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Productivity And Farmers' Income in Rice Plants Crop-Cattle Integration Farming System in Lera Village, Wotu Sub-District, East Luwu District

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Abstract

Integrated farming systems have become part of the farming culture in Indonesia. This system can efficiently utilize local resources, namely by-product materials like straw and livestock manure. The income of farmers with and without a crop-livestock integration system is undoubtedly different. This is because farmers with integration will get revenue from two businesses, namely crops and added from their cattle business. This study aims to assess the benefits of crops and cattle in the integration system and analyze the contribution of integrated agriculture to the production of rice crops and cattle and farmers' income. The primary method used to achieve the objectives in this study is descriptive (descriptive analysis). Quantitative and qualitative research is based on solving factual problems that exist in the present. The data collected were compiled, tabulated, and analyzed by analyzing farm income in the rice and cattle integration system. The results showed that the waste produced from rice plants in straw and bran can be helpful for cattle feed, saving energy and reducing the costs of finding grass and buying feed. At the same time, cattle feces (dung) and urine are helpful as organic fertilizers for rice plants to save the use of Urea, SP-36, and KCl fertilizers. The average income obtained from rice-cattle integration farming amounted to Rp. 32,103,966 with an R/C Ratio value of 1.793 means that the income level of rice-cattle integration farming in Lera Village is profitable, and the business is feasible to develop.

Keywords: *Productivity, Income, Integration.*

INTRODUCTION

The role of the agricultural sector in sustainable development can be seen from the agricultural sector's contribution to the national economy. The agricultural sector comprises subsectors of food crops, horticulture, forestry, plantations and livestock. Among the four important subsectors, the food sector is essential in providing food, especially for the community, to support survival.

The exploitation of land resources characterized by the continuous use of inorganic fertilizers in increasing national agricultural production has caused many agricultural lands in Indonesia to be degraded. On the other hand, labour in the agricultural sector, especially for seasonal farming, such as rice and corn, is only seasonal. In contrast, the availability of family labour is round-the-clock. Therefore, many family labourers are sometimes unemployed or need to be optimally used.

The livestock business, such as cattle, has been widely developed in Indonesia. However, farmers generally maintain it as a part-time business, so the maintenance management is still carried out conventionally. The main obstacle for farmers who need to integrate this business with crops is the unavailability of adequate feed, especially during the dry season. Consequently, many farmers are forced to sell their livestock at relatively low prices.

Integrated farming systems have become part of the farming culture in Indonesia. This system can efficiently utilize local resources, namely by-product materials like straw and livestock manure. The main characteristic of integrated farming systems is the link between crops and livestock. For example, crop waste (straw) is used as animal feed, and vice versa. Livestock manure can be used as organic fertilizer for plants.

Crops integrated with cattle can utilize by-products and plant by-products (crop residues) for animal feed, and conversely, cattle can provide raw materials for organic fertilizer as a source of nutrients needed by plants (Dewi et al., 2019). The direct benefit of cattle-crop integration is the increased income of cattle farmers from selling

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cattle and corn. The indirect benefit is soil quality improvement due to manure's application (Sun et al., 2019). Manure as organic fertilizer in crop-livestock integration systems has been proven to increase farmers' productivity and income and reduce production costs (Holland, 2020).

The income of farmers who apply the integration system and do not integrate cattle with crops differs. This is because farmers who apply the integration system will get revenue from 2 (two) businesses, namely crop farming and their cattle business. Meanwhile, farmers who do not implement the integration system get revenue only from crop farming. The integration system of cattle and crops is one of the effective ways to increase the productivity of tangible vegetable and animal food. Based on this, it is necessary to assess the potential and benefits obtained by plants and cattle in the integration system and analyze the amount of production, productivity of rice plants, and farmers' income with rice and cattle integration.

METHODS

This research was conducted at the Agricultural and Rural Self-Help Training Center (P4S) of Lera Village, Wotu District, East Luwu Regency, from October to December 2022.

The population in this study were farmers who were members of the Self-Help Agricultural and Rural Training Center (P4S) of Lera Village, totalling 23 people. In this study, the population was not greater than 100 respondents (Arikunto, 2012), so the sample taken was 100% of the population, namely 23 respondents.

