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Profitability and Viability of Cattle Fattening for Small Farm Households

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ABSTRACT

The main objective of this study is to assess a profitability and viability of cattle fattening for small farmers through the on-farm trials conducted in the two selected villages in Nakornpathom province. The study results showed the significant contribution of cattle fattening operation as supplemental income source. On the average, the net incomes generated by the fattening of a pair of younger steers and a pair of older steers were 6,652 and 7,896 baht per family, respectively. In addition, introduction of cattle fattening scheme was able to increase the employment for the farm household members, especially the underemployed family members like housewife and old persons. The feasibility and success of the beef cattle fattening for small farmers was dependent on that there had to be an agency or organization to assist and supervise the farmers in such management as acquiring investment fund, calves to be fattened, the concentrate for fattening as well as marketing services. This means that a development of farmers' organization should be established in order to provide assistant needs and strengthen their group management.

Key words : cattle fattening, profitability, small farmers.

INTRODUCTION

Cattle raising in Thailand was normally found as a part of farming in rural area. Cattle were raised as draft animals and regarded as a long-term saving as well as security of farmers in case of crop failure. Farmers intended to sell their cattle when they were retired or they needed cash. During the past decade the production of cattle was hardly increased. A major cause for this stagnation in cattle and meat production was the decrease in use of cattle by many farmers as draft animal. With an increasing demand for modern machanization in farming sector, the role of cattle as draft animal was decreasing.This caused the price of cattle and beef to increase steadily due to its increased demand. In addition,the trend of imported beef to serve domestic demand for high quality beef was gone up every year.

A cattle fattening scheme is considered as a potential mean to increase supply of cattle and good quality beef to serve domestic market as it was believed that the fattening of cattle could be introduced to and adopted by Thai farmers, especially smallholder farmers (Laisiricul, 1989; Prucsari, Priebprom and Srichan, 1987). However, introduction and promotion of cattle fattening scheme to smallholder farmers could not be effectively done without analysis and assessment of technical and economic viability of cattle fattening enterprise as well as perception and responsiveness of smallholder farmers in the target area (Saw-Ow, 1987 ; Priebprom, et al., 1989).

Thus, it was necessary to conduct a systematic research regarding cattle fattening operation through an on-farm trial to gain more understanding of the viability of the cattle fattening operation.

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The general objective of this study was to find out if farmers' income can be increased through the integration of cattle fattening enterprise as either complement or partial substitute for existing crops and backyard livestock production of smallholder farmers in the target areas. More specifically,the objectives of this study were as follows.

1. To estimate cost and return of fattening of American Brahman crossbred steers at a farm level.

2. To assess the effects of on-farm cattle fattening trials on farm outputs, employment and income of farm households participating in the trails.

3. To assess farm household acceptance of cattle fattening operation.

PROCEDURE AND METHODS

To achieve the objectives mentioned above, an on-farm trail of cattle fattening was designed and conducted in two selected villages in Nakornpathom Province. These chosen villages were Villages 2 of Thoongbua sub-district and Village 5 of Donkhoy sub-district of Kamphaengsaen District.There were 15 farm households chosen to participate in the on-farm trial. As cattle fattening on backyard requires a different management scheme compared to the traditional practice in raising native cattle,the participating farmers were trained on how to grow grasses,animal husbandry practices such as feeding, disease control and caring of cattle before the trial. When the on-farm experiment began, each farm household was recommended to prepare at least 0.5 rai or 0.2 acre of Guinea grass which was used as roughage to feed the cattle. The participating farm households were also supervised to construct a simple cattle shed with its space, drinking vessel, feed vessel.

The cattle to be fattened were man Nattive X Brahman crossbred with 50-70% of the Brahman's blood level. These cattle were divided into two groups according to their size and age. The smaller was one and a half-year-old steer weighing 180-200 kgs and the larger was two-year-old steer weighing 250-280 kgs. The cattle were castrated, vaccinated and dewormed. In addition, growth-accelerating hormone was implanted. Afterward, a pair of steers were given to each participating farm households. Besides fresh grass,concentrate consisting of 14% of protein and 16% of total digestible nutrients was fed to the cattle.Duration of the farm trail was from May 1987 to May 1988.

