OPTIMIZATION OF BEEF CATTLE FATTENING FARM ON FARMER LEVEL IN CENTRAL JAVA

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ABSTRACT

The aims of this study were to arrange the plan of optimizing utilization of resources to generate the maximum income on beef cattle fattening farm. The study was conducted in five regencies in Central Java, namely Blora, Rembang, Grobogan, Wonogiri and Boyolali and beef cattle fattening farm was standardized as an elementary unit. The study was conducted by survey method, and the samples were determined by multi stage quota sampling. Data were analyzed using linear programming analysis. The results of this study showed that beef cattle fattening farm at farmer level was run traditionally and has not been developed intensively yet. The allocation of beef cattle fattening farm resources in optimal condition can earn the maximum income IDR 9.422.538,70/6,78 month (equal to IDR 1.389.755,00/3,74 head/month), and the cattle breed which ideal to be raised was Simmental – Ongole Grade Crossbred or simmental-peranakan ongole (SPO). Based on the sensitivity analysis, the farmer's income can be increased if the percentage of increasing main product price (the end of weight gain) was greater than the percentage of main input price (feeder cattle).

***Keywords:** optimizing, resources, beef cattle fattening, farmers*

INTRODUCTION

Lean beef is one of the richest sources of protein and contributing to farmers' family income. The meat concumption has increased as well as the national production of beef product, however, the domestic supply has never been able to meet the nation's demand (Mersyah, 2005). Hence, all the stakeholders from government, private sectors,

and community need to put efforts toward food soverignty of beef product through improve farm management, marketing system, product diversification (Bamualim *et al.,* 2008).

The beef cattle farming in Central Java is characterized by inefficient small-scale farms with average 3,49 head/farmers (Prasetyo *et al.,* 2012). In accordance with research from Tawaf dan Kuswaryan (2006), most of the farmers face a number of fundamental problems which include low productivity and most of the farmers have two to four cows in average. It has low level of farm efficiency. The population of beef cattle in Central Java Province has increased approximately 3,17% in 4 years (Dinas Peternakan dan Kesehatan Hewan, 2015). The population of beef cattle from 2011-2015 are 1.937.551 head, 2.052.407 head, 1.500.077 head, 1.592.638 head, dan 1.628.093 head, respectively (Dinas Peternakan dan Kesehatan Hewan, 2015). Beef cattle farming system in Indonesia is dominated by smallholder farming system with two types of farming system (feeder farm system and fattening farm system).

The management condition of small dairy farm in Central Java Province is more or less traditional and it is not the main income for farmers. In addition, the beef cattle farming system in Central Java is characterized by inefficient small-scale farms and poor farming practices. The farm resources have not been used optimally and farmers have not been thinking to bussines oriented (Prasetyo *et al.* (2006). Schimmelpfennig *et al.* (2006) told that the agriculture system faces limited access to resources and low management farming practices. It will give financially effect to farmers' income. Hence, the farmers must act to be able to maximize resources and efforts to improve the quality of live.

The aims of this study were to arrange the plan of optimizing utilization of resources to generate the maximum income on beef cattle fattening farm. The results of this research would like to provide comprehensive information about the potency of fattening farming system especially smallholder farming level in Central Java Province.

METHODOLOGY

The study was conducted in five regencies in Central Java, namely Blora, Rembang, Grobogan, Wonogiri and Boyolali and all five regencies play important role to supply beef product in Central Java Province. Beef cattle fattening farming system was standardized as an elementary unit. Survey method was used in this research. The samples were determined by multi stage quota sampling. In total, there are 165 respondents in this research. The primary data were collected through cross data section and interview method using questionnaire. The secondary data was used to improve data analysis. Data were analyzed through editing, koding, dan tabulating. Moreover, data were analyzed using linear programming analysis and income analysis.

RESULT AND DISCUSSION

Resource optimization analysis is the set of processes and methods to match the available resources with the needs of the farmers in order to maximize income. Farmer' income related with product quantity, price of input and total output of the farming system. Farm income analysis is an important measure of the performance of the farm business by aggregating the total revenue and total cost of production. The aim of resource optimization analysis is to maximize income of the fattening farm system. Two variables was used to calculate data, namely, revenue and cost production. Several indicators have been used such as feeder cattle price, fixed cost, forage cost, fiber cost, work load, value of credit, livestock selling price, and selling price of manure.