The sampling technique used was purposive sampling, namely determining the sample based on the criteria set by the researcher, namely farmer households that cultivate rice crops and ruminants, in this case cattle. Respondents in this study were farmers who owned and managed integrated rice and cattle farming systems. The determination was made by considerations that were considered to represent the population. Data and information were collected through interviews, recordings, and observations based on the source, documentation, and literature study.

The primary method used to achieve the objectives of this study is the descriptive method (descriptive analysis). Quantitative and qualitative research is based on solving factual problems that exist in the present. The data collected is organized, tabulated, and explained.

The analysis used to explain the potential and benefits obtained by rice plants and cattle in the integration system is descriptive analysis with a qualitative approach. This method is used to solve and answer problems that occur in the present, carried out by taking steps to collect, classify, and analyze data, making descriptions with the primary objective of making a description of a situation objective in a description. Meanwhile, to determine the increase in farm income, quantitative data analysis is carried out with the following formula:

$$\pi = TR - TC$$

Where $TR = Q \times Pq$

$TC = TVC + TFC$

Information:

π = Income (Rp)

TR = Acceptance (Rp)

TC = Total Producrion Cost (Rp)

Q = Number of products produced

Pq = Product Price/ kg (Rp)

TVC = Total Variabel Cost

TFC = Total Fixed Cost

The financial feasibility analysis was conducted with the *Revenue Cost Ratio* (R/C) through the equation :

$$\text{R/C ratio} = \frac{\text{Total Acceptance}}{\text{Total Cost}}$$

Criteria of R/C ratio :

1. R/C<1, the farm is not profitable.

2. R/C>1, the farm is profitable.

3. R/C=1, the farm is at the break-even point.

RESULTS AND DISCUSSION

Characteristics of Farmers

Farmer characteristics observed include farmer age, education level, experience or length of farming, land area owned, number of family dependents, and cattle ownership (Table 1).

The average age of respondent farmers is still productive; most farmers are 35 - 55 years old, i.e., 78.26% are classified as productive age range. Generally, those of a productive age will have more incredible energy to work than those of an unproductive age (old or too young). According to Ukkas (2017), the age level affects the performance, productivity, and physical ability of a person's labour in work. Farmers have the spirit and productivity to be high in farming.

The average education level of respondent farmers is medium education; most attend junior high school (SMP) and senior high school (SMA), namely 43.48% and 30.43%, respectively, and around 17.39% have elementary school education. Yahya (2016) and Lestari et al. (2019) stated that the education level significantly affects farmers' adoption of paddy rice's integrated crop management and affects farmers' level of understanding and analysis ability towards innovation adoption decisions. A person's formal education level will influence decision-making in adopting an innovation based on their knowledge.

Table 1. Characteristics of respondent farmers in Lera Village, Wotu District, East Luwu Regency

No.	Age Group (Year)		Formal Education		Years of farming (Year)		Farm size (ha)		Number of family dependents (people)		Cow ownership (head)	
	Category	%	Level	%	Duration	%	Broad	%	Total	%	Total Ownership	%
1	≤ 35	17.39	ELEMENTARY	17.39	> 6	56.52	< 1	21.74	< 4	39.13	1	17.86
2	36 – 55	78.26	JUNIOR HIGH	43.48	6-10	43.48	1 - < 2	69.57	4	39.13	2 - 4	75.00
3	> 55	4.35	HIGH SCHOOL	30.43	>10	0.00	2	8.70	> 4	21.74	> 4	7.14
4			S1	8.70								

Source: Primary data after processing, 2023.

The experience of most respondent farmers in integrating rice crops with cattle is still new, namely 56.52% with < 6 years of experience and 43.48% with 6 - 10 years of experience. Munawaroh et al. (2020) argue that farming experience also affects business success. Although their education is low, farming experience will help their success because, with higher experience in farming, farmers are accustomed to facing risks and know how to overcome problems if they experience difficulties on their farms.

The area of land managed by most respondent farmers is below 1 ha (0.45-0.75 ha), as many as 6 people or 50%, while 1 - < 2 ha as many as 33% and ≥ 2 ha as many as 17%. Sudjarmoko (2010) stated that the wider farmland will increase the number of crops that farmers cultivate, with the possibility that production yields will also increase.

The average number of cattle each farmer respondent owns in Lera Village is 2-4 female cattle (86.08%). This condition illustrates that cattle farming is still a sub-system, meaning that the scale of cattle raising business in Lera Village is still on a small scale or smallholder farmers. The number of livestock owned will affect farmers' profits in conducting rice and cattle integration systems. This is by the opinion of Gusti et al. (2013) that the number of livestock influences the size of the population being maintained, where the greater the number of livestock, the benefits, both in terms of material and waste will increase.

