

Thesis Title	Carcass and Meat Quality of Beef Steers under Production System of Kamphaengsaen Beef Cooperative
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Degree	Master of Science
Program	Animal Science
Year	2006
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ABSTRACT

This study was aimed to investigate raising condition of feedlot cattle, carcass quality and factors affecting on carcass quality including meat quality and effect of ageing period on meat quality under production system of Kasetsart University Kamphaengsaen Campus Beef Producer Cooperative Ltd. (Kamphaengsaen Beef Cooperative). The survey data was collected for raising condition of feedlot steers and for carcass quality (n=316). Feedlot steers were divided into 3 groups as group 1 registered at initial weight of <300 kg (n=126), group 2 registered at initial weight of 300-400 kg (n=95) and group 3 registered at initial weight of >400 kg (n=95). For meat quality study, 30 samples of longissimus dorsi muscle (between 6th – 12th rib) were aged for 1, 5, 7, 14 and 20 days at 2-4°C. All data was analysed by using GLM procedure in SAS programme.

From a study of raising condition of feedlot steers, it was found that source of steers for fattening under production system of Kamphaengsaen Beef Cooperative were from 2 sources. Firstly, steers were bought from farmers via live cattle-buffalo market and there was 70% in this system. Secondly, culled steers were bought from Kamphaengsaen breeding farms which was 30% in this system. Steers were fed with roughage and supplemented with concentrate until they weighed 300-400 kg. Then they were fed with TMR for 8-10 months until they weighed 500-550 kg for slaughtering.

From 316 steers, it showed that feedlot steers had initial weight of 353 kg, fattening period of 320 d, age at slaughter of 2 yr and slaughter weight of 522 kg. The carcass characteristics were studied as hot and cold carcass weights (310 and 301 kg), percentages of hot and cold carcasses (59 and 58%), fore and hind quarters (52 and 48%), loin eye area (85.32 cm²), back fat thickness (0.69 cm) and marbling score (6.47). Effects of fattening period, slaughter age and slaughter weight on carcass quality of 95 feedlot steers were studied. The results showed that Steers, fattened for 300-500 d had higher hot and cold carcass percentages than those fattened for <300 d (P<0.05) but has no difference with those fattened for >500 d. Steers aged 2 yr at slaughter had higher hot and cold carcass percentages than steers aged >2 yr (P<0.05) but had no difference with those aged <2 yr at slaughter. It was found that loin eye area and back fat thickness increased as slaughter weight increased (P<0.05). The result also showed that there was significant effect of slaughter age under effects of fattening period and slaughter weight on hot carcass percentage.

To compare initial weight between <300 kg and >400 kg, it was found that steers with high initial weight had higher cold carcass percentage, loin eye area, back fat thickness than those with low initial weight (P<0.05). However, steers with high initial weight had lower chilling loss percentage than those with low initial weight (P<0.05).

From a study effect of carcass weight on retail cuts percentage of 237 left carcasses according to 3 groups of carcass weight of <143, 143-155 and >155 kg. The results showed that carcass weight of >155 kg had significant higher percentages of chuck, chuck eye and short rib + plate but had lower percentages of sirloin, bottom round + eye round and top round (P<0.05). In addition, steers with lower carcass weight (<143 kg) had higher percentage of T-bone than those with 143-155 kg and had higher percentage of flank than those with higher carcass weight (>155 kg) (P<0.05). As carcass weight increased, percentage of bone significantly increased (P<0.05).

The effect of ageing period on meat quality of feedlot steers was studied with 1, 5, 7, 14, and 20 d of ageing. It was found that the b* value of meat increased as ageing period was longer while there was no change in the L* and a* values. However, % chilling loss increased as longer ageing period (P<0.01). In contrast, shear force values decreased shown as 7.39, 5.99, 4.99, 4.46 and 3.82 kg for 1, 5, 7, 14 and 20 days of ageing, respectively (P<0.001)