

Characteristics of Production System of Australian Brahman Facing Low Fertility under Ang Thong Small Farm Conditions

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ABSTRACT

Production system of farmers facing low production performance in Ang Thong province was investigated in imported Australian Brahman breeding females. It was found that farmers still had special favor on Australian Brahman to local Native breeds (61% vs. 31%). More than half of the farmers had good barn and housing construction lay outs but still except poor in sanitation and waste management. Half of the farmers own the land for growing pasture with an average of 2 rai (0.30 hectare) per family. Local natural grassland with low quality was the major roughage available while *Brachiaria mutica* was used as the minor support. Only 23% of the households had sufficient feed for their animals and most of them did not give any feed supplement except small amount of urea and molasses. Rice straw was the main source of roughage in the dry and hot periods of the year. The body condition of the breeding females ranged from 3 to 5 on the 10 points scoring system. Eighty five percent of the problem females had an average liveweight less than 400 kg. Heat detection was observed during grazing period. Eventhough the majority of farmers (86%) knew how to detect heat, very small percentage of them immediately reported to officers for A.I. service. It took around 2 doses of A.I. for conception of the first calf. Only 20% of the farmers had regular record- keeping while the rest ignored to do so.

Key words: Australian brahman, beef fertility, Beef production.

INTRODUCTION

During the year 1994 to 1996 Thailand expanding beef cattle production project of small farmers in area where rice plantation is not effective. The government is expected to promote the total of 150,000 heads of beef females in next 3 consecutive years of 1994 to 1996 (Ministry of Agriculture and Cooperatives, 1994). Yet the production system relating to all aspects of farmers facing problems in raising crossbred cattle had been roughly reported. If overall classification of cattle promotion project

in Thailand in the past was made, there would be 4 types of production systems. **The first system** was classified as : (a) 3 breeding females per household (b) irrigated area with sufficient water supply (c) crop is the main occupation (d) cattle is sharing the minor part of income from total income from animal and aquaculture group. **The second system** was characterized as : (a) at least 5 breeding females per household (b) nonirrigated area (c) cattle is sharing more part in family income as compare to that from crop. **The third system** was the same as the first one except water supply was limited. **The**

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fourth system was associated with those in the second system but limited water supply was the limitation criteria. The systems mentioned strictly applied to all farmers with income less than 50,000 baht (US dollar 2,000) per family per year which is classified as small farmer in Thailand (Bank for Agriculture and Agricultural Cooperatives or BAAC, 1992). The government intended to supply farmers with 5 Brahman crossbred females per household according to the project written by the BAAC. However, there was some controversial argument from groups of cattle producer that only 2 to 3 breeding females should be the optimum number as compare to 5 heads. This study selected Ang Thong province to study details of production system where one to three Australian Brahman heifers were distributed to farmers in 1991. The system of production in this study is classified into the first system as mentioned above. It was reported by Juntip *et al.* (1995) that 19.6% of all breeding females not showing heat and not conceived after one year of rearing. Objectives of this study were to (1) evaluate the production system of farmers facing low production after 2 years of cattle rearing and (2) evaluate cattle performance in this low performance production system.

MATERIALS AND METHODS

Questionnaires with real measurements of all response variables were conducted with only household facing low performance output. Sixty households out of 258 families (23.25%) were sampled to collect all data necessary for statistical analysis by SAS (1985). Liveweight of animals were estimated using pocket tape-weight device.

RESULTS AND DISCUSSION

Three categories were reported as the results of low production performance. These categories were (1) farmers' attitude to Australian Brahman females (2) characteristics of production system and (3) performance of breeding females.

A. Farmers' Attitude. Wide scope of attitude was interviewed and specific interests were observed as shown in Table 1. Farmers facing low production performance exhibited 8.3% low attitude to cattle production. Sixty percent of farmers had moderate fondness and 31.6% expressed great appreciation. When specific questions were asked on their interest for better management and feeding care, only 38% of farmers showed great interest. Farmers showing

Table 1 Attitudes of farmers facing low production performance of Australian Brahman cattle.

Contents	production levels					
	Low		Medium		High	
	No. of farmer	Percent	No. of farmer	Percent	No. of farmer	Percent
Fondness of Cattle	5	8.33	36	60.00	19	31.67
Fondness of Australian Brahman	7	11.66	16	26.67	37	61.67
Willing to improve production system	21	35.00	16	26.67	23	36.33
Willing to cooperate with the project	7	11.66	18	30.00	35	58.33

little interest in improving their own production system was increased to 35% where 26.6% showed moderate interest. Final attitude was given on their fondness of Australian Brahman cattle. It was found that great satisfaction in Australian Brahman averaged 61.7% whereas 26.6% exhibited moderate appreciation and 11.6% of farmers had little favor on Australian Brahman. In spite of low production performance, farmers still had better attitude on Australian Brahman than the average indigenous beef breed. However, due to small income obtained from raising few females, farmers tended not to pay attention on improving the production method. When asked on willingness to cooperate with the project, positive result (88.33%) was found.