Potential and Benefits of Rice-Cattle Integration

The principle of rice-cattle integration is the handling or processing of the main rice-cattle products that have market value or are used as production facilities in rice farming. The potential and benefits of rice crop waste to cattle with integration are presented in Table 2.

The model of agricultural development based on rice-cattle integration and production facilities for cattle business can be obtained from the handling or processing of waste products (biomass) from rice plants, in this case, straw, which can be processed into feed for cattle. Straw as a feed material for livestock is recommended to be processed first because it has weaknesses to be used as feed, including, according to Bahasoan and Buamona (2023), low crude protein content, crude fiber content, high lignin and silica, low mineral content, low digestibility, and low palatability.

Table 2. Potential and benefits of rice crop waste for cattle in Lera Village, Wotu Subdistrict, East Luwu District

Section	Potential and Benefits for Rice Plants
Rice straw consists of leaves, midribs, and internodes or books.	Each hectare of paddy field produces 12-15 tons/ha/season of fresh straw and, after going through the fermentation process, produces 5-8 tons/ha, which can be used to feed 2-3 cows/year (Haryanto et al., 2003).
	Rice straw production (fresh straw 12-15 tons/ha/season and 5-8 tons/ha of fermented straw) can be used to feed 2-3 cows/year (Haryanto, 2004).
	Cattle given supplementary feed such as straw and probiotics can provide live weight gain of 0.56-0.68 kg/head/day (Suyasa et al., 2004).
	The biochemical composition of rice straw is typical of lignocellulosic residues with 30 - 45% cellulose, 20 - 25% hemicellulose, 15 -20% lignin, and several minor organic compounds. Other contents are C-organic 44.71%, N-total 1.08%, P 0.17%, and K element 2.7% (Indriyati et al., 2008).
	Adding straw compost can reduce the need for inorganic fertilizer between 20 - 80% and increase production equivalent to 100% inorganic fertilizer. The combination of 60% straw compost dose and 40% inorganic fertilizer gave higher dry grain weight than the 100% inorganic fertilizer treatment (Muliarta, 2020).
Bran, a by-product of milling rice into rice, consists of the aleurone layer and a small portion of the endosperm, pericarp, pegmen, and germ.	Bran yields 8-10% of the weight of the milled rice.
	Rice bran contains 88.30% dry matter, 15.30% crude fiber, 9.90% ash, 10.10% crude protein, 4.90% crude fat, and 48.10% BETN (Udiyono, 1987).
	Bran is an easily available source of carbohydrates and is effective in improving the quality of fermentation and rice straw (Bolsen et al., 1996). Bran has a high nutrient content such as lipids, proteins, carbohydrates, vitamins, minerals, and fiber (Nasir & Amri, 2022).
	The use of bran in composting aims to enrich the nutrients in compost so that its quality increases (Rahmasari, 2019).
	Giving bran and probiotic bioplast to pregnant cows in the local Katingan watershed can increase the body weight of cows by about 0.5 kg/head/day and increase the birth weight of calves by about 10.5 kg. Feed consumption increased by about 5.2 kg. In addition, the provision of bran and probiotic bioplast in local cows of the Katingan watershed can re-estrus 62 days after giving birth compared to the control about 85 days after giving birth (Salfina, 2012).

Source: Primary data after processing and from various sources, 2023.

The nutritional value of straw can be improved through probiotic fermentation and almost matches the quality of elephant grass. Straw as animal feed can streamline labour to find grass. According to Syamsu (2006), the nutritional composition of fermented rice straw generally shows a quality improvement compared to unfermented rice straw. The crude protein content of fermented rice straw increased from 4.23% to 8.14%, followed by a decrease in crude fibre content.

Rice bran is the output of processing rice into rice, where the quality of rice bran will vary depending on the type of rice. Rice bran is one of the products of the rice milling plant in producing rice. Bran produces as much as 8-10% of the weight of milled rice, so its availability is relatively abundant. It can also be used as cattle feed. However, most respondent farmers have not used bran in their cattle feed. Valentino et al. (2017) state that rice bran can be used as an animal feed ingredient.

