Native Beef Cattle Production System: Case Study at Nakhon Si Thammarat and Surat Thani Provinces

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ABSTRACT

The purpose of this research was to investigate the current status of native beef cattle production systems (raising conditions, sources and quality of roughages and carcass quality) at Nakhon Si Thammarat and Surat Thani Provinces. Most farmers raised cattle as a supplementary occupation apart from their main agricultural work. They were small scale farmers with 7-8 heads/farm. The main purpose was to earn additional income; that is, they were sold as beef cattle or fighting bulls. The farmers let the cattle into the paddy fields or natural pastures or tied in the rubber plantation. In the rainy season, the cattle were brought to the higher places and the feed provided. Most farmers vaccinated their cattle to prevent foot and mouth disease. Most farmers had never kept any records of their cattle and most of their cows were naturally mated with the native bulls. The cattle were mainly fed with green forages and most belonged to grass family. The most important forage types for farmers in Nakhon Si Thammarat harvested as their cattle feed were Hemarthria altissima and Microstegium ciliatum. For the Surat Thani province, most belonged to Axonopus compressus, Ischaemum magnum, Ischaemum timorense, Paspalum atratum, M. ciliatum, and Digitaria ciliaris. The nutritive values of the forages consisted of 9.84% protein, 67.07, 39.74 and 4.36% of NDF, ADF and ADL, respectively. Two-year-old male cattle were studied for carcass quality. The result showed that the average live weight of the cattle was 212.69 kg, carcass yield was 50.66%, carcass length 37.67 inches, and loin eye area 9.62 square inches. The lean yield averaged at 71.43%, fat and bone percentage at 2.08 and 22.95%, respectively.

Key words: Native beef cattle, Production system

INTRODUCTION

Nakhon Si Thammarat and Surat Thani provinces have the most cattle production of upper south Thailand which has 164,606 and 73,772 head. (Office of Agricultural Economics, 2009), and most of them were native beef cattle. However, in recent years there were many economics and social changes that impact on raising condition of native cattle, especially the agricultural policy of government to expand the rubber and oil palm plantations. So the pasture areas for cattle decrease continuously. Thus, this research was to investigate the current status of native beef cattle production system at Nakhon Si Thammarat and Surat Thani Provinces. The target group was the farmers whose native beef cattle were raised by grazing on the natural pastures. The study focused on the raising conditions, sources and quality of roughages, traits, carcass quality and yield.

MATERIALS AND METHODS

Data of raising conditions were collected from total 339 farmers in Nakhon Si Thammarat and Surat Thani provinces by interview. Information about type and quality of roughages was collected by randomly sampling green forage. The survey area was divided into 2 parts: plain and foothill areas. Samples of roughages from each survey were identified and recorded according to scientific names. (Skerman and Riveros, 1990; Mannetje and Jones, 1992), and their nutritive values were analyzed with the method as recommended by AOAC (2000); Goering and Van Soest (1970). Sixteen two-year-old male cattle fed with natural forages from both provinces were slaughtered and cut by Thai traditional cutting style to study carcass quality.

RESULTS AND DISCUSSION

Most farmers raised native cattle as a supplementary occupation apart from their main agricultural work such as paddy fields, rubber plantation, orchards and oil palm plantation. Generally, they were small scale farmers with the number of cattle averaging at 7–8 heads/farm. Most of them have raised the cattle for more than 10 years. The main purpose was to earn additional income; that is, they were sold as beef cattle or fighting bulls. Fighting bulls were also bred for selling, adding more value to the native cattle. In the dry season, the farmers let the cattle into the paddy fields or natural pastures. The cattle would be left in the natural pastures or tied in the rubber plantation. In the rainy season, when the area was flooded, the cattle were brought to the higher places and the feed provided. At night, most farmers kept their cattle in the cattle barn. The cattle barns were normally built temporarily. Some kept their cattle under their houses.

Regarding to the sanitation, most farmers (74.5%) vaccinated their cattle to prevent foot and mouth disease, disinfected the external parasites and had their cattle dewormed. Some farmers used both drugs and herbal plants to control internal parasites. Most farmers in Nakhon Si Thammarat and Surat Thani provinces (80%) had never kept any records of their cattle. Most of their cows were naturally mated with the native bulls.

In the areas of types and nutritive values of roughages fed to the native cattle in Nakhon Si Thammarat and Surat Thani province, The results revealed that the cattle were mainly fed with green forages and most belonged to the grass family. Types of forages found in the plain areas and foothill areas of both provinces are shown in Table 1 and 2. Among these, the most importance type of forages in Nakhon Si Thammarat were *Hemarthria altissima* and *Microstegium ciliatum*. For the survey in Surat Thani province most belonged to *Axonopus compressus*, *Ischaemum magnum*, *I. timorense*, *Paspalum atratum*, *M. ciliatum*, *Digitaria ciliaris* and *Pennisetum purpureum*. The nutritive values of the forages in Nakhon Si Thammarat were similar to those of Surat Thani province. (Table 3) The average of both provinces consisted of 9.48% protein, and the amount of NDF, ADF and ADL was 67.07, 39.74, and 4.36%, respectively.

Table 1. Type of forages as the farmers fed to the native cattle in Nakhon Si Thammarat province.

