

## Influence of giving a choice of grazing or maize silage offered in the field simultaneously on diet selection of lactating dairy cows

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**Introduction** Changing the times of access to grazing and to maize silage (MS) offered indoors affects the relative intake of each feed, but has little effect on dairy cow performance (Hernandez-Mendo & Leaver, 2000). Offering the MS in the grazing paddock as an instantaneous alternative to grazing should give an insight into the factors influencing feed intake, and may provide a means of alleviating the high rate of decline in milk yield of grazing dairy cows. The objective of this study was to examine the response in diet preferences and performance of lactating dairy cows when grazing a perennial ryegrass sward and having access to maize silage *ad libitum* simultaneously in spring, at two concentrate levels (CL) and two sward heights (SH).

**Materials and methods** This 35 day study was conducted in spring under continuous stocking and involved 24 multiparous Holstein Friesian cows. Treatments were arranged in a 2x2 factorial design, with two replicates, and CL (0 and 6 kg/cow: 5.5kg barley + 0.5kg soybean, fresh basis) and SH (4-6 and 8-10cm) as the main variables. Fresh MS was offered daily in bins in the field to each group of 3 cows, according to the previous day's intake, and daily intake recorded as the difference between maize silage offered and refused. Herbage dry matter intake (DMI) and total DMI were estimated indirectly from individual animal energy requirements (AFRC, 1993) and the ME concentration of the diets. Animal behaviour was recorded during two 48h observation periods.

**Results** Cows strongly preferred grazing to maize silage, as illustrated by the high proportion of grazing time (Table 1). For example, mean herbage DMI was 9.9 kg/d, compared with 5.1 kg DM/d for maize silage. Offering concentrates decreased grazing time (GT) and intake rate (IR) of herbage, but had no significant effect on maize silage eating behaviour. Intake of grazed herbage increased with SH even though GT was similar with both sward heights. This was due to IR of herbage being significantly greater at the high sward height.

**Table 1** Main means on animal behaviour, diet preference and animal performance of dairy milking cows when grazing and having access to maize silage *ad libitum* simultaneously in the field

		GT		P-GT	IR, g DM/min		DMI, kg DM/d		LWCh	MY
		(min/d)	TMS		HB	MS	MS	HB		
CL	0	407	69	0.83	30.1	77.4	5.3	12.3	+1.23	25.1
	6	363	66	0.82	21.0	74.0	4.8	7.5	+1.35	25.8
	s.e.d.	9.9	7.2	0.035	0.67	7.47	0.26	0.57	0.103	0.41
	Significance	0.05	NS	NS	0.001	NS	NS	0.001	NS	NS
SH	4-6cm	389	77	0.80	22.1	74.1	5.7	8.7	+1.20	24.7
	8-10cm	380	58	0.85	29.0	77.3	4.4	11.1	+1.38	26.1
	s.e.d.	9.9	7.2	0.035	0.67	7.47	0.26	0.57	0.103	0.41
	Significance	NS	NS	NS	0.01	NS	0.01	0.05	NS	0.05

GT, grazing time; TMS, time spent eating maize silage; P-GT, GT/GT+TMS; IR, intake rate; DMI, dry matter intake; HB, herbage; MS, maize silage; LWCh, liveweight change; MY, milk yield; NS, Not significant

**Conclusions** When grazing cows were offered maize silage in the field, cows preferred grazed grass to maize silage. Increasing sward height and increasing concentrate feed level had a greater impact on herbage intake than offering maize silage. The preference for grazing could be due to the higher digestibility of the herbage, and to improved palatability factors of herbage compared to maize silage. The high rate of intake of maize silage may be more beneficial at times when herbage is in short supply or when the feed value of herbage is poor. While it may be possible to exploit preferences for grazing vs maize silage in practice, further research is needed to provide a better understanding of diet preferences under grazing conditions.

### References

- Hernandez-Mendo O. & J. D. Leaver (2000). Combining grazing with different periods of access to an indoor diet to alleviate high rates of decline in milk yield of dairy cows. *Proceeding of the British Society of Animal Science*. p.76.
- AFRC (1993). Energy and protein requirements of ruminants. CAB International. Wallingford, UK.