SURGE FEEDING FOR MAINTAINING CRITICAL COW BODY WEIGHT AFTER CALVING, AT VILLAGE LEVEL

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ABSTRACT

Maintaining Cow's critical bodyweight after calving is crucial for better reproductive performance. A village research on surge feeding by supplementing tree legume leaves to pregnant cow's feed was conducted at lowland in Pasuruan and up-land in Malang. Sixty farmers were randomly allotted in each location as collaborators. Tree legume leaves were fed to cow just after calving up to 3 months as much as 3.50 percent of body weight. The result shows that at lowland during 3 months observation the control group lost 40.95 kg per head while surge feeding group lost only 18.00 kg per head. At upland location, the control group lost 28.00 kg per head and surge feeding group lost 20.70 kg per head. The fact shows that the difference of body weight loss was greater at lowland than upland. This means that surge feeding tree legume leaves produced greater impact at lowland. Reproductive performance was better for surge feeding group as indicated by average day of first estrus post partum. At lowland and upland the first estrus post partum for control group was 101.42 days and 111.09 days after calving respectively. While for surge feeding it were 81 days and 63.58 days after calving respectively. An economic analysis showed that extra return could be generated for surge feeding.

Key words : Surge feeding, Cow's reproduction, Extra return.

INTRODUCTION

In Indonesia to day, 3 vertically related beef industries have developed. They are the cow-calf, feedlot and beef processing industries. Strong demand for steer feeder of feedlot or fattening industry, has increased steer feeder importation from Australia and other exporting countries (Anonimous, 1996). To strengthen cow-calf industry that produces calf and mainly in the hand of small traditional farmers requires improvement in reproductive and productive capacity of cow Hardjosubroto *et al*, 1980, Suhartoyo, 1991). The problem of cow's body weight loss after calving and milking is related to late the first estrus post partum, hence longer calving interval (Winugroho and Teleni, 1995). The improvement can be carried out by improving farmer's resource base which optimizing the utilization of low opportunity cost resources such as family labour, by products, forage and tree legumes (Sabrani and Saefuddin.1993).

This paper is directed to present the result of a cow reproduction and nutrition research at Grati (East Java) at village level where surge feeding technology was tried to improve cow's reproductivity and farmer's income.

MATERIAL AND METHOD

Collaborative work with village studies was developed to conduct monitoring activities in cow surge feeding research at village levels in lowland and up-land conditions. The total households in lowland and up-land locations kept cattle were 426 and 211 respectively. Of these households a sample of 60 household collaborators were randomly selected in each location and another 60 samples as control.

Tree legume leaves were given to pregnant cow about 3.50% of cow's body weight. The tree legume leaves were fed right after calving up to 3 months after calving

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where calf was weaned. Data on body weight after calving, 3 months after, price of cattle per liveweight and price of calf of 3 months of age was collected.

To measure the economic impact of surge feeding on farmer's income, model of extra return based on partial budgeting technique was used. The equation of extra return is as the following. If aR1 is defined as the extra returns from breeding cow, then αR1 may be estimated by aa partial budgeting technique.

$$aR_1 = (W_s - W_c) P_1 - QP_2 - E + (P_s \frac{365}{C.1_s} - Pc \frac{365}{C.1_c})$$

αR = extra return from a breeding cow up to weaning (3 months after calving).

Ws = extra weight gain of cow in surge feeding group just after calving and 3 month after.

Wc = same as above for control group.

P1 = price per kg body live weight at farm gate.

Q = total quantity (kg) of tree legume leaves given during experiment (last 1 month of pregnancy up to 3 months after calving).

P2 = price per kg tree legumes leaves.

E = extra labour cost for surge feeding.

Ps = price of calf per head at weaning age (3 months) for surge feeding at farm level.

Pc = same as above for control group.

C1 = calving internal for surge feeding (C.Is) and control (C.Ic).

