THE RELATIONSHIP BETWEEN GR SITE, TISSUE COMPOSITION AND CARCASS ATTRIBUTES

G.R. FERRIER, G.M. GAUNT and P.A. KENNEY

Department of Natural Resources and Environment, Agriculture Victoria, Rutherglen, Vic 3685

Tissue depth at the GR site (11 cm from the backbone over the 12th rib) is used extensively by the lamb industry as an indicator of carcass fat. Using real time ultrasound scanning at the GR site in terminal sires and monitoring by using a GR probe (Thatcher 1984) on commercial carcasses the lamb industry has been successfully moving towards larger, leaner and meatier lambs. Estimated breeding values used by LAMBPLAN are based on real time ultrasound scanning of fat depth and eye muscle (Banks 1990). Parratt et al. (1987) suggested that compositional changes in tissue distribution could change in long term selection programmes and should be monitored while Kenney (1996) reported biases in the estimates of fatness in lambs when GR and C measures were used.

The aim of this work was to examine GR, GR composition (muscle and fat components) and how composition is influenced by carcass weight, the amount of muscle, fat and bone in the loin area, and sire type.

Two hundred and seventy lambs were slaughtered at a commercial processor as part of the 1996 Central Progeny Test. Lambs were progeny of Border Leicester x Merino ewes joined to 31 sires representing 11 breed types. After slaughter, 93 samples of loin (approximately 10 cm length posterior from the 12th rib) from cryptorchid lambs were dissected to determine the amounts of muscle, fat and bone. The depth of muscle and fat contributing to tissue depth at the GR site was measured using a ruler. Multiple linear regression analysis (Genstat 5, Release 3.1) was used to examine associations between the composition (muscle and fat) at the GR site, GR tissue depth, sire type, carcass weight and amount of muscle and fat in the loin.

Muscle tissue at the GR site was positively related to carcass weight (P=0.003) but not to GR tissue depth. GR muscle tissue was inversely (P<0.001) related to the weight of eye muscle in the loin portion. The amount of muscle tissue dissected from the flap of the loin portion was not significantly related to muscle tissue at the GR site or to GR tissue depth. In contrast, fat dissected from the loin was significantly related to GR tissue depth (P=0.005), to carcass weight (P=0.020) and inversely related to GR muscle tissue (P=0.015). Four sires representing two breeds were found to have significantly (P<0.03) greater amounts of muscle tissue at the GR site than other sires.

Estimation of GR is important in the prime lamb industry as an indicator of carcass fat. However the results show that the tissue composition of the GR site and its relationship to composition of the loin is affected by sire and carcass weight. The amount of muscle at the GR site was found to be inversely related to the amount of eye muscle in the loin area. Such effects will make comparisons, based on GR measures, of fat and lean deposition in progeny of different sires less accurate as breeding lines continue to diverge from lighter, fatter styles to heavier, leaner carcasses. Further work is required to evaluate relationships between composition of GR site and fat and lean deposition at other sites.

The lamb industry, especially the seed stock sector, should consider improved technologies which may give more accurate measurement of fat and lean deposition and will take the industry closer to value based marketing practices.

This study was financed in part by the Meat Research Corporation.