

Strategies for Development of Beef Cattle Farming Based on Innovation Technology and Feeding Program to Meet Self Sufficiency in Meat

¹Romziah, S., ²Hario P.S., ³Tri Bhawono, D.

¹Professor in Department of Animal Husbandry, Faculty of Veterinary Medicine, Airlangga University, Indonesia

²Academic Staff in Department of Veterinary Public Health, Faculty of Veterinary Medicine, Airlangga University, Indonesia

³Academic Staff in Department of Veterinary Clinic, Faculty of Veterinary Medicine Airlangga University, Indonesia
email: romez02@yahoo.com

Abstract- Innovation and technology of feed supply for the beef cattle ration by using soy bean cake, pollard and corn oil, and it's was combined with urea-fibrolite-molasses candy for cattle were significantly ($p < 0.05$) increase the life weight gain of Rambon (Indonesian native beef cattle) as well as the utilization of feed were more efficient. When evaluated of the dressing percentage of the carcass and meat weight, these combination types of beef cattle feed bring a positive prospect for improving the performance of Rambon beef cattle.

Key word- Beef cattle, innovation, technology, feeding, meat.

INTRODUCTION

Rambon cattle is classified a light beef cattle type, the daily weight gain around 200-400 gram/head/day with final body weight ranged about 250-400 kg. Generally, the adult male Rambon cattle have black color of hair, but red color of female Rambon, these characteristic belong to Bali cattle gen specific. Limited research information about improving Rambon cattle performance. Actually many management factors can influence the beef cattle performance such as: selection program, health control, feeding program, animal housing system, biosecurity, sanitation hygiene and professional human resource in the farm. Feeding program include: the properly choose of the feed stuffs, how to proceed of the feed stuffs with some innovation technology and make the ration more palatable, and high on nutrition content that may increase the performance of beef cattle. Because, beef cattle is a ruminant animals which have a multiple stomachs including: rumen, reticulum, omasum and abomasum. When the cattle age above 6 months, the rumen development completely up to 60 % of the total multiple stomach size. Rumen ecosystems were responsible to maintain the number of microflora, micro fauna, rumen pH and temperature, ammonia nitrogen and volatile fatty acid (VFA) in optimum range. The condition of rumen ecosystem can be changed and it depend on the quantity, quality and the balancing between forages and feed supplement. Soybean cake is a by product of soybean oil industry, while pollard is a by product from wheat flour industry. Both of the ingredients as a source of protein and energy resource, respectively. Corn oil is a good source of long chain fatty acid and it beneficial to protect the animals from inflammation case. Urea is common used in ruminant diet, but not more than 3% from the total ration. *An aerobe* microorganism in the rumen capable to utilize urea and converted to ammonia – nitrogen for producing microbial protein to digest fiber matter. Every day the farmer given some silage only to the Rambon Cattle, so it look like the performance of the Rambon cattle is slow in growth.

The silage that composed by farmer include: corn

Type of Feed	DM 60° C, %	DM 105° C, %	CP, %	Fat, %	CF, %	NFE, %	Ash, %
Silage 1	80.8	91.48	7.50	5.81	20.9	47.13	10.1
Concentrate feed 6	90.7	93.79	15.1	6.48	13.5	49.33	9.30
UFMCC 2	87.2	90.97	11.9	21.1	4.43	36.74	16.7
			5	0			5

crop, cassava cob and fermented with a little amount of molasses. Learn about the increasing demand of meat in Indonesia, the meat supply still insufficient. Mostly the beef cattle farming in small scale farm, only a few were provide by large scale beef industry. So, up to now the available beef meat in the market be supplied by imported meat. Therefore, in the research to create some innovation technology by composing some urea, fibrolite

enzyme, and molasses to cattle candy form with round shape about 8 cm of diameter and 1.5 cm in height [7]. Concentrate feed was composed from soybean cake, pollard and corn oil as feed supplement too. The objectives of the research is to observe the effects of supplementation of concentrate feed containing soybean cake, pollard and corn oil with Urea Fibrolite Molasses Cattle Candy on the performance and Carcass figure of Rambon Cattle.

