

USING MOLASSES AS PART OF THE RATION OF HIGH YIELDING DAIRY COWS

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Molasses is used as an energy supplement in the northern dairy industry because it is generally cheaper than grain-based concentrates. Research has indicated that 1.3 kg molasses is equivalent to 1.0 kg of grain for milk production (Cowan and Davison 1978; Chopping *et al.* 1980). Production per cow has increased since this research, so 2 experiments were designed to assess the use of molasses in rations for high producing cows.

Each experiment was a randomised block design with a 4-week covariate period and a 12-week trial period. Data was analysed by analysis of variance using the data from the first 4 weeks as a covariate. In the first experiment cows calved during summer and grazed tropical grass pastures; in the second experiment cows calved in late autumn and grazed irrigated, nitrogen-fertilised ryegrass pastures. Five treatments based on the percentage of molasses in the diet were fed. Treatment M0 was 8 kg/cow.day of a grain-based concentrate, while treatments M6 to M24 were fed 1.3, 2.5, 3.7 or 5.0 kg of fresh molasses with lesser amounts of concentrate. The protein content of each of the concentrates was adjusted so that each treatment offered cows similar amounts of energy and protein.

Table 1. Covariate adjusted milk, and milk component per cent for weeks 7 to 12 of the feeding period in the summer and winter experiments

	Treatment					LSD (P<0.05)
	M0	M6	M12	M18	M24	
<i>Summer Experiment</i>						
Milk yield (L/cow.day)	20.5 ^{abcA}	22.7 ^a	21.4 ^{ab}	19.8 ^{bc}	19.7 ^{bc}	2.5
FCM yield (L/cow.day)	20.2	21.2	20.6	19.2	18.9	2.1
Milk fat (%)	3.87	3.68	3.77	3.71	3.82	0.46
Protein (%)	3.03	3.03	3.03	3.10	2.99	0.16
Lactose (%)	4.92	4.93	4.92	4.91	4.89	0.11
<i>Winter Experiment</i>						
Milk yield (L/cow.day)	28.7 ^a	25.7 ^{bc}	25.7 ^{bc}	27.1 ^{abc}	25.0 ^{bc}	2.8
FCM yield (L/cow.day)	25.4	24.5	24.4	24.7	24.7	2.2
Milk fat (%)	3.28	3.70	3.65	3.40	3.90	0.52
Protein (%)	2.97	3.00	3.01	2.97	2.94	0.17
Lactose (%)	4.94 ^a	4.87 ^a	4.84 ^{bc}	4.81 ^{ab}	4.75 ^b	0.11

^A For each treatment comparison, means followed by different letters are significantly different (P<0.05).

During summer milk yield was highest for cows fed a low level of molasses (1.3 and 2.5 kg) in the concentrate (Table 1). Higher levels of molasses maintained milk yields at levels similar to the yield from the grain-based concentrate ration, M0. During winter milk yield and lactose percentage in milk were reduced (P<0.05) with the inclusion of molasses. We conclude from these 2 experiments that including molasses in the diet of high producing cows will either increase or maintain milk yield while cows graze tropical pastures, and there are substantial economic benefits in doing this. During winter, when cows graze temperate pasture, there will be a reduction in milk yield and molasses is not an economical substitute for maize.

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CHOPPING, G.D., SMITH, L.J., BUCHANAN, I.K. and O'ROURKE, P.K. (1980). *Proc. Aust. Soc. Anim. Prod.* 13: 401-4.

COWAN, R.T. and DAVISON, T.M. (1978). *Aust. J. Exp. Agric. Anim. Husb.* 18: 12-5.