RESULTS

1. General Characteristics of Participating Farm Households

The main occupation of the participating farm households was sugar cane and rice farming. The average number of person per family of the farm households was 6.2 of which 4.7 persons (or 75%) were in the labor force. The average land holding was 25.22 rai per household. Regarding land use, sugar cane, was the major crop for 10 farm household while rice was the major crop for 5 farm households. The average income of all participating farm households was 50,561 baht per household per year. Crop production was the most important source of household income accounting for 82.2 percent of the total household income. Wage and income from livestock activities also provided 10 and 5.6 percent of family income.The remaining 2.2 percent of household income was cash received from friends, relatives and other persons and earning from household assets. The net family income of participating farm households which was the difference between total family income and total family expenditure was about 2,086 baht per household per year.

2. Cost and Return of the Fattening of Feeder Steers

The costs incurring from cattle fattening were classified into two main components as operating expenses and fixed expenses. Operating expenses of cattle fattening comprised various variable costs such as cost of feeder cattle, feed (concentrate and roughage), hormone, rope, deworming, shipping of the cattle, unpaid family labour and opportunity cost of variable expenses.

Fixed expenses covered depreciation of and interest charge on investment of animal pen (roof, cement floor, feed vessel, and water container and insect net) and durable tools and equipment used in

cattle fattening operation.These fixed costs were incurred due to farmers who participated in on-farm cattle fattening had to invest on animal pen construction by their own money. However, farmers' pen construction normally extended from their houses by using material available in the village. Thus the investment cost of pen construction was relatively low ranging from 1,427 baht to 2,879 baht.

Table 1 shows average cost and return of cattle fattening enterprise averaging of all 15 participating farmers from both villages. Cost and return of cattle fattening operation averaged 9,239 and 12,864 baht per head, respectively. Thus, on the average of all 15 participating farmers, the profit obtained from cattle fattening was 3,625 baht per head.

Regarding the composition of the cost incurring from cattle fattening,it was observed that feeder cattle was the major cost item accounting for almost 45 percent of the total cost (Table 1). Moreover, both concentrate and roughage were the next major cost items as they accounted for 28 and 11 percent of the total cost.

When feeder steers were classified by age, it was clearly seen that cost and return of younger and older steers fattening were different (Table 1). On the average, the total cost of fattening of the older steers was higher than that of the younger steers i.e. 9,899 and 8,620 baht per head, respectively. However,due to higher final weight, the return obtained from the fattening of older steer was higher than that of the younger steer, i.e. 13,847 and 11,946 baht per head, respectively. Therefore, the profit earned from the fattening of the older steer (3,948 baht per head) was higher than that of the younger steers (3,326 baht per head) as it can be seen from Table 1. This implies that fattening of older steer was more favourable than younger steer in terms of profit earning.

3. Effects of Cattle Fattening Operation

Even cattle cattle fattening was induced to generate a supplemental income to sugar cane farmers and rice farmers. The consequences of cattle fattening enterprise on the current farm production and other household activities were also concerned and traced out. Since the operation of cattle fattening may need to draw some farm household resources from the current crop and livestock production as well as the other households activities such as off farm work.

3.1 Effect On-Farm Output and Off-farm Work

To accomplish the cattle fattening enterprise, each participating farmers had to cultivated Guinea grass for at least 0.5 rai (or 0.2 acre)to feed cattle.However, it was observed that most participating farmers avoided to allocate their major crop land to grass cultivation. Only space of land nearby farmers' houses were cultivated to the grass production averaging for 0.6 rai per farm household. This area was used to be devoted for backyard vegetable production for household consumption. Common types of vegetable planted were chili, squash, cabbage etc. The imputed value of these vegetable production obtained from this piece of land was about 295 baht per household per year. This means that the participating farmers had to trade off this value of vegetable for the grass cultivation and it should be deducted from the total revenue obtained from cattle fattening. Guinea grass cultivation of the participating farmers did not affect the production of their major crops like sugar cane and rice.

Apart from effect of cattle fattening on vegetable production, other effects,the impact of raising a pair of feeder steers on the current production and activities done by households was also investigated. It was found that the space required for pen for a pair of steers was a part of the land adjoined the farmers' house. Thus, the land used for the pen was not taken away from the major crop land. However, for the farmers who were raising pigs, adoption of cattle fattening seemed to compete with pig raising in using of the space (pen) and family labour. There were 2 out of 15 participating farmers reported that they stopped raising pigs when they participated in the on-farm cattle fattening experiment. Thus, introduction of cattle fattening enterprise world reduce the production of a backyard livestock activity such as pig in this case.

Another households' activity affected by the cattle fattening enterprise was off-farm work done by some family members who involved in cattle fattening operation. There were 4 out of 15 participating farm households reported that one or two members of their families had to stop doing off-farm

Table 1 Cost and return of fattenings of younger and older feeder steers.

