YIELD AND COMPOSITION OF MILK AND GROWTH OF LAMBS FROM MERINO EWES SUPPLEMENTED WITH EXPELLER CANOLA MEAL OR LUPIN SEED

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Expeller canola meal (ECM) as described by Milton *et al.* (1996) was shown by Masters and Mata (1996) to be superior to lupins to increase wool growth in reproducing ewes. Partial replacement of lupins fed to dairy cows with ECM has also led to higher yields of milk and milk components (G.M. Hough, unpublished data). In a field study to investigate the value of ECM to improve wool growth in reproducing ewes, we also measured the yield of milk and milk components and the growth of crossbred lambs from ewes supplemented with either whole lupin seed or pellets containing ECM.

The ewes and lambs for this study are described by Milton *et al.* (1996). To summarise, both groups of ewes received the same amount of supplementary crude protein and metabolisable energy from a base supplement of either canola pellets or whole lupin seed, each plus equal quantities of lupin seed.

Ewes of similar liveweight (15 fed canola pellets and '16 fed lupins) and with single lambs of known birthweight and an average age of 24 days were milked by the method of Bencini (1995) to determine their 24 hour milk yield. Samples of milk were analysed for fat, protein, lactose and solids-non-fat using a Milko Scan and the yield of each component was calculated (Table 1). The single lambs were weighed whilst their dams were being milked and their growth rates from birth are shown in Table 1.

Table 1. The yield of milk and milk components from Merino ewes supplemented with canola pellets or lupin seed and growth of their crossbred lambs

Attribute	Canola pellets	Lupin seed	LSD[A]
Milk yield (g/24 hour)	1,556	1,298	252
Fat yield (g/24 hour)	124.6	93.2	22.4
Protein yield (g/24 hour)	60.0	51.8	9.3
Lactose yield (g/24 hour)	80.9	69.1	13.5
Solids-non-fat yield (g/24 hour)	161.7	138.3	25.6
Growth rate of lambs to 24 days (g/day)	234.3	223.3	28.2

[A]Least Significant Difference (P<0.05).

The milk yield of ewes fed canola pellets was 20% higher than that of ewes fed lupin seed. The yield of fat from ewes fed canola pellets was 34% higher and their yield of other milk components also tended to be higher than that of ewes fed lupin seed (P< 0.1). The higher fat yield was mainly due to the increase in milk yield, but the fat content of the milk from ewes fed canola pellets was also above that of ewes fed lupin seed (79.7 vs 73.4 g/kg, LSD = 9.1). However, as expected, the concentrations of other milk components in association with the higher milk yield from ewes fed canola pellets were all slightly less than those of ewes fed lupin seed.

With an apparently larger supply of nutrients the single lambs from ewes fed canola pellets would be expected to grow faster than single lambs from ewes fed lupins, but the extra growth was small and non significant. One possibility for this is that ECM might have disturbed iodine metabolism. However, Milton *et al.* (1996) reported that the levels of thyroid hormones for the single lambs measured for growth in the present study were not affected by maternal diet. The most likely explanation for the small growth response is that the ewes fed lupins produced sufficient milk to meet their lamb's nutrient requirement for lean tissue growth and the extra nutrients produced by ewes fed canola pellets was stored by their lambs as fat rather than lean tissue. Energy stored as fat translates into a much smaller liveweight gain than energy stored as lean tissue.

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