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THE DYNAMICS OF BEEF CATTLE FATTENING IN WEST TIMOR

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Abstract

The improvement made in a village used to practice fattening steers for commercial cattle through the introduction of technologies including: (i) The introduction of communal (group) raising system, keeping animals in a communal housing with individual stalls. Each group may consist of 20-30 animals, which was own by a group of farmers. Any farmer member may care for 1-3 animals in each period; (ii) The improvement of feed and feeding standard by introducing 60% grasses to 40% legumes ration; (iii) The provision of sites to collect the cattle dung for organic fertilizer (manure); and (iv) Utilizing the manure for vegetable backyard farming and other crops. The results of the research carried out during 1999/2000–2001 were: (i) Nine lots of fattening period were carried for 4-6 months in each period, involved 6-11 groups of farmers keeping 104-256 steers in each period; (ii) The total numbers of cattle involved during the nine periods of fattening were 1,277 heads owned by 156 farmers, worth of Rp. 2,035,614,082; (iii) The average growth rate of the fattening cattle in the research was higher than the growth rate of cattle raised traditionally by the local farmers (0.7 kg/head/day vs. 0.3 kg/head/day); (iv) The amount of manure produced was 500-600 kg/head/period, contributing significant value for backyard farming of other crops; (v) The development of this program was expected to enhance the income and welfare of the farmers; (vi) The sustainability of this fattening program in the long term will guarantee an integrated farming system at village level; and (vii) The impact of the activities has spread over to other nearby villages, even to other districts in East Nusa Tenggara.

Introduction

The region of Nusa Tenggara is characterised by semi-arid climatic condition with low rainfall (less than 1,500 mm/year) and long dry season (8-9 months/year). These phenomena provide a vast savannah area suitable for grazing animal with low cost and cheap labour. Therefore, livestock is a major farmer's income and contributing some 8-12% of the region's income.

The predominant beef cattle in the region are Bali cattle, which were introduced into the Timor Island in the early 1915. In 1980, the cattle population in this region has increased rapidly, about 600.000 head (*Anon.*, 1999) exporting some 60,000–

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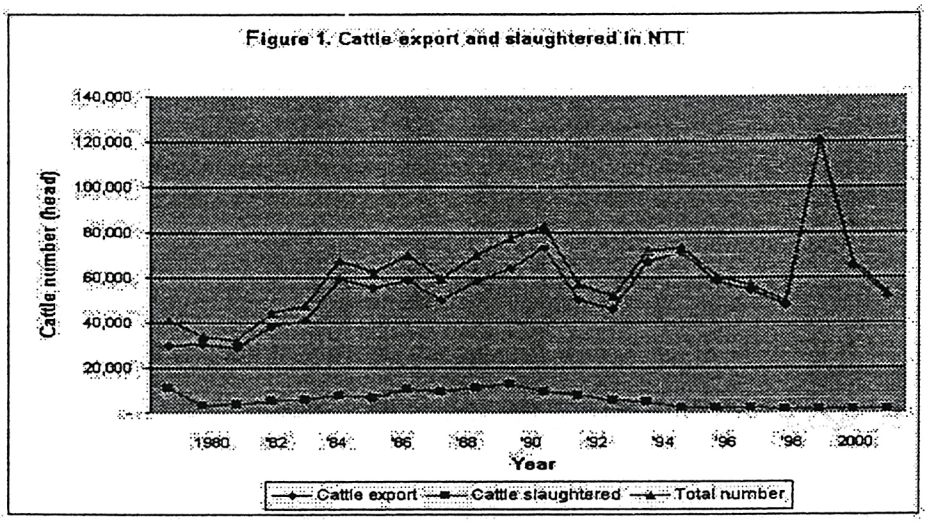
80,000 heads of cattle to the other islands in Indonesia each year. This becomes a very significant role to the economic development of the region and primarily to the welfare of the rural farmers.



In general, farmers graze their livestock on the communal grazing (Nulik and Bamualim, 1998) with very low means of livestock management control. In this system, most cattle are grazed and herded during the day and yarded in pen near the house at night. Some farmers leave their cattle graze freely and eventually mustering them for sale or other purposes. This husbandry practice made it difficult to record and estimates the real cattle population in the area.

Under such condition, cattle growth is relatively low, following the fluctuation of feed supply through the seasonal condition of the year. The cattle growth rapidly during wet season when the grasses are abundant and the growth of animals decrease dramatically in the drought season, due to lack of quantity and quality of feed supply (Wirdahayati, 1994; Wirdahayati *et al* 1994; 1998). Therefore, to fatten the cattle, most farmers practice a hand-feeding system by tightening the young steer (1–1.5 years old) near the house for 2-3 years before sent for slaughter, locally known as *paron* system. The common basal feed given is *lamtoro* leaf (*Leucaena leucocepahala*) with average growth rates of only 0.3 kg/hd/day. Most of the cattle sent for export from the region come from such fattening system. The total amount of the cattle slaughtered and exported from Timor, is shown in Figure 1. It indicates a rapid increase of the total export of cattle was reached in 1985, then steady up to year 2000.

