ANALYSIS OF FATTENING CATTLE BEEF PRODUCTIVITY IN ACEH BESAR REGENCY

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ABSTRACT

Aceh Besar Regency is a region in the province of Aceh are set out in the National territory of Spatial Plans (RTRWN) as the hinterland (buffer) for area main stay of the provincial capital Banda Aceh city. Agricultural sector is the ranch that became one of the priorities of the economic development in Aceh Besar District. Kereman fattening systems around the river banks components of farming which is quite developed in Aceh Besar Regency. This study focuses on variables that affect the productivity of beef cattle fattening efforts in Aceh Besar District free variables (forage, banana stem, labor and the weighting variable) on the dependent variable (productivity a cow). Site selection studies conducted by purposive method while the system is done with a sample of Villages "Simple Random Sampling" approach to linear regression models", then transformed into a linear logarithmic form. Results of the study shows the variables that influence the real against the productivity of beef cattle in the area of Krueng Aceh river banks is the banana stems, forage and weights the early going, while the influential real variables to productivity outside of the area of Krueng Aceh river banks are the variables forage.

Keywords: Productivity, Fattening Cattle, Riverbanks

INTRODUCTION

Agriculture is a potential sector that plays an important role in the development of Indonesia. It is based on the contribution of the agricultural sector which not only plays a role in generating gross domestic product (GDP), the creation of employment opportunities, increase in people's income and foreign exchange earnings, but also can be viewed in a more comprehensive, such as the provision of food of the community so that it is able to play a role in the creation of a national food security *(food security)* and can save foreign exchange that comes from exports or import substitution product.

Aceh Besar Regency is one of region in the province of Aceh are set out in the National territory of Spatial Plans (RTRWN) as the hinterland (buffer) for area mainstay of the provincial capital city of Banda Aceh. A fairly prominent role of the agricultural sector in regional economic structure is shown from its contribution to the Gross Domestic Product (GDP) by 19.1% and absorb labor of 41.7 % (79325 people) in 2009.

Livestock is one of the priority sector in agricultural to increase government revenue in Aceh Besar Regency, linked to its role towards the establishment of animal food security and the economic empowerment of rural people and spurred the development of the region. For the last decade (2000-2009), Livestock sector grew by 4.97%, mainly influenced by the rate of increase meat production amounted to 6.97% per year. In 2009 the production of meat in the Aceh Besar Regency reached 2131.1 tons, which amounted to 63% (1342.6 tons) is beef. Beef as a commodity in the regions in Aceh province, the population amounted to 16.1% of the total livestock population.

The system of fattening beef cattle "Kereman" in Aceh Besar Regency by using existing resources on activities of an economy geared to reach the levels of economic efficiency, in order optimum productivity can be achieved. Development of the production of beef cattle to consider various important aspects relating to local resources such as agro ecological conditions, power support, economic value, as well as the factors constraints through the approach area and process of participation to a synergy with the regional development direction.

Fattening cattle venture "Kereman" is a component that is developing in Aceh Besar Regency of fattening cattle Businesses. It's has been known by community and was conducted around of riverbanks areas and outside of the riverbanks of Krueng Aceh. The fact is number of farmers ranchers beef "Kereman" in around of riverbanks areas is larger than the outside of riverbanks. Based on the explanation above, this study focused on variables that affect productivity of fattening cattle beef in the around and the outside of riverbanks area Aceh Besar Regency.

RESEARCH METHODS

This research was conducted on two area of riverbanks, namely in around of Riverbanks area (DBS) and outside the riverbanks area (outside the DBS) in Krueng Aceh river Aceh Besar Regency, which is central to the production of beef cattle. The site selection of study was conducted by purposive method whereas the determination of the sampling is done by a system of village *"Simple Random Sampling"*. From every village was selected 30% farmer from the total the population in areas of cattle fattening business Riverbanks and beyond the Riverbanks in Aceh Besar Regency.

Factors affecting the production of beef cattle were analyzed with multiple linear regression model approach. The factors thought to affects the productivity of beef cattle in the Aceh Besar is the amount of concentrate, forage, labor, and the price of cattle. In general the mathematical equations of function of the *Cobb-Douglas* can be formulated as follows:

$$\mathbf{Y = a + X_1 b1 + X_2 b2 + X_3 b3 + X_4 b4 + \mu}$$

Y is the dependent variable or response variables, and X is a free variable change or variable independent. To facilitate prediction against the regression model, then it can be transformed into a form of linear regression models so that logarithmic to the productivity of beef cattle can be formulated as follows:

$$\mathbf{Ln\ Y = a + b1\ LnX_1 + b2\ LnX_2 + b3\ LnX_3 + b4\ LnX_4 + \mu}$$

Description:

y   = the productivity of beef cattle (kg/day)

a   = Constant

b1-b4 = Coefficients or parameters of the variable

X_1 = Forage (kg/day)

X_2 = Banana Stem x 2 (kg/day)

X_3 = Wage Labor (Rp/day)

X_4 = Early Weights (Kg)

μ = errors.