MATERIAL AND METHODS

Nine male Rambon cattle averaging 1.5 to 2 years with body weight about 160 kg were used as experimental animals. Three variations of feed, such as P0: silage only, P1: silage + 1 kg concentrate feed, and P2: silage + 1 kg concentrate feed + 100 g Urea Fibrolite Molasses Cattle Candy (UFMCC) as the treatments variables. The experimental animals were divided into three groups (P0, P1 and P3) with three replications, so the research were designed as Complete Randomized Design (3 x 3 replications). One week adaptation to environment and treatment ration diet were applied in each group. Feed Intake were measure every day, while live weight gain be measured weekly. Finally, at the end of two months trial, three animals were slaughter for carcass analysis to measure the dressing percentage, the weight of meat, bone, total body fat, and measuring meat and bone ratio. Data were analyzed using Analysis Varian (ANOVA) and Duncan's Multiple Range Test method by using SPSS version 13.00.

RESULTS

Table 1, showed the nutrient composition of silage, concentrate feed and urea fibrolite molasses cattle candy. Determination of dry matter of feed based on two type measurements, such as partial dry matter (60°C) and dry matter as dry matter basis (105°C). However, all nutrient data perform based on dry matter as dry matter basis. The protein content of silage rather low, only about 7.50 %, the fat content around 5.81%. Crude fiber content of silage about 20.94 %, it is lower compared to fiber matter of the grasses, and it's commonly about 33 to 34 %. The ash content of silage quite high, it about 10.10 %. The silage is a good source of nitrogen free content, it about 47.13%. Concentrate feed have a good nutrient composition and it was in the Table 1. Nutrient Composition of Animal Feed

DM= Dry Matter; CP= Crude Protein; CF= Crude Fiber; NFE= Nitrogen Free Extract.

UFMCC= Urea Fibrolite Molasses Cattle Candy.

Standard level as well as Indonesian National Standard for beef cattle diet. The concentrate feed containing 15.13 % protein, 6.43 % fat, 13.55 % crude fiber, 49.33 % nitrogen free extract and 9.30 % of ash. Urea fibrolite molasses cattle candy containing 11.95%

crude protein, 21.10 % fat, 4.43 % crude fiber, 36.74 % nitrogen free extract, and 16.75 % ash content. Concentrate feed and UFMCC provide some protein, energy and ash resources as supplemented feed for Rambon cattle in group P1 and P2.

On the starting of the research, no Significant ($p > 0.05$) difference of initial weight of Rambon cattle among treatment groups, and it is range about 173.67 to 177.33 kg. After receiving concentrate and or combination of concentrate feed and urea fibrolite molasses cattle candy feed supplement, there were any significant ($p < 0.05$) different on animal daily gain. The animal daily gain of group P2 was highest ($p < 0.05$), it about 667.00 g/head/day, and followed by group P1 with animal daily gain about 357.00 g/head/day. The animal daily gain of control group (P0) was lower ($p < 0.05$), it only 317.00 g/head/day. These data be shown in Table 2 and figure 1.

Table 2. Mean of Initial and Final Weight, Animal Daily Gain of Rambon Cattle Based on the Treatment Group

Parameter	Treatment Group		
	P0	P1	P2
Initial weight (kg)	176.00	177.33	173.67
Final Weight (kg)	186.00	189.67	201.67
Animal Daily Gain (g/head/day)	317.00 ^c	357.00 ^b	667.00 ^a

^{a,b,c} Superscript at the same row were significantly ($p < 0.05$) different.

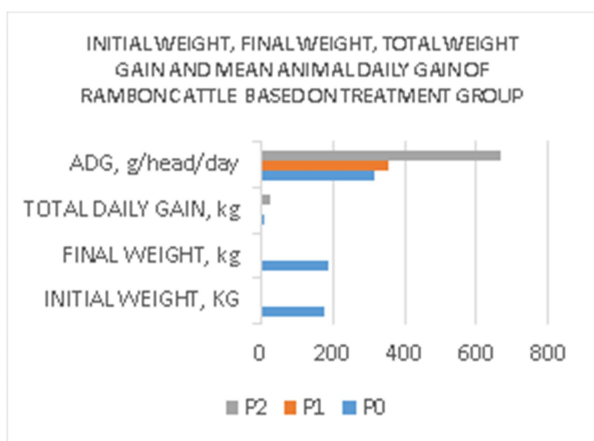


Figure 1. Profile of Animal weight, Daily and Total Gain Based on Treatment Group.