Plain areas	Foothill areas
Hemarthria altissima	*Microstegium ciliatum*
Ischaemum magnum	*Ischaemum timorense*
Hymenachne acutigluma	*Digitaria ciliaris*
Eriochloa procera	*Hemarthria altissima*
Panicum repense	*Ottochloa nodosa*
Leersia hexandra	*Eleusine indica*
Axonopus compressus	*Brachiaria mutica*
Hemarthria sp.	*Brachiaria ruziziensis*
Cynodon dactylon	*Pennisetum purpureum*
Ischaemum sp.	*Axonopus compressus*
Paspalum sp.	*Paspalum conjugatum*
Cyperus rotundus	*Centrosema pubescens*
Actinoscirpus grossus	*Calopogonium mucunoides*
Commelina diffusa	*Imperata cylindrica*
Alternanthera philoxeroides	*Cynodom plectostachyus*
	Mikania cordata

Table 2. Type of forages as the farmers fed to the native cattle in Surat Thani province.

Plain areas	Foothill areas
Microstegium ciliatum	*Echinochloa colonum*
Ischaemum magnum	*Digitaria ciliaris*
Ischaemum timorense	*Pennisetum setosum*
Hymenachne acutigluma	*Pennisetum purpureum*
Oryza sp.	*Ottochloa nodosa*
Paspalum atratum	*Brachiaria ruziziensis*
Pennisetum purpureum	*Axonopus compressus*
Brachiaria ruziziensis	*Imperata cylindrica*
Axonopus compressus	*Paspalum conjugatum*
Panicum repense	*Hymenachne acutigluma*
Alternanthera sessilis	*Panicum repense*
Commelina diffusa	*Eleusine indica*
Eragrostis sp.	

Table 3. The nutritive values of forages in Nakhon Si Thammarat and Surat Thani provinces (% on DM basis).

Nutrient (%)	Nakhon Si Thammarat			Surat Thani			Average
	Plain areas	Foothill areas	Average	Plain areas	Foothill areas	Average	
CP	9.27	11.11	10.19	9.46	9.51	9.48	9.84
NDF	66.71	64.17	65.44	68.01	69.40	68.70	67.07
ADF	40.19	38.58	39.38	39.32	40.87	40.09	39.74
ADL	4.71	4.55	4.63	4.14	4.04	4.09	4.36
Ca	0.32	0.42	0.37	0.37	0.35	0.36	0.365
P	0.21	0.28	0.24	0.19	0.17	0.18	0.21

For the study on carcass quality, the result showed that there were no differences on carcass quality between cattle from two provinces. (Table 4) The average scores from the two provinces showed that the average live weight was 212.69 kg, carcass yield 50.66%, carcass length 37.67 inches and loin eye area was 9.62 square inches. The lean yield averaged at 71.43%, fat and bone percentage was 2.08% and 22.95%, respectively. These result were agreed with the report of Tumwasorn (2001) who have shown that the carcass percentage, carcass length of Thai native cattle was 51.2% and 36.6 inches, but had smaller loin eye area (7.3 square inches) than the present study. The result also supported by the report of Sethakul and Opatpatanakit (2005) who studied carcass from the native cattle fed with natural forages had lower fat percentage.

Table 4. Carcass characteristics and boneless cuts of native beef cattle in Nakhon Si Thammarat and Surat Thani provinces.

Item	Nakhon Si Thammarat	Surat Thani	Average
Live weight (kg)	205.00±0.35	220.37±24.57	212.69
Hot carcass weight (kg)	105.13±1.86	110.42±19.24	107.78
Carcass percentage	51.22±0.90	50.10±3.02	50.66
Carcass length (inch)	37.32±1.52	38.01±1.75	37.67
Loin eye area (inch^2)	9.72±0.95	9.52±0.55	9.62
Percentage lean (%)	71.60±0.48	71.26±2.19	71.43
Fat[1] (%)	2.20^a±0.75	1.97^b±0.10	2.08
Bone (%)	22.97±1.60	22.93±1.90	22.95
Boneless cuts[1]			
Chuck (%)	21.74±0.49	22.37±1.12	22.05
Fore shank (%)	2.42±0.16	2.82±0.47	2.62
Brisket (%)	3.88±0.54	3.95±0.52	3.91
Plate + Flank (%)	9.07±0.49	8.52±0.43	8.80
Loin (%)	6.24±0.01	6.04±0.46	6.14
Tender loin (%)	1.69^b±0.04	2.29^a±0.91	1.99
Round (%)	23.37^a±0.08	22.19^b±0.73	22.78
Hind shank (%)	3.17±0.09	3.43±0.10	3.30

[1]% of carcass weight

^{a,b} Number with different superscripts differ statistically at $P<0.05$

CONCLUSION

The present study has shown that most farmers who raised native cattle in upper of south Thailand were small scale for supplementary occupation. Some farmers raised native cattle as fighting bulls that could add more value to them. The raising conditions were still supported by natural sources, although the pasture areas for producing forage crops were decreasing continuously. However, the quality of these forages were quite good for feeding the native cattle. The carcass quality and carcass yields in present study also similar to those of other native cattle in Thailand. From this reason native cattle of south Thailand could be supported grant from the government.

ACKNOWLEDGEMENT

This research was supported by the financial contribution of The Thailand Research Fund (TRF) on the behalf of Ministry of Science and Technology of Thailand. The authors are also grateful to Rajamangala University of Technology Srivijaya.

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