RESULT AND DISCUSSION

An Overview of Aceh Besar Regency

Aceh Besar Regency is one of the administrative regions in Aceh province which geographical position at 5.2^o – 5.8 ° North latitude and 95° East longitude with the border of administration, are: (a) to the North with the Strait of Malacca and the city of Banda Aceh, (b) to the south with Aceh Jaya Regency, (c) the East by Pidie, and (d) Indonesia Ocean to the West. An area of Aceh Besar Regency is 2974.12 km2 (5.18 of the vast Province of Nanggroe Aceh Darussalam) with its capital city of Jantho covering 23 districts, 68 kemukiman and 601 villages.

Multiple Linear Regression Analysis

Multiple linear regression analysis used in this study with the aim to find out whether there is influence the dependent variable against the independent variable. In this research that became variable the independent is the productivity of beef cattle and which became the dependent variable (free) is the banana stems, forage, labor and weights going to the cows in Aceh Besar District.

Table 1. F test result of cattle beef productivity in Aceh Besar Regency

Description	*Riverbanks Region*	*Beyond The Riverbanks Region*
Residual	0,045	0,026
F- count	45,571[**]	70,100[**]
Signifikan	0,000	0,000
F-table	2,76	2,76
R^2 *(regresi)*	0,860	0,905
R (korelasi)	0,938	0,958

Source: Primary Data

From the table above in getting that dependent variables are jointly (forage, banana stem, labor and weights going) is significantly affected to independent variable (the productivity of beef) on the confidence level of 99 (0.01) in these two areas. This is shown from the F-value calculate in Riverbanks Region of 45.57 and F-female outside the area of 70.100 Riverbanks, where F-female in both areas greater than F-table (2.76).

The initial weights in DBS spread to 175.3 kg/tail, whereas the initial weights outside DBS amounting to 160.7 kg/tail, from a T test results obtained that the weights in these two areas are very significantly different (sig < 0.01).

The value of R^2 in the DBS and the outer DBS of the river nearly to 1.00 (0.86 and 0.905), this value means the independent variable (the productivity of cows) is influenced by the dependent variable (forage, banana stem, labor and weights), consist of 86 on DBS, and 90.5 on outside of the DBS.

The value of R that are obtained 0.938 in around of Riverbanks area and 0.958 on outside Riverbanks area, the value of R in both areas approaching 1, this means the relationship between a independent variable (the productivity of beef) with dependent (banana stalks, forage, labor and weights) in these two areas belongs to the powerful.

Partial Analysis (test t)

The t-test is a test to find out the significance of the influence of free variables are individual or partial bound variables against.

Table 2 individual Trials. the influence of banana stems, forage, manpower, initial weight against the productivity of beef cattle in Aceh Besar District

Variabel	Koefisien Regresi	t-value	Signifikan	Korelasi
Riverbanks Region				
Constants	-0,406	-3,103	0,005	1,000
Forage	0,012	4,183	0,000[**]	0,883
banana stem	0,073	2,648	0,014[*]	0,738
Labor	0,0006	1,067	0,296[tn]	0,466
The initial weights	0,002	3,291	0,003[**]	0,310
t-table (0,05) = 2,05				
Beyond The Riverbanks Region				
Constants	-0,366	-2,770	0,010	1,000
Forage	0,020	3,906	0,001[**]	0,851
banana stem	0,029	1,084	0,289[tn]	0,923
Labor	0,001	2,009	0,055[tn]	0,921
The initial weights	0,001	1,826	0,080[tn]	0,407
t-table (0,05) = 2,05				

Source: primary data are processed

*Description :   ** influential real on the extent the beliefs of 99 (p0.01)*

***the real effect on the extent of) confidence 95 (p0 .05)*

tn = has no effect on real (p0 .05)

Based on table above regression equations are obtained as follows:

   Equation DBS $\rightarrow \hat{Y} = -0,406+0,012X_1 +0,073X_2 +0,0006X_3+0,002\ X_4+\mu$

   Beyond the equation DBS $\rightarrow \hat{Y} = -0,366+0,020X_1 +0,029X_2 +0,001X_3+0,001\ X_4+\mu$

Description:

$\hat{Y}$: the productivity of beef cattle (kg/day)

X 1: forage (kg/day)

X 2: the banana stem (kg/day)

X 3: Labor ($/day)

X 4: initial weight (kg)

μ: variable not in the meticulous

Variable forage has a coefficient 0.012 in DBS and 0.020 in outside of DBS. Indicates that the variable is positive toward the influential variables forage productivity beef cattle, where if the livestock consuming forage then will provide a positive influence towards increasing the weight of the body of a cow with a different contribution in both areas. Beef cattle are consuming forage in areas of Riverbanks and Riverbanks provide real influence (t- table) on the confidence level 99 (0.01) against the productivity of the cow.

