub-district, through beef cattle maintenance efforts are expected to increase land use, labor use, and utilization of agricultural waste. Therefore, beef cattle maintenance business is expected to be able to improve the welfare of the community in the Kamang Baru sub-district, Sijunjung district. This study aims to determine the role of beef cattle farming in the household economy of the community in Kamang Baru sub district, Sijunjung district [13].

RESEARCH METHODS

The study was conducted by survey method in 3 research areas, namely Nagari Kunangan Parit Rantang, Nagari Kamang, and Nagari Muaro Takung. The location of the study was conducted purposively based on the following criteria: 1) the agricultural sector generally and the livestock sector in particular were the dominant characteristics of the region's economy, 2) the number of farmers and the relatively large cattle population, 3) easy access to the research location. From the total population, 93 samples were taken which were determined by Slovin formula. The respondents of this study were the head of the family or one of the family members of the farmer. The sample was taken from 3 villages in proportion, namely with the following formula:

$$ni \quad \frac{Ni}{N} \; x \; n$$

ni = Sample number is random
Ni = Total of village population
N = Total population from 3 villages
n = Samples (93)

Table-1: Village population and sample

Kenagarian	RTP Population*	RTP Sample
Kunangan Parit Rantang	412	39
Kamang	424	41
Muaro Takung	133	13
Total	969	93

Description: *Sijunjung Regency Animal Husbandry Data, 2016

The sampling method used in this study is accidental sampling. Data collected includes primary data and secondary data. Primary data collection was obtained from interviews and questionnaires. Secondary data sources from this study were obtained from the Central Bureau of Statistics (BPS) of Sijunjung district, Sijunjung district Agricultural Service, Wali Nagari office and data relating to the Kamang Baru sub-district. The data analysis used to answer the research objectives was descriptive analysis. Absorption of labor in the maintenance of beef cattle can be known by calculating the outpouring of family labor. The outpouring of family labor is a comparison of the number of working hours used to maintain beef cattle in various activities with available working hours, then converted into MDH with the following formula;

Outpouring of labor =
hours of work devoted x MDH…. …Hartoyo [3]
Available working hours

Adult male workers who work 8 hours/day are calculated as 1 MDH (Man Days Hours, adult women are calculated to be equivalent to 0.8 MDH and workers under 15 years are calculated as 0.5 MDH for men and 0.4 MDH for women [4]. The income of the farmer household can be determined by calculating the family income first. Family income comes from the income of oil palm, rubber, non-farm business income, and business income for beef cattle. To find out the income from the business of raising beef cattle, the following formula is used:

$\pi bc = TR - TC$
Πbc = Revenue for maintenance of beef cattle
TR = Total revenue for beef cattle business
TC = Total costs incurred in beef cattle business

To find out the contribution of a beef cattle maintenance business to family income, the following formula is used

$$K = \frac{PUSP}{PK} \times 100\% \ldots [5]$$

K = Contribution of beef cattle maintenance Business
PUSP = Income from beef cattle maintenance Business
PK = Family income

RESULTS AND DISCUSSION

Maintenance of Beef Cattle for Absorption of Labor in Households

The perspective of the system of raising beef cattle in the research area, the use of labor for the maintenance of beef cattle is divided into 3 namely; 1) conventional grounded; 2) joints are grounded and released / grazed; 3) just released. The outpouring of labor on conventional grounded systems is presented in the following table.

Table-2: Outpouring of Family Workers in Conventional Stacked Systems

Beef Cattle Maintenance Activities	Time Out						Total MDH
	Father		Mother		Child		
	Hour	MDH	Hour	MDH	Hour	MDH	
Clean the cage	0.07	0.01	0.22	0.02	0.00	0.00	0.03
Looking for grass	1.94	0.24	0.00	0.00	0.02	0.00	0.25
Feed and drink	0.06	0.01	0.25	0.03	0.00	0.00	0.03
Bathe a cow	0.07	0.01	0.00	0.00	0.00	0.00	0.01
Total	2.14	0.27	0.47	0.05	0.02	0.00	0.32

