Manipulation of Early Lactation Feeding Management on Total Lactation Performance of Spring Calving Dairy Cows

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The objective of this study was to establish the influence of daily herbage allowance and concentrate supplementation offered in early lactation on the total milk production performance of spring calving dairy cows. Sixty-six (30 primiparous and 36 multiparous) Holstein-Friesian dairy cows (mean calving date – 7 Feb; ± 9.9 days) were randomly assigned to a 6 treatment (*n*=11) grazing study. The treatment groups were comprised of 3 daily herbage allowances (DHA; 13, 16 and 19 kg DM/cow/day; >4 cm) and 2 concentrate supplementation levels (0 and 4 kg DM/day). Treatments were imposed from 21 February to 8 May (11 weeks; P1). During P2, (subsequent 4-weeks) animals were offered a daily herbage allowance of 20 kg DM/cow/day and no concentrate. Subsequently, all animals grazed as a single herd and were offered 22 kg DM/cow/day herbage and no concentrate for the remainder of lactation. The grazing areas required were calculated by cutting 2 strips per grazing area twice weekly to determine herbage mass and sward density. Pre and post grazing sward heights were measured daily. Milk yield was also recorded daily; milk composition and liveweight were determined weekly. All animal parameters were analysed using covariate analysis within a randomised statistical design. Offering a low DHA did not significantly reduce total lactation milk yield. However, the inclusion of 380 kg DM/cow/year concentrate in the early lactation diet significantly increased ($P<0.01$) total lactation milk yield (+ 432 kg/cow/year). There was no effect of early lactation feeding system on total lactation milk fat, protein and lactose concentrations, bodyweight or body condition score. The results of this study indicate that a low DHA in early lactation is sufficient as total lactation milk yield is not adversely affected. However, total lactation performance can be maximised by including concentrate in the diet during the first 9 – 13 weeks of lactation.

Table 1. Effect of daily herbage allowance and concentrate level on the total lactation performance of spring calving dairy cows

	L0	**L4**	**M0**	**M4**	**H0**	**H4**	**SED**	**DHA**	**Conc.**	**Linear**
Milk yield (kg)	5077	5346	5262	5746	5167	5711	257.9	NS	**	NS
Fat content (g/kg)	42.3	40.7	41.1	40.7	38.9	40.6	1.59	NS	NS	NS
Protein content (g/kg)	35.1	35.6	35.5	35.4	34.4	35.2	0.70	NS	NS	NS
Lactose content (g/kg)	45.5	45.4	45.5	46.4	45.6	46.4	0.58	NS	NS	NS
SCM yield (kg)	4922	5047	5041	5516	4846	5495	271.4	NS	**	NS
Bodyweight (kg)	517	516	525	527	522	538	10.1	NS	NS	NS
Body Condition Score	2.65	2.78	2.75	2.77	2.69	2.76	0.088	NS	NS	NS

NS= Non significant, **=P<0.01

SCM yield = Solids corrected milk yield; DHA = daily herbage allowance level; Conc. = concentrate level

Keywords daily herbage allowance, concentrate, total lactation production