Banana stem variables have coefficients 0.073 in DBS and DBS 0.029 outside of. This value indicates that the variable positive effect against banana stem variables, where beef cattle productivity if livestock consume the stem of banana then it will give a positive influence towards increasing the weight of the body of a cow with a different contribution in both areas. Beef cattle that consume the stem of banana in DBS gave a real influence (t-hit-table) at a confidence level of 95 (0.05) against the beef productivity, whereas beef cattle that consume a banana stem outside influence Riverbanks Region are not real (t-hit-table) against the productivity of beef cattle in the area. The coefficient is positive, this still indicates that the increasingly high number of banana stems given can still raise the possibility of increasing the productivity of beef cattle.

Labor has a variable coefficient 0.0006 in DBS and 0.001 outside of DBS. This value indicates that the variable is positive toward the influential labor productivity variable beef cattle, where if the wages of Labor issued larger then the amount of forage produced will be more and more work done the maximum so that it will give a positive influence to productivity of cattle although the not-so-real influence against the productivity of beef cattle in both areas. But the magnitude of the wage labor is expended on DBS and DBS exert influence are not real (t-hit-table) to productivity of cows in a second area.

Variable weights of cattle beef have a coefficient of 0.002 in DBS and 0.001 in outside of DBS. This indicates that the variable weights going positive effect against beef cattle productivity variable. The initial weights of the beef cattle which is in the Riverbanks provide real influence (t-hit-table) at a confidence level of 99 (0.01) against the productivity of the cattle, while the initial weight of the cows outside the Riverbanks give Area of influence are not real (t- table) against the productivity of beef cattle in the area.

The value of the constant/*Intercept* on the banks of the river is a registration -0.406 while in the Outer areas of Riverbanks are -0.366. This means that if the free variables forage, banana stem, manpower and initial weights are ignored then the beef cattle in the area On the River will experience a decline in the productivity of the constants of 0.406, while outside the area of 0.366 Riverbanks.

Based on the results of individual partial test above it can be concluded that that the variables forage equally influential real cow to productivity in these two areas of research on the extent of trust 99 (0.01).

The results of the analysis of the factors which affect the productivity of beef cattle.

Productivity can be defined as the ratio between the effectiveness of the achievement of the objectives at the level of a certain quality (output) and the efficiency of the use of resources (inputs). Productivity is a combination of effectiveness and efficiency (and other ', 1998). As for the factors that are thought to affect the productivity of cattle "Kereman" in Aceh Besar Regency was the number of banana stems, forage, labor and weights the early going. Factors is a free variable and the productivity of beef Kereman is variable.

Tabel 3. Average of variable observed

Description	Riverbanks Region	Beyond The Riverbanks Region
	Average	*Average*
Forage (kg/head/day)*	17,93	20,24
Banana stem (kg/head/day) tn	3,29	3,32
Labor (R/day)**	9500	12.300
Weight (kg) **	175,3	160,7

*Description: T-test results **= very significant effect (p0.01),*

= significant (p0 .05), tn= not significant (p0 .05)

Fodder given farmers in the study site is grass and grasses. The awarding of the forage can be either whole or elephant grass and grasses field entirely or a mixture of both grasses. From table 3 its can be seen average forage consumption of beef cattle in the area of Riverbanks is 17.93 kg/day and outside Areas of Riverbanks is 20.24 kg/day, from a t test results obtained that the average forage consumption in both areas is significantly different (p 0.05). The difference in amount forage consumption in these areas influence by the type of grass that is used. Breeders usually provide a grass field organized 25-35 kg/head/day while the elephant grass was given 10-15 kg/head/day, in the Riverbanks plentiful grass type is elephant grass outside while the Riverbanks Region type of grass that many encounter is a grass field. The different types of grass in these two areas that make the average amount of forage consumption in these two areas are different.

The abundance of agricultural byproducts in the study site in the form of banana stems, giving the initiative to the farmers to take advantage of the banana stem become additional feed for livestock. From table 3 above can be seen average consumption of banana stems on the Riverbanks Region for one of cows 3.29 kg/day and outside Areas of Riverbanks 3.32 kg/day, the t test results obtained from that average consumption of bananas stem in these two areas did not significantly different (p 0.05).

Breeder labor used in the study site in general is a labor in the family. The wages of Labor issued in these two areas differ due to acquire grass, ranchers who are outside the area of riverbanks should drove far enough to get it, while the ranchers who were in the area of the riverbanks can get the grass near the location of his enclosure. Average wage labor in the area of Riverbanks is Rp 9.500/day, Average wage labor in outside of Riverbanks Region is Rp. 12.300/ day, from the results of the test t obtained that labor wages in these two areas are very significantly different (P 0.01).

CONCLUSIONS

Based on the results, it can be concluded that the variables that significantly affect the productivity of beef cattle in Riverbanks of Krueng Aceh was banana trees, forage and initial weight feeder, whereas variables that significantly affect productivity outside of Riverbanks Krueng Aceh River is variable of forage.

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