Based on the table, it can be seen that the highest use of labor in the conventional stranded system is grass-seeking activities, namely 0.25 MDH. The use of labor in cleaning the cage was 0.03 MDH, and feeding and drinking activities were 0.03 MDH. The use of labor in cow bathing activities was obtained 0.01 MDH. In the table, it can be seen that the use of the workforce of the head of the family (father) devotes more time. In line with the research of Sani *et al.* [6] the most widely used transmigrant family workforce were men, on average 0.52 MDH (72.45%), followed by female workers 0.14 MDH (19.31%) and children 0.06 MDH (8.24%). Rahman [7] states that farming activities in the broadest sense are more prioritized for male workers, while women in order to help increase family income cannot be separated from their role in managing the household. This is not much different from the outpouring of labor in the combined system as shown in the following table.

Table-3: Outpouring of Family Workers in Combined Systems Stacked and Removed / Pastured

Beef Cattle Maintenance Activities	Time Out						Total MDH
	Father		Mother		Child		
	Hour	MDH	Hour	MDH	Hour	MDH	
Bring cattle to the pasture	0.13	0.02	0.02	0.00	0.00	0.00	0.02
Clean the cage	0.01	0.00	0.03	0.00	0.00	0.00	0.00
Feed and drink	0.01	0.00	0.03	0.00	0.00	0.00	0.00
Looking for grass	0.27	0.03	0.03	0.00	0.00	0.00	0.04
Bring cattle to the cage	0.14	0.02	0.02	0.00	0.00	0.00	0.02
Total	0.56	0.07	0.13	0.01	0.00	0.00	0.08

The most outpouring of labor is the search for grass. The use of family head labor is more than 0.07 MDH. Farmers who choose a joint maintenance system are caused by the distance, from the house's farmer to his own farm, which is not very far. The outpouring of labor in the maintenance system is released, table 4.

Table-4: Outpouring of Family Workers on the Release Systems

Beef Cattle Maintenance Activities	Time Out						Total MDH
	Father		Mother		Child		
	Hour	MDH	Hour	MDH	Hour	MDH	
Bring cattle to the pasture	0.04	0.00	0.00	0.00	0.01	0.00	0.01
Clean the cage	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Bring cattle to the cage	0.04	0.00	0.00	0.00	0.01	0.00	0.01
Total	0.09	0.01	0.00	0.00	0.02	0.00	0.02

The outpouring of labor in the released system is not so much because the beef cattle business has not been a major concerned and it is still traditional which it is the with the cattle's food and health needs. From the three tables above it can be seen that the outpouring of labor in the maintenance of beef cattle is still low at 0.42 MDH. While the outpouring of family labor available is 3 MDH. This means that 2.58 MDH is used by farmers for other jobs rather than raising beef cattle. This shows that the business of raising beef cattle has not been a major concern because farmers are more focused on land processing activities than raising beef cattle. Therefore, the effort to maintain beef cattle at the research location is still a part-time business.

The average of the farmer's income in each maintenance system, where the average farmer income with a conventional stowage maintenance pattern is IDR 199,238/ month. The average of the income of farmers with a combined maintenance pattern is IDR Rp. 25,538/ month, while the average of the farmer's income with a maintenance pattern released is IDR 16,532/ month. The farmer's income in the maintenance system is assumed to have the highest value. Based on this, the higher is the outflow of labor in the maintenance of beef cattle the higher is the income. In accordance with the opinion of Sudono [8] which suggests that the highe efficiency of the use of labor is, the higher income is received.

The advantages of maintenance systems grounded (intensive) are; (1) cow growth is easily controlled, (2) maintenance costs are easily calculated, (3) it is easy to maintain the security and (4) it is easy to monitor cattle health. While the weaknesses are; (1) feed costs are quite high and (2) labor costs. But for labor costs can be minimized by utilizing labor in the family.

Utilization of Resources to Increase Added Benefits/Values: Empty Land, Agricultural Waste, and Forage in Plantation Areas

Beef cattle play a role in increasing the benefits/added value of resources owned by farmers such as the use of vacant land, utilization of agricultural waste, and forage utilization in plantation areas for animal feed. This is possible to see it from the aspect of the resource utilization of farmers in raising beef cattle which can be seen in table 5.