Tabel 1. Value of technical coefficient in Resource optimization analysis of fattening farm system

No.	Variables	Value
1.	Feeder cattle price of PO	Rp 6.591.629,00/head
2.	Feeder cattle price of SPO	Rp 7.635.047,20/head
3.	Feeder cattle price of LPO	Rp 8.482.311,20/head
4.	Fixed cost	Rp 117.426,00/head
5.	Forage cost	Rp 306.318,00/ton BK
6.	Fiber coust	Rp 1.867.021,00/ton BK
7.	Work load	Rp 28.699,00/hok
8.	Credit	7%/year
9.	Selling price of PO	Rp 21.660,00/kg
10.	Selling price of SPO	Rp 21.670,00/kg
11.	Selling price of LPO	Rp 21.036,00/kg
12.	Selling price of manure	Rp 299,00/kg

Note: PO : Peranakan Ongole
SPO : cross breed between simmental and PO
LPO : cross breed between limousine and PO

Problems have been faced by the farmers was used as functional constrains equation. The indicators of functional constrains equation are number of cows, total of capital, access to forage, access to fiber, availability of work load, cattle productivity to increase the weight. All variables and indicators had been used to calculate resource optimization analysis as a solution to maximize profit. The result of analysis shows in Table 2.

Based on Table 2, the resource optimization analysis have been calculated that the maximum income was Rp 9.422.538,70/month. The value was higher than actual income of the farmers which is equal to Rp 449.945,23/month. In addition, the farmer income also will get higher than actual income even without calculation of labour, which is equal to Rp 3.604.812,64/month. The value of probability was

22,97%, it was higher than value of credit from government (6 – 7% per).

Tabel 2. Activities in resource optimization analysis of fattening farm system in Central Java Province

Activities		Value (Rupiah)
Production Cost :		
▪ Feeder cattle price of PO	-	-
▪ Feeder cattle price of SPO	3,74 head	28.555.076,53
▪ Feeder cattle price of LPO	-	-
▪ Forage price (BK)	13,60 ton	4.166.717,81
▪ Fiber price (BK)	2,35 ton	4.395.175,93
▪ Work load	136,15 hok	3.907.076,03
Total cost :	-	41.024.046,30
Total revenue :		
▪ Selling price of PO	-	-
▪ Selling price of SPO	1.905,73 kg	50.089.354,11
▪ Selling price of LPO	-	-
▪ Selling price of manure	1.190,81 kg	357.230,89
total cost of production:	-	50.446.585,00
Maximum income :	-	9.422.538,70

The number of cows (the PSO) based on the result of resource optimization analysis was 3,74 head (equal to 4 head of cattle) with 6,78 month/leght of production, meanwhile the PO and the LPO was not seen as basic value of optimal solution. The number of cows was higher than actual result, which was avarage 3,08 head of cattle (with compotition of the PO, the PSO, and the LPO amounted to 0,675 head of cattle, 1,047 head of cattle, 1,363 head of cattle, respectively)

The cows weight was main component in total revenue (1.905,73 kg/3,74 head/leght of production (6,78 month). This value was higher

than actual result (1.448,37 kg/3,08 head/ leght of production (7,82 month) because the SPO was basic value in resource optimization analysis. Meanwhile, actual condition in the field farmers had mixed PO, SPO, or LPO.

Based on the result, the quantity of production factors in optimize condition as well was main product or byproduct were higher than actual condition in the field during data gathering. Based on the comparison, optimal condition reflects product efficiency. Nuraeni dan Purwanta (2006) stated that the succes of farm bussines based on several factors: (1) human resouces, including knowledge, skills, and farm management; (2) natural resources, including availability of forage resources and fiber resources; (3) support dan facility, either from government or private companies.

SUMMARY

The allocation of beef cattle fattening farm resources in optimal condition can earn the maximum income IDR 9.422.538,70/6,78 month (equal to IDR 1.389.755,00/3.74 head/month), and the cattle breed which ideal to be raised was Simmental – Ongole Grade Crossbred or *simmental-peranakan ongole* (SPO).

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