The Assessment Institute of Agriculture Technology in West Timor (BPTP-NTT) has conducted some trials to improve cattle productivity, particularly to

increase growth rates through the improvement in management and feeding system. The results the trials on utilizing the local feed stuffs has been shown by Bamualim *et al.* (1990; 1993); Wirdahayati *et al*, (1994, 1997; 1998); Wirdahayati and Kali Taek, (1993).

The Institute has repackaged an improved technology in order to improve the existing local cattle fattening system. The objective of this trial was to design a Livestock Base Farming System towards the development of agribusiness in the rural area as a means of integrated farming activities. The impact of this activity is expected to be spread over the area with similar agro-ecosystem.

Materials and Methods

The package was mainly designed towards the improvement in management and feeding system to enhance growth rates of cattle and shortening the fattening period. It also introduced how to encourage farmers to utilize animal dung as manure/organic fertilizer crops and backyard farming. The cooperative farmers were guided to acknowledge the improved technology package in few aspects described as follows:

- Introducing communal housing (group pen),
- Each group may consist of 20-50 individual stalls, as one farmer may keep 2-3 head of cattle,
- Improving feeding ratio, 60% grasses : 40% legumes,
- Introducing good quality and balance feeds,
- Providing holes/place for collecting cattle dung, for manure,
- Introducing the use of manure for crops and backyard farming (vegetable garden),
- Empowering the farmers group through the finance and marketing support from related institutions (Village Cooperative Units, Rural Banks, Private Company, Local Government).

Results and Discussion

Fattening Program in Amarasi District

The assessment of fattening program was conducted in Amarasi, West Timor during 1998–2001 involving 1,277 head of cattle owned by 156 farmers for 9 periods is presented in Table 1.

Recommended technology on communal system and improved feeding (60% grasses: 40% legumes and other stuffs) increased growth rates and reducing periods of fattening (3-4 months) before sale Initial weight seemed to influence the growth rates, steers with lower initial weight need longer time to adapt and performed lower growth rates During the wet season cattle grew better than in the dry season.

Table 1.Growth of cattle assessed in a few groups in nine periods in 1999-2001

Parameters	Periods								
	1	2	3	4	5	6	7	8	9
Cattle number (head)	169	158	171	178	104	246	92	85	74
Groups number	11	10	9	7	6	6	6	6	6
Fattening period (day)	90	70	70	84	57	55	45	75	70
Initial weight (kg)	204	204	192	183	194	186	209	182	195
Finishing weight (kg)	261	242	237	246	228	217	227	235	239
Growth (kg/hd/day)	0.65	0.68	0.67	0.75	0.59	0.56	0.62	0.71	0.62

Table 2.Data on cattle sale during the assessed fattening program in West Timor

Year/Period	Groups	Total cattle sold (heads)	Price (Rp)
1. July 1998	8	114	217,845,400.00
2. October 1998	8	135	209,539,400.00
3. March 1999	8	124	182,758,900.00
4. June 1999	8	126	198,471,200.00
5. September 1999	8	95	142,549,800.00
6. March 2000	8	72	123,117,600.00
7. September 2000	8	78	148,064,700.00
8. December 2000	8	71	130,001,600.00
9. March 2001	8	256	435,300,000.00
10. July/August 2001	6	72	141,139,782.00
11. Sept/August 2001	6	46	85,924,300.00
12. November 2001	6	10	20,901,400.00
Total sale		1,199	2,035,614,082.00

Marketing

During the nine fattening periods, the finished steers were sold in groups at 12 periods of sale (Table 2). The selling price based on the current market information. Unfinished steers might join the next lots for further fattening until the required weight for sale is reached in the past, cattle used to be sold by individual farmer to based on the estimation of bodyweight by the local trader. In some occasion, the payment was not in cash and may take a few months to be completed. Therefore, under this condition, farmers were on the lower bargaining position.

The main role of the institute in this matter was to facilitate a fair marketing system for the farmers as well as the traders. Most farmers sold their cattle as the initial weight standard was reached at 200–224 kg (35%), and some at 250-274 kg, with only a few farmers sold their beast with bodyweight above 275 kg (Table 3).