	Younger Steer		Older Steer		Average	
Cost (baht/head)						
Operating Cost:						
Feeder cattle	3,342	(38.8)	5,007	(50.6)	4,146	(44.9)
Concentrate feed	2,577	(29.9)	2,678	(27.0)	2,626	(28.4)
Roughage	1,145	(13.2)	900	(9.1)	1,027	(11.1)
Hormone	70	(0.8)	70	(0.7)	70	(0.8)
Rope	7	(0.1)	7	(0.1)	7	(0.1)
Deworming	43	(0.5)	43	(0.4)	43	(0.4)
Labor	784	(9.1)	605	(6.1)	698	(7.6)
Shipping	50	(0.6)	50	(0.5)	50	(0.5)
Interest on variable cost	476	(5.5)	431	(4.4)	454	(4.9)
Total operating cost	8,494	(98.5)	9,791	(98.9)	9,121	(98.7)
Fixed Cost	126	(1.5)	108	(1.1)	118	(1.3)
Total Cost	8,620	(100.0)	9,899	(100.0)	9,239	(100.0)
Revenue (baht/head):						
Fattened Cattle	11,020		12,702		11,832	
Cattle Dung	926		1,145		1,032	
Total Revenue	11,946		13,847		12,864	
Profit (baht/head)	3,326		3,948		3,625	
Fattening Period (days)	279		224		253	

Figures in parentheses are percentage of the total cost.

work when they involved in the cattle fattening activity because they expected that the cattle fattening operation would generate more income than their off-farm work these 4 households usually earned about 2,000 baht per annum from their off-farm work.

3.2 Effect on Household Employment

The routine activities of cattle fattening operation involved grass harvest and feeding, concentrate feeding, pen cleaning and water filling. Normally, all of these activities accounted for half an hour to one hour per day. The time spent on grass harvest depended on the source of grass supply. If the farm household did not grow enough grass to feed their cattle on the daily basis, one or two of their family members had to go out of their farm to harvest grass along a high way and or from idle land. This would take more time depending on the distance and availability of grass. Normally,male was incharge in this job by using a motor cycle or bicycle to carry a bag of grass. However, it would take less time for the farm households that grew grass on their backyard to harvest grass.

The survey results showed that there were about 2 to 4 persons in each farm household involved in cattle fattening activity. About 25, 35 and 40 percent of all participating household reported that there had 2, 3 and 4 persons from their family members participated in cattle fattening, respectively. At least one of these family members who was able to allocated about half an hour to one hour a day to feed cattle and clear the pen every day through a fattening period would play a vital role in cattle fattening. It was found that housewife and old persons from each farm household were the key workers in cattle fattening operation because housewife and or old persons had enough time to take care the feeder steers

due to the fact that they had to stay home to take care their children and domestic work. Moreover, it was found that other family workers besides housewife and old persons also contributed their time to cattle fattening whenever they were free from their major crop activities. This implied that a promotion of cattle fattening scheme to small farmers was able to increase the work hours and labour productivity as well as employment of their family workers especially housewife and old persons.

3.3 Contribution of Cattle Fattening Enterprise to Net Family Income

Cattle fattening scheme was launched in order to increase income of small farmers. To investigate a net contribution of cattle fattening to farm household income, it was necessary to take into account both gains and losses due to the adoption of a new cattle fattening operation. Results obtained from the on-farm experiment revealed that on the average,each participating farmer earned 7,250 baht of profit from the fattening of 2 feeder steers. But many participating farm households had to give up some income generating activities such as backyard vegetable production, pig raising and off-farm work when they involved in cattle fattening activity.Forgone income of these activities could be imputed and presented in Table 2. To fatten a pair of steers each participating farm household had to give up 521 baht per household as a net loss of income that could be earned from backyard vegetable production, pig raising and off-farm work. Thus, the net gain obtained by each participating farm households from the fattening of 2 feeder steers was 6,729 baht per household (or 7,250-521). This implied that each farm household participated in cattle fattening would be better off and gain more net profit.

The fattening of 2 older steers showed better contribution to net gain or profit than the fattening of 2 younger steers, i.e. 7,050 and 6,589 baht per family, respectively (Table 2).

Table 2 Net income of household activities replaced by cattle fattening enterprise and net gain from cattle fattening enterprise.