The function of bran as a carrier material in compost is as a carbon source. According to Zahroh et al. (2018), bran has high levels of carbohydrates that can support microbial growth. Carbon is essential for chemoorganotropic bacteria such as Azotobacter sp. and Azospirillum sp. (Santoso et al., 2019).

Respondent farmers utilize cattle waste in the form of feces and urine (Table 3). The solid waste of cow feces or dung is first processed into compost by adding several materials, such as straw that has been cut into small pieces, and then using bioactivators such as EM4 so that the composting process occurs faster.

Table 3. Potential and benefits of cattle waste for rice crops in Lera Village, Wotu Sub-district, East Luwu District

Section	Potential and Benefits for Rice Plants
Feces (manure) of cattle	The amount of manure released daily is around 12% of the body weight of cattle and, if not treated properly, will make waste and pollute the environment because it contains NH3, NH, and other compounds.
	The estimated results of a cow in one day can produce manure as much as 10-30 kg (Hambali et al., 2007)
	The nutrient content in cow dung is 10 -18.76% C organic; 0.7 - 1.30% N; 0.52% P; 0.95% K; 1.06% Ca; 0.5 - 0.86% mg; 0.17% Na; 5726 ppm Fe; 334 ppm Mn; 122 ppm Zn; 20 ppm Cu; 6 ppm Cr; 14.0 - 18.0 C/N ratio; 24.21% Water content; 1.5-2.0% P2O5; 0.5-0.8% K2O5; 26.28 % Moisture content; 3.42% Humic acid and 2.92% Fulvic acid (Irfan et al., 2017; Simanungkalit et al., 2006; Tisdale et al., 1985; Yulipriyanto, 2010)
Urine	Cow urine can be used as a liquid organic fertilizer because of its nutrient content, especially nitrogen, phosphorus, potassium, and more water. Which is a macro element needed for plant growth (Murniyati & Safriani, 2012)
	A cow can produce urine on average 10 liters/day (Sarwono, 2011). Research results of the Department of Soil, Faculty of Agriculture, Andalas University Beef cattle urine contains nitrogen levels of 36.90-37.31%, phosphate 16.5-16.8 ppm, and calcium 0.67-1.27% (Rohani et al., 2016).
	The nitrogen content in beef cattle urine is the same as that in SP36 fertilizer, which is 36% nitrogen, or not much different from the nitrogen content of urea fertilizer, which is 45% (Zein, 2011)

Source: Primary data after processing and from various sources, 2023.

Livestock waste includes all manure from livestock business activity in solid and liquid waste. Solid waste is all in the form of solids or the solid phase (feces). Liquid waste is all liquid or in the liquid phase (urine). According to Erfan (2020), one cow weighing 400-500 kg can produce solid and liquid waste of 27.5-30 g/head/day. An adult cow on a farm can produce as much as 8 litres of urine daily. The research results by Adijaya et al. (2011) found that the urine potential of male cattle weighing ± 300 kg produced 8-12 litres per day, while female cattle weighing ± 250 kg produced 7.5-9 litres of urine per day.

In the composting process, organic matter is broken down in a biophysical-chemical manner involving the activities of microbes and mesofauna. According to Efendi et al. (2017), cow manure compost is one way to apply sustainable and environmentally sound organic agricultural technology. Besides that, cow faeces compost can provide benefits in providing macro nutrients and micro nutrients for plants, improving soil structure, and loosening the soil, thus facilitating plant root growth by absorbing elements and nutrients.

Cow urine is a waste cows produce in addition to feces, and respondent farmers ferment it before applying it to rice plants. Cow urine is a source of nutrients that is readily available for free. The nitrogen content in urine is relatively high. According to Chantika (2009), when urine is diluted (10-20% urine with 80-90% water or 1-2 parts urine mixed with 8-9 parts water will be a good fertilizer for plants). Urine can also be used as an additional ingredient in composting, both anaerobic and aerobic.

Productivity and Income of Rice-Cattle Integration Farms

The productivity of rice crops of the respondent farmers is generally almost the same, with an average productivity of 6,045 kg/ha in each growing season, which means that each hectare of rice crop area can produce an average production of 6,045 kg/growing season. This is because the respondent farmers come from the same group, namely from the Agricultural Training Center and Rural Self-Help (P4S) Lera Village, so the types of inputs used are basically the same, as well as the use of technology used is also relatively the same.

Income analysis was conducted to determine how much income rice farming farmers had. The income analysis explains how the cost structure and income from rice farming. The form of analysis of rice farming income, in general, is the difference between production receipts and costs incurred. The average income of rice farming is presented in Table 4.