Table 3.Number of cattle and standard of bodyweight sold in Amarasi District -West Timor

Period	Bodyweight Classification (kg)							
	200-224	225-249	250-274	275-299	300-324	325-249	350-374	375-399
1	11	21	24	22	20	10	4	2
2	35	38	34	17	3	6	1	1
3	56	41	17	6	4	-	-	-
4	43	35	27	14	5	1	-	1
5	53	28	5	3	-	2	1	3
6	34	20	12	4	2	-	-	-
7	22	28	16	7	4	-	1	-
8	119	51	47	33	4	2		
9	29	23	11	5	3	-	-	-
10	25	33	11	3	-	-	-	-
11	21	18	5	1	-	-	-	-
12	4	6	-	-	-	-	-	-
Total (hd)	452	299	209	115	45	21	7	7
(%)	47.3	24.9	17.4	9.59	3.75	1.75	0.6	0.6
Grand total								1,199 hd 100 %

Periods: 1 = live weight (LW) 200-224 kg; 2 = LW 225-249 kg; 3 = LW 250-274 kg; 4 = LW 275-299 kg; 5 = LW 300-324 kg; 6 = LW 325-349 kg; 7 = LW 350-374 kg; 8 = LW 375-399 kg.

Farm Economic Analysis

The economic analysis indicated that the assessed communal fattening program is more beneficial compared to the traditional system as shown in a better income of Rp 1,008,700.00 with the benefits of Rp. 376,200.00 given B/C ratio 1.59. In the first period (April-June 1999) the gross income of traditional fattening system was Rp 717,600.00 with benefits of around Rp 100,000.00/head/period; given B/C ratio of 1.16.

Other benefits obtained by the farmers in this program were organic fertilizer from the manure used for fertilizing their crops or sold to other farmers. This was not valued by the farmers used traditional fattening system.

Feeding

Feeding improvement by introducing 60% grasses and 40% legumes in this program increased growth rate up to 0.5-0.7 kg/head/day and the length of fattening period were only 3-6 months. The amount of fresh feed offered each day at least 10% of the cattle live weight, providing the dry matter requirement at least 2-3 % of cattle live weight. Feeding practice normally used by farmers was based on one type of feeding either grasses or *lamtoro* with banana stems. The purpose of using banana

stem is to meet the need for water.

Although not all farmers in the program adopted the introduced feeding ratio perfectly, monitoring records on one of the groups showing that farmers in this group have been feeding in average 10.4 kg legumes, 8.33 kg grasses, 1.08 kg of other local feed stuffs and 2.11 kg of palm pith to each animal each day. Most of them also used commercial "probiotic" to improve the digestion process of the animal.

Feed Supply and Feed Conservation

Most farmers involved in the program grew tree legumes such as *leucaena, sesbania* and *gliricidia* in their compound or as live fencing to meet the feed supply each farmer is encouraged to grow at least 200 legume trees for each animal they keep Drought tolerant grasses such as Gamba grasses and adapted herbaceous legume were also introduced to the farmers. Feed conservation by means of hay making using the abundant grasses after the wet season was introduced to help solving the problem of lack of feed supply during the drought.

Collection of Manure for Organic Fertilizer

In the past, farmers were not fully aware of the value of the manure. This program introduced the process of preparing organic fertilizer to the women. Then that group of women were guided in vegetable farming. The yield of their vegetable farm contributed significantly to the family income as well as to the improvement of family diets

Partnership Development

A success fattening program may be an interest to some people to help the farmers in a partnership means whish is agreed under mutual benefit. This program has also been facilitated by the institute. After the first fattening period (April-July 1998), farmers responded well and very enthusiastic with the program. The members of the group expanded soon. However, most farmers facing the crucial constraint in the procurement of initial stock for fattening. The institute (BPTP) also helped farmers to find partnership who could supply yearling stocks for fattening applying a fair share with the farmers. These partners are mostly livestock traders and exporters who also agreed to buy the stock at the end of fattening period. In the second and third period, about 50% of the stocks for fattening were supplied by the traders through an agreement with the farmers either giving a certain amount of payment based on the increasing body weight during fattening or simply divided the bodyweight gained through the fattening period between the farmers and the stock supplier. A few other mutual works between farmers and the supplier have been applied under mutual agreement that yield a fair income for both sides.

Conclusion

A few conclusions of the assessment research are as follows:

- Improving feeding system has improved the growth rate and shortening the period of raising stock.
- Collective fattening program run through communal groups have proven to be more beneficial, in terms of buying farming inputs or selling, and in terms of agribusiness input and loan needs.
- Collecting manure becomes a potential part of an organic farming and also as the basic for an integrated farming in the rural area.
- The acceleration of fattening program through reducing the length of fattening period resulting a shortage of yearling stocks supply in the area. Ideally, the fattening program should be supported by a breeding program to provide a continuously supply of yearling stock for the fattening farm. Unfortunately, farmers were more interested in fattening rather than breeding farm because of quick return in fattening business in the short run, but in the long run, however, breeding farm is very important and more sustainable.
- Some farmers were not fully committed to the sustainability of their fattening progress, as they spent most of the income after sale without saving part of the money for the next activity. Their activity will depend on the help from outside such as partnership or government help. Therefore, there is a need to make farmers aware on how to sustain their activity through an intensive guidance.

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