Table-5: Activities Conducted If Maintaining Beef Cattle

Activities carried out if raising beef cattle	Do		Number of Respondents (People)	Persentation (%)		Total (%)
	Yes	No		Yes	No	
Utilization of Empty Land	65	28	93	70	30	100
Utilization of Food Crop Waste	0	93	93	0	100	100
Utilization of Palm Leaf Waste	34	59	93	37	63	100
Utilization of Grass in the Plantation area	82	11	93	88	12	100
Child or wife has a job at home	71	22	93	76	24	100
Cows can be used by farners to get cash quickly	93	0	93	100	0	100

Based on table 5, it can be seen that farmers tend to use forage in plantation areas and use vacant land to grow forage. The utilization of food crop wasted is not carried out because there are no respondents who do food crop farming but because respondents thought that the capacity of forages or grasses in the oil palm and rubber plantations they had was still sufficient for the number of cows they kept. Even though there is still many other food sources that can be utilized such as palm leaf waste. The lack of farmers's skills in processing the food is caused by the low level of farmer education in the research location so that the absorption of information and new innovations is also very low.

The accordance with the opinion of Pardede [9] it is easier for the farmers to absorb and try new innovations in supporting their business having a higher level of education. In the study location the utilization of palm leaf wasted was only carried out by 34 respondents (37%). For the supply of palm leaf waste in the form of midribs, it is first processed using the chopping method and then given a solution of brown sugar and urea. In addition to the utilization of agricultural waste, forage and empty land, the use of family labor is also carried out. Family members who do not have jobs such as wives who usually do housework, their free time are used to help husbands raise the beef cattle. At the study site, 76% of the respondent's family members helped in the business of raising beef cattle. Thus, the presence of beef cattle is able to make efficient use of family labor.

The use of cattle by farmers to get cash quickly is also done by all respondents. This is usually done when the respondent has a sudden need at a substantial cost and beef cattle also can be used as savings in a famine if the farmer has previous experience.

Maintenance of Beef Cattle as a Source of Capital for Productive Enterprises

Beef cattle have a role as a source of capital for business or as assets for farmers such as savings, and sources of income and labor. The role of cattle as business capital is different depending on the needs of the farmer itself. Table 6 shows that the majority of farmers in the research area functions as beef cattle farms as family savings. This can be seen from the data obtained, where 48 respondents (52%) use the cattle as savings and 36 respondents (39%) in income sources.

Table-6: Function of Maintenance of Beef Cattle

Function of Maintenance of Beef Cattle	Respondents (People)	Persentation (%)
Savings	48	52
Labor and source of income	1	1
Labor and savings	8	9
Savings and Sources of income	36	39
Total	93	100

From the results of interviews and direct observations in the field, the farmers did business in beef cattle to be used as savings and sudden needs, such as children's school fees, medical expenses, family celebration fees and others. This is in accordance with the statement of Mr. Nasrichan (34) as the head of the jorong in the village of Muara Takung.

"People here including me do beef cattle business, the main goal is for savings and needs that are sudden because cows are easy to sell, such as children's school fees, medical expenses, and family expenses."

From the statement above, it can be seen that farmers conducting beef cattle business have not been commercial in nature and do not have a target as a source of family income. This is because they are still trying only for family needs. This is reinforced only if the farmers are interested in adding beef cattle. The majority of farmers provide reasons for saving and increasing family income. To see the reasons for breeders if raising beef cattle can be seen in tables 7 and 8.

Table-7: The reason for the respondents if they are interested to add the Cows that they raise

Reasons If Respondents Are Interested in Adding Cattle that are Maintained	Respondents (People)	Presentation (%)
Increase income	4	6.4
For savings and increasing income	20	32.3
For savings	38	61.3
Total	62	100

Table 7 explains that the reason for farmers to increase beef cattle is to save and increase family income by 20 respondents (32.3%). While for savings as many as 38 farmers (61.3%) and to increase income only 4 respondents (6.4%). While the reasons for the respondents not interested in adding cattle can be seen in table 8.