Table 4. Average income of rice farming in Lera Village, Wotu District, East Luwu Regency

No.	Description	Vol	Unit Price (Rp)	Total (RP/Growing Season)
1.	**Acceptance**			
	Production (kg/growing season)	6,045	5.300	32.040.574
	Total Receipts			**32.040.574**
2.	**Production Cost (PC)**			
	a. Variable Cost (VC)			
	✓ Seedling (kg)	35	8.000	280.000
	✓ Organic Fertilizer			
	- Artillery (kg)	685	1.000	685.000
	- Sabi of your (L)	5	1.500	7.500
	✓ Anorgak			
	- Urea (kg)	100	2.400	240.000
	- NPK (kg)	300	2.500	750.000
	✓ Pestisida			
	- Insecticide (L)	0,74	219.457	161.301
	- Herbicida (L)	0,25	380.000	95.380
	✓ Labor Cost			
	- Pematang Job, L (HOK)	4	100.000	400.000
	- Tillage	1	1.300.000	1.300.000
	- Planting, L (HOK)			
	• Cabut Bibit, L (HOK)	4	100.000	400.000
	• Tanam, in (Hawk)	5	200.000	1.000.000
	- Fertilization I, L (HOK)	2	75.000	150.000
	- Fertilization II, L (HOK)	2	75.000	150.000
	- Pest Control & - Disease, L (HOK)	3	100.000	300.000
	- Harvesting and Pasaca Harvest			
	• L (HOK)	24	15.000	360.000
	• P (CAGE)	40	12.027	481.087
	Total Labor Cost			4.541.087
	Total Variable Cost (TVC)			**6.760.268**
	b. Fixed Cost (FC)			
	✓ Tool Depreciation Cost			307.576
	✓ Tax			53.272
	Total Fixed Cost (TFC)			**360.848**
	Total Cost of Production (TCoP)			**7.121.116**
	Revenue (Rv)			**24.919.458**

Source: Primary data after processing, 2023.

Table 4 shows that from a sample of 23 farmers in Lera Village, Wotu District, East Luwu Regency, the average total rice production yield was 6.045 kg/ha/planting season from a total land area of 23.90 ha or average production yield. 6,279 kg/planting season, with the average rice farming income obtained being IDR 24,919,458.

Variable costs are costs whose size is greatly influenced by production. Pamusu and Paelo (2023) state that variable costs are costs whose size is greatly influenced by production, and variable costs are costs whose size depends on the production level.

Variable costs in this research include the costs of seeds, fertilizer, organic and inorganic fertilizers, pesticides, and labour. The average cost of organic fertilizer used is Rp. Six hundred eighty-five thousand for manure and 7,500 for cow urine. This cost is relatively smaller because of the cattle waste used and the rice plant waste itself. Organic fertilizer costs include a mixture of organic fertilizers such as organic materials, bran, bioactivators, and others. Meanwhile, for inorganic fertilizers, farmers use urea and NPK for reasons other than the limited availability of other fertilizers, but also that these two types of fertilizer are relatively easier to obtain than other types of fertilizer. The average cost of inorganic fertilizer used is Rp. 990,000 (Rp. 240,000 urea and

Rp. 750,000 NPK. Pesticides used include insecticides with an average cost of Rp. 161,301 and herbicides with an average cost of Rp. 95,380. Average labour costs reach Rp. 4,541,087.

Fixed costs in rice farming are equipment depreciation costs, which reach an average of Rp. 307,576 and average tax costs of IDR 53,272, the total fixed costs of rice farming are IDR. 360,848.

Farming revenue is the total nominal value of products from farming in a certain period. Revenue is obtained by multiplying the amount of rice production by the price (Mooduto et al., 2021). The average rice production by respondent farmers was 6,045 kg with a total selling price of Rp. 5,300 per kg, so the average income from rice farming is IDR 32,040,574. The average income from rice farming per hectare per planting season is IDR 24,919,458.

The variable cost components in the cattle farming business in Lera Village consist of the costs of seeds, medicines, vitamins, and work wages. In contrast, the fixed costs include equipment and pen depreciation, as presented in Table 5.

