

An integrated approach for improving the quality of pasture fed beef.

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Liberalisation of the Japanese beef market coupled with concern about reliance on a single market (the United States) led Richmond Ltd to develop an integrated programme linking New Zealand beef producers to the Japanese market through the supply of chilled beef to specification. This programme has as its cornerstone the selection of carcasses based on weight, fat cover, pH, meat and fat colour specifications. Richmond Ltd was the first New Zealand company to reward farmers with bonuses based on the achievement of quality parameters. These premiums have been up to 40 cents/kg for carcasses meeting specification.

Grass finished cattle are supplied on contract by suppliers over a wide geographical area with a diverse range of climate types. The mix of farming systems allows cattle to be sourced on a year round basis, which would not otherwise be possible from a narrow supply base. Cattle are slaughtered at Richmond Pacific following overnight fasting and carcasses are assessed 18 hours after slaughter. Meat colour, fat colour and marbling are assessed between the 9th and 10th rib, 30 minutes after carcass quartering, using the Japanese Meat Grading Association standards (Anon 1988). Carcasses meeting the specifications for weight (300 to 370 kg), fat cover (≥ 3 mm), marbling (≥ 1), pH (≤ 5.8), meat colour (≤ 5) and fat colour (≤ 5) are deemed suitable for the Richmond Asian Beef Programme. However, carcasses which meet the above specifications but have an improved meat colour (≤ 4) and fat colour (≤ 4) receive higher payments.

The Richmond Asian Beef Programme also provides feedback of individual carcass quality information to farmers. In addition, farmers supply detailed information on the breeding, animal health, management and feeding of their cattle. This data, together with the quality data collected on the carcasses is analysed by AgResearch. From this database, key trends together with management recommendations are made available to farmers in the form of an annual report and at discussion groups.

Mean pH of the carcasses supplied to the Asian Beef Programme is 5.61. The majority of carcasses met the pH specification with 92% achieving a pH of 5.8 or less (Fig 1). Older cattle tended to have higher mean pH than younger cattle. Mob size was found to effect pH, with a small but significant increase in pH as mob size increased from 1 to 20. Increasing mob size above 20 did not appear have any further effect on meat pH (Smith *et al.*, 1996).

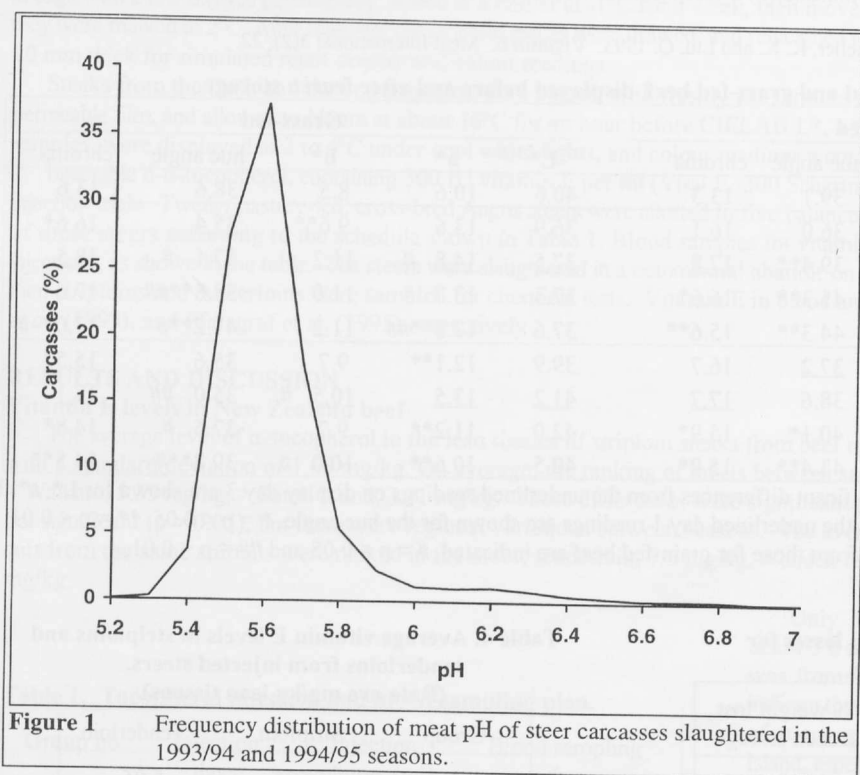


Figure 1 Frequency distribution of meat pH of steer carcasses slaughtered in the 1993/94 and 1994/95 seasons.