Table-8: Reasons for respondents not interested in adding cows that areraised

Reasons If Respondents Are Not Interested in Adding Cattle that are Maintained	Respondents (People)	Presentation (%)
Insufficient labor	10	32.3
Because of the jembrana outbreak	15	48.4
Limited cage capacity	1	3.2
Grass and labor are limited	4	12.9
Limited grass	1	3.2
Total	31	100

Table 8 also explains the reasons for respondents if they are not interested in increasing the number of beef cattle. From the table, the majority of respondents were not interested in increasing the number of beef cattle because they were still worried about the epidemic of jembrana which caused many cows to die and the selling price to be low. Of the total breeders as many as 15 farmers (48.4%) did not want to increase the number of beef cattle because of the outbreak of jembrana and as many as 10 farmers (32.3%) reasoned because the number of workers owned was insufficient. In addition, it is caused by limited cage and grass capacity.

Contributions of Beef Cattle to Household Income of Farmers

The income of farmer families at the study site came from farming (palm oil, rubber), non-farm business (labor, private employees, handyman), and beef cattle business. Following is the table of respondents' average income.

Tabel-9: Average Income of Respondents

No	Type of business	Respondents (people)	Average land / livestock ownership	Average Income / Month
1	Rubber farming	10	0.30 Ha	IDR 482,796
2	Palm Oil Farming	63	1.91 Ha	IDR 2,908,602
3	Palm Oil - Rubber	9	0.30 Ha	IDR 493,548
4	Non-farm business	11	-	IDR 232,258
5	Beef Cattle Business	93	6 Head	IDR 241,308

Most of the beef cattle business in the research location is carried out on a small scale that is integrated with other agricultural businesses. Revenues from beef cattle business come from livestock sales. Based on the table, it can be seen that the respondents have an average income of beef cattle business of IDR 241,308/ month in the last 5 years, and the average family income of IDR 4,358,513/ month. Based on this, it can be observed that the maintenance of beef cattle contributes to the respondent's family income of 5.54 percent as can be seen in the following figure.

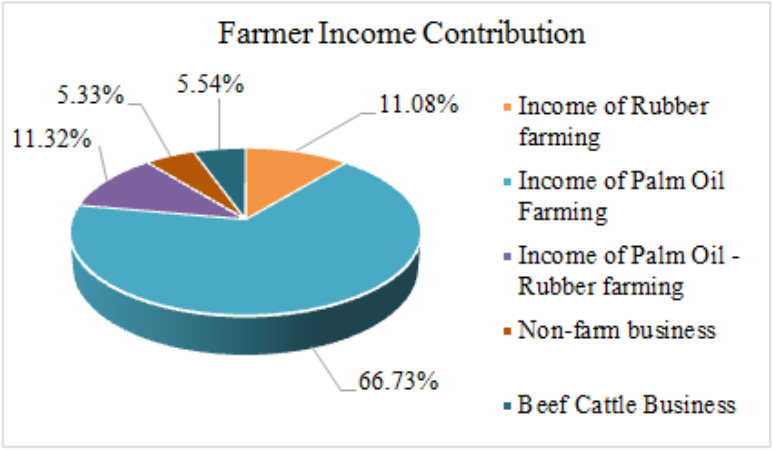

Fig-1: Farmer Income Contribution

The picture above shows that beef cattle business contributes to the low family income. The quantity illustrates the business role of beef cattle on the income of the respondent's family that has not shown maximum proportion. This is because income from beef cattle business is still low. The low income of beef cattle business is due to the low sales of beef cattle and the ownership of beef cattle which are still classified as small scale. The average sales of beef cattle are only 1 in the last 5 years and the average number of livestock owned is 6. Jamilah [10] said that theoretically for cattle farms, breeders should have at least 7-10 cows. This figure is economically feasible. But the facts on the ground show that some farmers cannot afford to raise as many cows as they can. Generally, they do not have the energy to feed. The level of sales also influences the level of income of beef cattle business. This is in accordance with Saputra, A's research in Zulfikri *et al*. [11], that livestock business income is strongly influenced by the large number of livestock kept and the number of livestock sold. In the study location, respondents tend to have no target to sell cattle that are kept as presented in the following table.