Table 5. Average income of cattle farming in Lera Village, Wotu District, East Luwu Regency

No.	Description	Vol	Unit Price (IDR)	Total (Rp/Year)
1.	**Acceptance**			
	Sales (tail)	2,609	15.543.478	40.548.204
	Total Receipts (TR)			**40.548.204**
2.	**Production Cost (PC)**			
	a. Variable Cost (VC)			
	✓ Breeds of Cows (heads)			
	-Male	1,00	5.166.452	5.166.452
	-Female	3,00	8.682.840	26.048.520
	✓ Medicine (bottle)	2,45	139.527	341.739
	✓ Vitamins (bottles)	2,78	20.870	58.072
	✓ Working Wages for Livestock Rearing and Cages (HOK)	28,87	40.000	1.154.783
	Total Variable Cost (TVC)			**32.769.565**
	b. Fixed Cost (FC)			
	✓ Tool Depreciation Cost			111.522
	✓ Cage Depreciation Cost			482.609
	Total Fixed Cost (TFC)			**594.130**
	Total Cost of Production (TCoF)			**33.363.696**
	Revenue (Rv)			**7.184.509**

Source: Primary data after processing, 2023.

Table 5 shows that the average total sales of cattle was > 2 head (2,069 head) with an average selling price of Rp. 15,543,478 per head, so the average income from cattle farming is IDR 40,548,204.

Variable costs include the costs of cattle seeds, medicines, vitamins, and labor wages to maintain livestock and pens. The average cost of purchasing cattle seeds consists of male seeds with an average purchase of 1 head and an average price of IDR 5,166,452 per head and female seeds with an average total price of IDR 8,682,840 per head with an average purchase of 3 birds. Hence, the average total price is IDR 26,048,520. Meanwhile, the average labor wage reaches Rp. 1,154,783. The average total variable costs are 32,769,565. The largest production cost in cattle farming is purchasing cattle seeds or feeder cattle. According to Budirahardjo et al. (2011), the biggest cost in cattle farming is the purchase of cattle feed.

Fixed costs consist of equipment depreciation costs, which reached IDR 111,522, and cage depreciation costs of IDR. 482,609, the total fixed costs of the cattle farming business are Rp. 594.130. The total production costs in the cattle farming business are the sum of variable and fixed costs, namely 33,363,696. According to Usmany (2021), total costs are the total costs incurred by beef cattle breeders during one year of maintenance, resulting from the sum of fixed costs and variable costs.

The income for the cattle farming business is IDR 7,184,509. The higher the income, the higher the level of profit. If the production costs incurred are too large and the income received is not optimal or too small, the livestock business will be less profitable (Candra & Anggriawan, 2020).

The research results show that integrating rice and cattle farming in Lera Village, Wotu District, East Luwu Regency produces a ratio of revenue to total costs (R/C Ratio) of more than one (Table 6).

Table 6. R/C Ratio value of integration of rice and cattle farming in Lera Village, Wotu District, East Luwu Regency

Farm Business	Revenue	Production Cost (Cost)	R/C ratio
Padi	32.040.574	7.121.116	4,499
Sapi	40.548.204	33.363.696	1,215
Rice - Cattle Integration	72.588.778	40.484.812	1,793

Source: Primary data after processing, 2023

The R/C ratio value of rice and cattle integration farming is 1.793, meaning that every Rp. 1.00 of farming costs incurred will generate Rp income. 1,793. This condition shows that the income from the integration of rice crops with cattle in Lera Mario Village is profitable. According to Fyka et al. (2018), analysis of the balance between total revenue and cost is a feasibility test for a type of business. The criteria for the results of the R/C ratio analysis are if the R/C Ratio value is >1. The business is said to be profitable and worth running because the amount of revenue can cover the costs incurred in the farming business. Vice versa, the respondents' revenue for this farming system business comes from two sources. Namely revenues from the rice farming sector and cattle rearing businesses.

CONCLUSION

Waste from rice plants in the form of straw and bran can be used as cattle feed, saving energy and reducing the costs of looking for grass and buying feed. Meanwhile, cattle feces (dung) and urine are helpful as organic fertilizers for rice plants, thus saving on the use of Urea, SP-36, and KCl fertilizers.

The average productivity of rice plants is 6,045 kg/ha, with an average income per hectare per planting season of IDR 24,919,458 and an R/C Ratio value of 4.499, while the average income for cattle farming is IDR 7,184. 509 with an R/C ratio value of 1.215, which means that the income level of rice and cattle farming in Lera Village is profitable and the business is feasible to develop.

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