Participating Farm Households	Activities Replaced(B/HH)				Profit	Net
	Vegetable Production (1)	Pig Raising (2)	Off-Farm Work (3)	Total (4)	from CF (B/HH) (5)	Gain (B/HH) (6)=(5)-(4)
HH with Younger Steer	363	- 400*	100	63	6,652	6,589
HH with Older Steer	207	359	280	846	7,896	7,050
Average	295	- 27	253	521	7,250	6,729

HH = Household
CF = Cattle Fattening

* total income obtained from pig selling could not cover a high cost of production due to a falling price of pig as well as an increased cost of feed.

SUMMARY AND CONCLUSION

The major findings and recommendations of the study could by summarized and presented as follow:

1) There were no competition between the cattle fattening activity and major crop production in using family labour and land resources. The major farm output like sugar cane and rice were not affeced by the introduction of backyard cattle fattening operation. Only minor activities such as backyard vegetable production,backyard pig raising and off-farm work were replaced by the cattle fattening activity.

2) Cattle fattening was able to generate the employment for farm household members, especially the underemployed family members like housewife and old persons, because family members who took a major responsibility in cattle fattening operation was the one who had to stay at home to take care their children like bousewife and domestic house work or the one who was too old to do farm werk like old persons. These family members were considered as the unemployed or underemployed or underemployed persons regarding to time spent in economic activities. The introduction of cattle fattening scheme, therefore, increased the labour productivity and employment of the family members.

3) The significant contribution of cattle fattening activity as supplemental income source was obviously seen. On the average, the net income generated by the fattening of a pair of younger steers and a pair of older steers were 6,652 and 7,896 bath per family,respectively. Most of the participating farms was satisfied with the supplemental net income earned from cattle fattening.

4) The major constraint for the participating farm households to continue the cattle fattening business by their own support was a shortage of investment fund due to a relatively high investment cost of cattle fattening as compared to their annual income. Many of farm households indicated that they were willing to carry on cattle fattening operation of they could acquire a credit with a fair rate of interest (i.e.not more than 15 percent per annual). This may suggest that the promotion of cattle fattening scheme to small farmers can not be accomplished effectively without a strong support and arrangement of the credit or loan program for the fattening of cattle by the concerned government agencies.

5) The problem of excess demand for feeder steers was predominantly seen after the completion of the on-farm experiment in the first village. Because of a reputation of the profitable cattle fattening operation along with a good prospect market for fattened cattle and good quality beef. This caused a rapidly increased price of feeder steers which inturn increased the investment cost on the feeder steers. Consequently, it would reduce the profit and rate of return on investment on cattle fattening operation. Thus, theincreasing priceoffeeder steers was expected to slow downthe expansion of cattle fattening business. One possible way to overcome this problem was to supportand stimulate the role of a private sector in producingcross breed feeder steers. Because the increasing price of feedersteers would increase the expected profit and possible to pay-offon the investment project of cattle breeding.

6) Beef of fattened cattle from the backyard production scheme so far could not perfectly substitute for the imported beef. However, the beef of fattened cattle was better than that of the native cattle.The price of this beef therefore laid between the native beef and inported beef. This implied that a new market for beef and beef products from the fattened cattle had to be developed and expanded. Thus, a program to improve and upgrade of this type of beef products as well as consumer awareness should be carried out by the join efforts of public and private sectors.

7) According to the fact the responsiveness and comments of farmers participating in the project's on-farm trial to the small pasture development or Guinea grass cultivation for the cattle's feed are learned. Many of them hesitated to devote their land to grass cultivation. Since their perception on cattle roughage should come from the waste products from crop production or from the grass in the waste area. Especially, in the case that the small farmer had to trade-off their crop cultivation as far as their concerning on the limited supply of land resource. To overcome this problem,a cash crop cultivation that could provide not only cash income from its main product sold but also roughage from its crop residue, should be introducted to replace the Guinea grass

cultivation component in the backyard cattle fattening system of the small farme Baby-corn was once the good potential cask crop to incorporate in the backyard cattle fattening system. Since the baby-corn has a very pominent market demand due to a rapid increase of the demand for baby-corn (ears) product. In addition, after the main product of baby-corn was harvested, its crop residue like baby-corn stalk could be made use as roughage for the cattle.

8) Eventhough the fattening of beef cattle seemed to provide a satisfactory outcome for small farmers,its feasibility and success was dependent on that there had to be an agency or organization to assist and supervise the farmers in such management as acquiring investment fund, calves to be fattened, the concentrate for fattening as well as marketing services. This means that a development of farmers ù organization like Kamphaengsaen Fattened Steer Producer Group should be established in order to provide assistant needs and strengthen their group management.

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