Table-10: Respondents who have targets to sell cows

Target to sell cattle	Respondents (People)	Presentation (%)
There is	37	40
There is no	56	60

Total	93	100

The percentage of respondents who do not have a target to sell cattle is relatively high. This is because the raising of cows is only used as savings which are sold at any time if there is a sudden need. While the reason for respondents who have a target to sell cattle is; 1) capital to buy cattle; 2) increase income; 3) to increase income and capital to buy cows. From the explanation above, it can be seen that the maintenance of beef cattle in the research location is still secondary. This is in accordance with the opinion of Soehadji in Zulfikri *et al*. [11] which states that cattle business can be said as a branch of business if its contribution to family income ranges from 30-70%, whereas if the contribution is smaller than 30%, then it is still a part-time business and if more than 70% is said as a main business or main business.

CONCLUSIONS

Based on the results obtained in the study as explained in the results and discussion, it can be concluded as follows:

- The business of raising beef cattle in the household economy in the Kamang Baru sub-district plays a role in various things, namely; a) maintenance of beef cattle for employment, b) maintenance of beef cattle in increasing the benefits / added value of resources owned by farmers, c) maintenance of beef cattle as a source of capital for productive business and d) contribution of beef cattle to household income of farmers. Although it has not shown a maximum figure, the effort to maintain beef cattle is seen as being able to increase farmers' income through employment and increasing land use.
- The contribution of beef cattle in the study area is also still low, but it can still be improved in line with the increase in cattle sales and the increase in the number of livestock that are kept since there is still a lot of labor that can still be used to raise beef cattle.

REFERENCES

1. Putra Joshua, A.T. Development and Poverty in Rural Indonesia. Semarang Daily Opinion May 23, 2016.
2. Indonesian Central Bureau of Statistics. Poverty Statistics Data. BPS. Jakarta. 2016
3. Hartoyo S. Tingkat produksi, tenaga kerja, pendapatan rumah tangga dan kelembagaan di desa Gemarang, Ngawi, Jawa Timur. Studi Dinamika Pedesaan, Survey Agro Ekonomi; 1981.
4. Agustar A., Hellyward J., and Zein M. Optimization of Potential Farmer Resources for Maintenance of Folk Beef Cattle in Different Agricultural Bases in West Sumatra. Pasture. 2015; 5 (1): 56 – 62.
5. Hartono, B and E S Rohaeni. Contribution income of traditional beef cattle farmer households in Tanah Laut Regency, South Kalimantan, Indonesia. Livestock research for Rural Development. 2014; 26 (8).
6. Sani, Santosa, Ngadiyono. Family Labor Allocation of the Transmigrant and Local Farmers for Cattle Rising In Konawe Selatan Regency, Sulawesi Tenggara Province. Livestock Bulletin. 2010; 34 (3): 194-201.
7. Rahman S, Bhatnagar R. An expert system based algorithm for short term load forecast. IEEE Transactions on Power Systems. 1988 May;3(2):392-9.
8. Sudono A. Ilmu Produksi Ternak Perah. Institut Pertanian Bogor. Bogor. 1999.
9. Pardede LV, Hardjowasito W, Gross R, Dillon DH, Totoprajogo OS, Yosoprawoto M, Waskito L, Untoro J. Urinary iodine excretion is the most appropriate outcome indicator for iodine deficiency at field conditions at district level. The Journal of nutrition. 1998 Jul 1;128(7):1122-6.
10. Jamilah. Revenue Analysis of Aceh Cow Farmers. Agrifo Journal 2017; 2 (2): 50-55.
11. Zulfikri, Dolorosa E. and Komariyati. The Contribution Analysis of Cattle Husbandry Business to Farmer's Household Income in Tebas District Sambas Regency. Vocational. 2014; 10 (1): 54-67.
12. Nugroho I and Dahuri R. Development of Regional Economic, Social and Environmental Perspectives. Jakarta: LP3ES Library; 2012.
13. Sijunjung Regency Animal Husbandry Statistics. Sijunjung Agriculture Service. Sijunjung. 2016.