PROTEIN AND ENERGY CONCENTRATES FOR MILK PRODUCTION.

ALLISON HODGE* and G. L. ROGERS*

Ryegrass/white clover pasture is generally assumed to provide adequate protein for milk production by grazing cows. Recent studies have shown that milk production was increased by post-ruminal supplements of casein (Rogers et al., 1980). We have compared commercially available energy or protein concentrates as supplements for grazing cows in early and mid-lactation.

In early lactation 4 groups of 10 cows were offered pasture ad libitum (DMD : 78%; N : 2.3%; ME : 11.2 MJ/kg) with nil supplement or with isocaloric amounts of crushed oats (4.4 kg; DMD : 74%; N : 1.9%; ME : 12.1 MJ/kg) or with whole soya bean and maize meal (4 kg; 60% WSB/40% MM; DMD : 84%; N : 4.1%; ME : 14 MJ/kg). In mid-lactation cows were offered pasture (DMD : 72%, N : 2.1%, ME : 11 MJ/kg) and silage (DMD, 65%; N, 1.8%; ME, 9.4), restricted to provide 70% of energy requirements, with supplements of either crushed oats (4.4 kg), WSB/MM (4 kg), or a mixed cottonseed and soya bean meal (4 kg; 80% CSM/20% SBM; DMD : 63%; N : 5.8%; ME : 9.3 MJ/kg).

Table 1. Effects of supplements on milk production.

	EARLY LACTATION				MID LACTATION				
	PAST.	PAST. OATS	PAST. WSB/MM	LSD P=0.05	PAST.	PAST. OATS	PAST. WSB/MM	PAST. CSM/SBM	LSD P=0.05
Milk L/d	22.0	21.1	23.9	1.7	11.6	12.7	13.6	13.7	0.9
Fat g/d	878	816	872	66	549	598	588	643	52
Prot g/d	702	682	765	51	401	423	460	476	36
Fat %	4.14	3.97	3.82	0.40	4.81	4.79	4.34	4.72	0.28
Prot %	3.27	3.34	3.26	0.14	3.49	3.50	3.40	3.48	0.14
L/weight kg	435	439	442	16	454	443	451	450	11

In both experiments protein supplements increased production of milk and milk protein compared with crushed oats. Fat yield was not increased by the WSB/MM supplement due to a marked reduction in milk fat concentration; this was not the case with CSM/SBM.

Milk production by cows when restricted or fed to appetite on pasture was improved by protein concentrates. In further work the difference in responses from protein and cereal concentrates has been found to be due to lower pasture intakes of cows supplemented with cereals, rather than an effect of protein per se (Rogers et al., 1983). In practice, the usefulness of protein concentrates is limited by their high cost relative to cereals.

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* Department of Agriculture, Dairy Research Institute, Ellinbank, Vic 3820.