B. Production System. Housing and equipments, feed and feeding, and herd health control were reported in this section.

1. Housing and Equipments. Table 2 showed conditions of housing for cattle under the project. Most cattle pen was located separately from the house with good air ventilation. Seventy percent of them had mosquitoes nest to prevent external parasite at night time. For sanitation of the pen, it was found that either farmers seldomly clean the manure or not doing at all, this made 90% of them stay in moderate to poor sanitation status. Because of the low out-put, most farmers had hard soil bedding floor where 10% and 3% of farmers had their animals stay on cement and wooden floor, respectively. All housing and equipments had been constructed to reduce the cost of production where minimum inputs was the major concept. Nevertheless, it was found that more than 95% of them had chute and coral ready for artificial insemination and health check.

2. Feed and Feeding. Detail observations were made on farmers routine activities, availability of feed and quality, and supplements. Table 3 showed the percentage of the farmers participating

in each activity. It was found that only half of farmers took care of cattle by themselves within a very small grazing area of less than 2 rai (0.30 hectare) per family. Farmers would gather cattle in a big herd and hired someone to take care the grazing cattle during the day. Low quality roughage was available as natural herbage with low protein content and high fiber. Only 23% of the farmers reported that there was sufficient amount of feed for the cattle where 28% of them had cut and carry method of feeding.

Half of the cattle suffered from the lack of drinking water supply throughout the year due to ignorance of the owners. The majority of farmers facing infertile breeding females did not supply mineral to their cattle (66%) while half of them had vitamins AD₃E injection. Urea and molasses supplementation was found to be scarce and not being recognized by farmers in this province.

3. Health and body conditions. Herd health status and conditions of all breeding females were reported in Table 4. It was found that only 56% of them had parasite control and 13% experiencing some sickness. Eighty one percent of the cattle population did not get sick and most of farmers vaccinated their cows every year. When 10 points scoring of body condition was evaluated, it was observed that 21% of the females were below standard condition. Sixty percent of females had less than 350 kg liveweight which indicated that they were smaller than normal standard size of 400 kg.

4. Breeding Practice. Farmers who owned low fertility breeding females refused to continue keeping Australian Brahman breeding females and wanted to return all infertile cattle to the government. This study showed the significant finding that even though 86% of them knew how to detect heat, none of them observed heat regularly. All of them only checked heat on their cattle during grazing period and 60% of them would not report to officer

Table 2 Housing equipments and environmental condition is raising australian brahman facing low production performance in Ang Thong province.

Contents	No. of household	Percent
Location of barn & pen		
Separate from the house, with roof	44	73.33
Separate from the house, no roof	9	15.00
Under the house	7	11.67
Air ventilation		
Good	34	56.67
Moderate	18	30.33
Poor	8	13.33
Mosquitoes nest equipment		
Good condition	24	40.00
Poor condition	18	30.00
None	18	30.00
Floor		
Hard solid	52	86.67
Cement	6	10.00
Wooden	2	3.33
Cleanness and sanitation		
Good	6	10.00
Moderate	44	73.33
Poor	10	16.67
Waste management activity		
Every day	9	15.00
Seldom	41	68.33
None	10	16.67
Shut and corral equipment		
Individually Own	45	75.00
Sharing with neighbors	12	20.00
None	3	5.00

themselves. Eventhrough heat was detected, more than half of the farmers would not immediately report to the officers. Seventy nine percent of farmers preferred having their cow artificially inseminated with an average of 2 doses per conception. Recommendation for breeding and

development of the project, data recording was frequently informed to farmers as the most important. It was found among low production group of farmers that only 20% of them had regular record keeping activity. Details on breeding and management were reported in Table 5.

Table 3 Feed and feeding systems of farmers experiencing production output from Australian Brahman in Ang Thong province.

Contents	No. of household	Percent
Cattle rearing activities		
Own rearing	31	51.67
Hire someone else	11	18.33
Neighbors help	18	30.00
Feeding characteristics		
In big herd with neighbors	32	53.33
Separate grazing	11	18.33
Stanchion	17	28.34
Land utilized for grazing		
Own	33	55.00
Rent	3	5.00
Communal grazing area	24	40.00
Size of grazing area		
More than 2 rai (>0.30 hectare)	5	23.80
2 rai (0.30 hectare)	12	57.14
1 rai (0.15 hectare)	4	19.06
Grass variety in grazing area		
Brachiaria mutica	8	38.09
Mixed varieties from seed company	1	4.77
Natural herbage	12	57.14
Method of roughage feeding		
Grazing	33	55.00
Soilage	17	28.33
Both	10	16.67
Feed availability		
Only roughage	37	66.67
Both roughage and small amount of concentrate	9	15.00
Sufficient roughage and concentrate	14	23.33
Feed Supplement with urea & molasses		
Every day	0	0
Seldomly done	25	41.67
None	35	58.33
Water availability		
At all time	29	48.33
Three times a day	17	28.33
When grazing at own wick	14	23.34
Mineral supplementation		
At all time	20	33.33
Seldomly done	18	30.00
None	22	36.67
Vitamins supplementation		
By injection	29	48.33
Mixing in concentrate	5	8.33
Both	26	43.34

Table 4 Herd health and animal conditions on infertile group of Australian Brahman in Ang Thong province.