Programme but there is a wide range in quality between individual suppliers. For example, in the 95/96 season, the top ten suppliers had a success rate of 86% or higher in meeting the quality specifications. These better suppliers are more accurate at supplying cattle within the target weight range which suggests more regular and accurate use of scales. They also tend to supply lighter and younger cattle. The breeds supplied by these top farmers also tended to be traditional beef cattle (e.g. Angus and Angus cross).

Meat colour was found to be affected by age, with older cattle tending to have darker meat colour. For example, cattle weighing between 300 and 335 kg and with no permanent incisors (mainly under two years) had the highest success rate whereas cattle with 6 or 8 permanent incisors (mainly 3 year olds) had a much lower success rate.

In general, fat colour was the main limitation to achievement of specification. Carcasses from older cattle tend to be yellower, reinforcing the general consumer perception that beef with yellow fat comes from older cattle. At the same age, there was a clear trend for heavier cattle to also have yellower fat. For example, for carcasses weighing between 300 and 320 kg, 37% met the specification for the premium grade (≤ 4) whereas only 17% of carcasses between 380 and 400 kg met the same specification (Fig 2). There was also a significant breed effect, with traditional cattle breeds (particularly Angus and Angus cross cattle) being more likely to achieve specification. Of the breeds supplied to the programme, Dairy and dairy beef cattle (Friesian and Friesian cross) were the least likely to meet the fat colour specification.

On average, 59% of cattle supplied meet the specifications for the Richmond Asian Beef

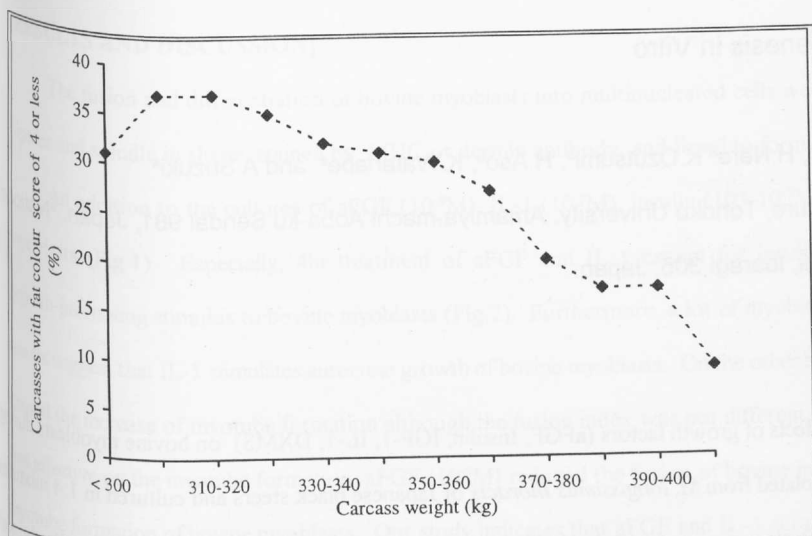


Figure 2 Relationship between fat colour and carcass weight

This partnership between Richmond and AgResearch has allowed the development of supply-to-specification within a new high quality export market. The feedback of appropriate signals to producers enables them to improve beef quality and share in the increased returns available from the Asian market.

References

- Anonymous (1988). New Beef Grading Standards. Japan Meat Grading Association, Tokyo.
- Smith, D.R., Wright, D.R. and Muir, P.D. (1996). Variation in meat pH in steers and association with other carcass attributes: analysis of a commercial database. *New Zealand Society of Animal Production* 56 187-192.