What Supplementation Type for Spring Calving Dairy Cows at Grass in Autumn?

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Introduction In spring-calving herds the requirement for conserved forages for indoor feeding is very limited but these feeds may have a role to play as buffer feeds in the spring and autumn periods when grass supply is less than required or as alternatives to concentrates on pasture for cows in early lactation. The objective of this experiment was to compare alternative forages and concentrates as buffer feeds on pasture with spring-calving cows in the autumn.

Materials and methods Ninety cows were blocked on calving date and milk yield (19.9 ± 1.5 kg/head per day), into groups of six and assigned randomly to the following treatments; (i) 17.5 kg of grass DM allowance (LG), (ii) 24 kg of grass DM allowance (HG), (iii) LG + 4 kg concentrate DM (C), (iv) LG +4 kg maize silage DM (M), (v) LG + 4 kg urea-treated processed whole crop wheat DM (UPWCW) and (vi) LG + 4kg fermented whole crop wheat DM (FWCW). The treatments were in place from 13 September to 7 November 2004 over 2 grazing rotations. The animals grazed as three separate herds. Both LG and HG were grazed separately while the four supplemented treatments were grazed together as a herd of 60 cows. The supplementary forages were group fed from a diet feeder after morning milking. The concentrates were offered individually in the milking parlour in two equal feeds daily. The cows were offered fresh grass after morning milking. Herbage mass (above 50mm) was determined in each grazing paddock by cutting either four or six strips (0.5 × 10m) with an Agria motor scythe. Ten grass height measurements were recorded in each cut strip (pre and post harvesting) to determine the sampled height and calculate the bulk density (kg DM per mm/ha). The sward height before grazing was measured. This sward height multiplied by the mean bulk density from the Agria cuts was used to calculate the herbage mass in the paddocks. Thirty pre and post grazing sward heights were measured daily for each treatment with a rising plate meter. Milk yield was recorded daily. The concentrations of fat, protein and lactose were determined in one successive morning and evening milk sample per week. Composite morning and evening bulk milk samples were taken from each treatment on one day weekly for processability measurements using a Rheometer. Production data were analysed by SAS using covariate analysis.

Results and discussion Mean herbage mass was 2670kg DM/ha (s.d. 372). Mean pre and post grazing sward heights were 16.2, 15.9, 15.7cm (s.d. 1.33) and 6.7, 5.7, 5.9cm (s.d. 0.76) for HG, LG and supplemented herds respectively. Grass disappearance was 18.7, 15.0 and 14.4 kg/head per day (s.d. 2.65 kg) for HG, LG and supplemented herds. Treatment C had a significantly greater milk yield than HG, M and UPWCW, which in turn had a significantly greater yield than LG and FWCW. Solids corrected milk (SCM) yield was significantly greater for C than HG, which was greater than M, UPWCW and FWCW. Treatment LG had the lowest SCM yield. Milk fat, protein and lactose concentrations, body condition score (BCS) or liveweight were not significantly different across treatments. The rennetability of milk tended to be highest in treatments M and FWCW and poorest in C which was largely a reflection of milk protein concentrations in these treatments.

Conclusion There is a large solids-corrected milk production benefit to supplementing grazing cows, on a restricted grass allowance in late lactation, with concentrates. Supplementing with other forages gave smaller responses, with extra herbage allocation being the best. Milk rennetability would appear to be influenced by the type of supplement offered.

Table 1 Effect of fermented (FWCW) and urea-treated processed whole crop wheat (UPWCW), maize silage (M), concentrate (C) and additional grass (LG) on production of grazing dairy cows in autumn

	LG	HG	C	M	UPWCW	FWCW	RSE	Sig
Milk yield (kg/day)	13.2[a]	15.5[b]	18.3[c]	15.0[b]	14.9[b]	14.2[a]	1.56	***
Milk fat (g/kg)	4.31	4.25	4.04	4.21	4.31	4.29	0.37	Ns
Milk protein (g/kg)	3.67	3.72	3.57	3.71	3.63	3.71[a]	0.16	+
Milk lactose (g/kg)	4.26	4.35	4.35	4.26	4.29	4.30	0.13	Ns
SCM yield	12.6[a]	14.9[c]	17.2[d]	14.5[b]	14.3[b]	13.8[b]	1.35	***
Bodyweight (kg)	562	576	568	570	573	575	20.6	Ns
BCS	2.83	2.77	2.81	2.80	2.90	2.87	0.16	Ns

[abc]Means within row with different superscripts differ ($p<0.05$)