Contents	No. of household	Percent
Parasites control		
Routinely	34	56.67
Seldomly	11	18.33
Sickness history		
Experiencing sickness	8	13.33
No sickness	49	81.67
Do not know	3	5.00
Vaccination history		
Every year	53	88.33
Every 6 months	-	-
None	7	11.67
Condition of breeding females		
2	3	5.00
3	10	16.67
4	28	46.67
5	11	18.33
6	8	13.33
Liveweight of breeding females		
Less than 300 kg	10	16.67
Between 301-350 kg	28	46.67
Between 351-400 kg	14	23.33
Between 401-450 kg	5	8.33
Between 451-500 kg	2	3.33
More than 500 kg	1	1.67

CONCLUSIONS

This study could reflect the production system of farmers facing low output from raising Australian Brahman in many aspects. Inspite of low fertility problem, farmers still preferred the Australian Brahman to the local crossbreeds. Because of the low output, the majority of farmers were willing to join the project but they did not

want to improve their production system. This indicated that if the return from the production is high enough, farmers would not reluctant to improve their production system. There were small problems relating to housing and equipments in that there was minimal practice for the waste management which could create continuous parasites infection.

The major problems associated with low fertility were due to feeding and management

Table 5 Breeding practice and management on Australian Brahman by farmers in low production group.

Contents	No. of household	Percent
Ability to detect heat		
Able to	52	86.67
Not able to	2	3.33
No interest	6	10.00
Time of heat detection		
Early morning and afternoon	-	-
Early morning and late evening	-	-
During Grazing	52	100.00
Person who report for A.I. service		
Owner	21	40.39
Friends	17	32.69
Both	14	26.92
Time to report for A.I.		
Immediately	24	46.15
3 hours after detecting heat	18	34.61
More than 3 hours after detecting heat	10	19.23
Method of breeding		
A.I.	19	79.17
Natural	3	12.50
Both	2	8.33
No of dose for A.I.		
once	9	37.50
Twice	14	38.33
More than 3 doses		
Record keeping		
Regular	12	20.00
Seldom	23	38.33
None	25	41.67

practices of farmers themselves. It was found that most farmers who experienced low production output did not spend enough time taking care of their cattle. Pasture development and feed supplement were not found throughout the area of

the study. The significant findings of low fertility were associated with the under condition of the breeding females and below average liveweight which inhibited regular hormonal secretion. The accumulated effects of farmers, reglignce to report

to officers for artificial insemination and not detecting heat had created paramount failure on reproductive performance.

It was rather difficult to develop the better production system in this low land farming system. This was due to the fact that only an average of 1.7 heads of Australian Brahman breeding female per household was too small a number to contribute significant income as compared to other agricultural commodities. It was seen that other alternative production systems other than beef cattle should be promoted inspite of limited area of grazing per household. If modified cattle production system were to be promoted, at least 5 heads of breeding females should be encouraged for significant income contribution. Again, informal small group of farmers must be developed in order to create impact on production and marketing power.

ACKNOWLEDGMENTS

The authors would like to thank the Kasetsart University Research and Development Institute (KURDI) in supporting fund under Project No. 1.34 for Beef and Dairy Cattle Breeding Research and Development in the Tropics Project. They also

thank the Department of Animal Science of the Faculty of Agriculture and BAAC for the encouragement throughout the project.

LITERATURE CITED

- Bank for Agriculture and Agriculture Cooperatives (BAAC). 1992. Annual Report. Bank for Agriculture and Agriculture Cooperative, Bangkok.
- Juntip, P., K. Markvichitr, B. Thanindratarn, and S. Tumwasorn. 1995. Reproductive Performance of Australian Brahman Experiencing Subfertility in Ang Thong Province. Beef and Dairy Cattle Breeding Research and Development in the Tropics Project, Kasetsart University, Bangkok.
- Ministry of Agriculture and Cooperative. 1994. Policy on Beef and Dairy Cattle under Reduction Area for Rice Plantation. Ministry of Agriculture and Cooperative, Bangkok.
- SAS. 1985. SAS for Linear model : A Guide to the ANOVA and GLM procedure. Statistics Analysis System Institute Inc., Cary, North Carolina.