Table 3, showed the mean total dry matter feed intake, concentrate and urea fibrolite molasses cattle candy, and feed conversion by Rambon cattle. Total dry matter intake were significantly ($p < 0.05$) different among treatment groups. Because any concentrate and or UFMCC supplementation, so the total dry matter feed intake by Rambon cattle was higher ($p < 0.05$) in

Table 3. Mean of Feed Intake and Feed Conversion by Rambon Cattle Based on Treatment Group

Parameter	P0	P1	P2
Total DM Intake, kg.	9.38 ^b	8.33 ^c	10.54 ^a
Silage DM Intake (kg/head/day)	9.38	7.33	9.44
Concentrate DM Intake (kg/head/day)	0	1	1
UFMCC DM Intake (g/head/day)	0	0	100
Feed Conversion	39.37 ^a	26.73 ^b	15.81 ^c

^{a,b,c} Superscript at the same row were significantly ($p < 0.05$) different.

Group P2 (10.54 kg), and followed by group P0 (9.38 kg). However, dry matter feed intake of group P1 was lower ($p < 0.05$) compared to other groups. Feed conversion decreased significantly ($p < 0.05$) when Rambon cattle received concentrate and or combination with urea fibrolite molasses cattle candy in their ration diet. The feed conversion was higher in control group

(P0), it was about 39.37, then followed by group P1 (26.73), and the lower is group P2 (15.81).

Data of dressing percentage, meat, bone, and body fat weight, meat to bone ratio of Rambon cattle were perform in Table 4. Dressing percentage of Rambon cattle range about 45.45 to 49.37 %. The weight of meat Rambon cattle in group P0 about 41.4 kg, in P1 about 53.2 kg, and in group P2 about 66 kg. Weight of bone about 22 kg, 24 kg and 25.2 kg in group P0, P1 and P2, respectively. Also body fat weight and meat to bone ratio slightly increase when Rambon cattle received both supplemented feed. Weight of body fat range about 0.6 to 2.4 kg, while meat to bone ratio ranged about 1.88: 1, 2.22:1, and 2.62:1 in P0, P1 and P2, respectively.

Table 4. Dressing Percentage, Weight of Meat, Bone, Body Fat and Meat/Bone Ratio In Rambon Cattle Based on Treatment Group

Parameter	Treatment Group		
	P0	P1	P2
Dressing percentage, %	45.45	48.7	49.37
Meat weight, (kg)	41.4	53.2	66
Bone weight, (kg)	22	24	25.2
Body fat weight, (kg)	0.6	0.8	2.4
Meat to bone ratio (Meat/bone)	1.88:1	2.22:1	2.62:1

DISCUSSION

Protein content of silage which was provided by the farmer was too low, it is only 7.50 % and its categories a critical value for ruminant feeding. Just why to meet nutrient requirement by Rambon cattle for producing 1kg meat in group P0 need a large amount of feed dry matter intake that performed in highest feed conversion. However, Rambon cattle in group P1 and P2 have a small values of feed conversion compared to control group. It means, when beef cattle received concentrate containing soybean cake, pollard and corn oil and or combined with urea fibrolite molasses cattle candy supplementation will showed a high performance on animal daily gain, feed consumption and conversion. Also, these feed supplement given more effectively and efficiently for beef cattle production. Animal daily gain rise up to 657 g/head/day and the level was higher compare to the common average of daily gain on Rambon cattle with range about 200 to 400 g/head/day. Carcass evaluation in the research can be used a model of the utilization of concentrate containing soybean cake, pollard and corn oil and or combined with urea fibrolite molasses cattle candy supplementation for increasing level of dressing percentage, meat, bone, and body fat weight, and also ratio meat to bone.

CONCLUSION

1. Nutrient composition of concentrate feed containing soybean cake, pollard and corn oil and urea fibrolite molasses cattle candy (UFMCC) were followed the Indonesian National Standard for beef cattle feed.
2. Supplementation of concentrate feed containing soybean cake, pollard and corn oil and urea fibrolite molasses cattle candy (UFMCC) were potential for increasing performance of Rambon beef cattle by effective and efficiently.
3. Supplementation of concentrate feed containing soybean cake, pollard and corn oil and urea fibrolite molasses cattle candy (UFMCC) were potential for increasing carcass profile of Rambon beef cattle.

RECOMMENDATION

Concentrate feed containing soybean cake, pollard and corn oil and urea fibrolite molasses cattle candy (UFMCC) are very useful for beef cattle supplementation feed with high performance be achieved it to meet self-sufficient meat in Indonesia.

ACKNOWLEDGMENT

The authors would like to say thank you to Rector of Airlangga University for supporting the research grand, and also to Mr. Heryo, Drh. From PT. Indo Berkah, Probolinggo for facilitated Rambon cattle and animal housing.

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