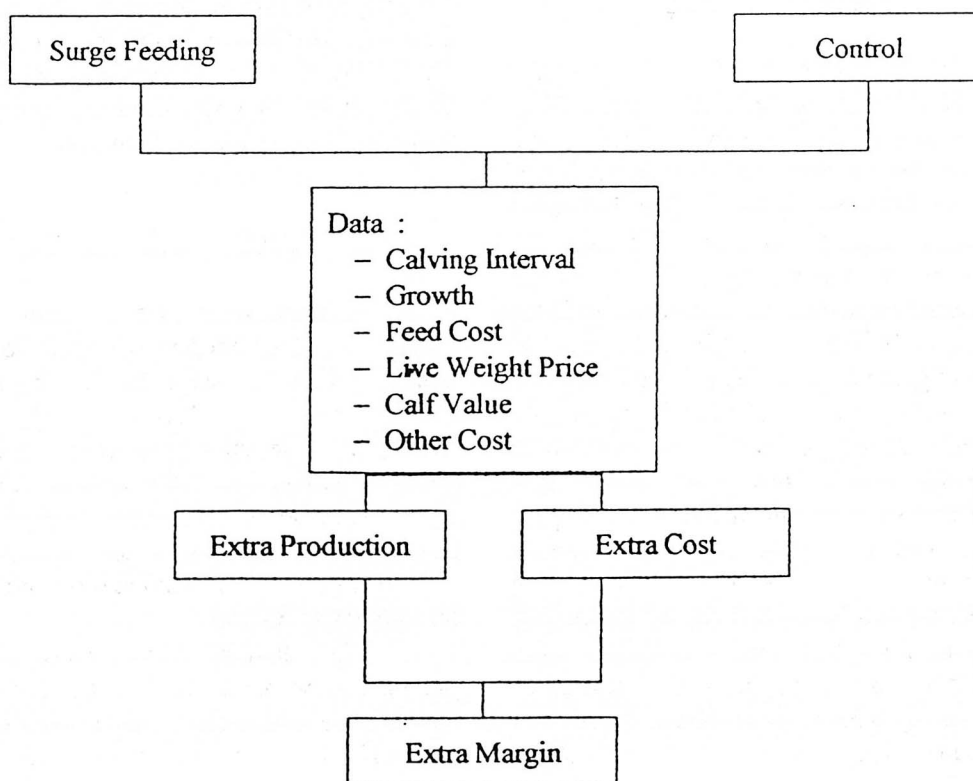Figure 1 shows the systematic steps in getting the extra return

Figure 1. Model for extra margin analysis

Table 1. Cow's production parameters under village condition.

Parameter	Low Land		Up Land	
	Surge feeding	Control	Surge feeding	Control
Cow initial liveweight (kg)	314.29	283.75	279.25	301.35
Live weight change during observation (3 months after pasturation) (day)	-18.00	-40.95	-20.70	-28.80
Calving interval (day)	393.34	423.16	377.31	429.32
Average day of first estrus post partum (day)	85.95	111.77	66.55	117.92
Tree legumes leaves supplement per day (kg/cow)	11.00	-	8.80	-
Cow price (Rp/kg/liveweight)	3.900	3.900	3.600	3.600
Calf price (Rp/head)	600.000	500.000	560.000	500.000

RESULT AND DISCUSSION

Table 1 is the summary table that presents some reproductive performance of cows under village condition in lowland and upland site. In terms of bodyweight from calving to 3 month after calving, the average body weight loss was higher for control group. The difference between body weight loss at lowland and upland, it was greater at lowland. This fact shows that the surge feeding has greater impact on body weight loss at lowland.

Based on calving interval, the result was longer for surge feeding group at both locations. But from first estrus post partum point of view the surge feeding group was faster.

This contradictive result may be due to the unadequate breeding bull for the surge feeding cows.S

Based on those reproductive parameters the financial impact of the surge feeding technology on extra return now can be calculated.

1. At lowland site.

δR = (-18.00+40.95).Rp 3,900-990.Rp 40+{Rp 600,000.(365/393.34-Rp 500,000.(365/423.16)}
δR = Rp 175,396.27

2. At upland site

δR = (-20.70+28.80).Rp 3,600-792.Rp 40+{Rp 560,000.(365/377.31)-Rp 500,000.(365/429.32)}
δR = Rp 114,118.77

The result showed that the impact of surge feeding was greater at lowland site than those at upland. The net extra return for farmer's labour at lowland was Rp. 175,396.27, while at upland it was Rp. 114,118.77 per cows.

At lowland site the price of tree legume can be tolerated up to Rp. 217,17 per kg, while at upland it was up to Rp. 114.09 to produce zero extra return or no impact on income.

CONCLUSION

Under village environment and management, surge feeding showed a significant extra return for farmer's labour and management. Therefore by maintaining or a small increase in cow bodyweight has an economic impact on cow reproduction and calf body growth. By establishing tree legume bank as fences around farmer's house, along land boundary, as shading in tree crops will enrich the synergistic farming system that sustains and stabilizes land use and environment. This complexity of the system satisfies farmer's

needs and sustainable traditional farming requirement.

The surge feeding and the bank establishment will support farmer's multiple objectives related to income, employment and adjustment to risk. For further tree legume development it requires policy to improve resource management internal to farming system.

ACKNOWLEDGEMENTS

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