

PhytoMilk: Effect of silage botanical composition and harvest system on organic milk composition



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Conclusions

Harvest system and botanical composition affected fibre and crude protein concentration of silage but the differences did not affect milk yield or milk fat, protein or lactose concentration.

Introduction

This experiment is a part of the CORE organic project PhytoMilk, a project with aim to study effects of organic forage botanical composition on salutary milk components. The aim of this feeding experiment was to study how harvest system and botanical composition of silage effects dairy milk percentage of fat and protein but also concentration of fatty acids, vitamins and phytoestrogens in forage and milk.

Materials and Methods

Twenty-four Swedish Red dairy cows in mid lactation were allocated randomly to treatments in a 3x3 Latin square design with each period of three weeks. The treatments were red clover (*Trifolium pratense* L.)/grass silage mixture of first and second cut (R2), red clover/grass silage mixture of first, second and third cut (R3) and birdsfoot trefoil (*Lotus corniculatus* L.)/grass silage mixture of first and second cut (B2).

Results

There was 42 % red clover in R2, 38 % red clover in R3 and 16 % birdsfoot trefoil in B2 (Fig. 1). Silage NDF concentration and silage intake was lowest in the early harvested R3 and crude protein concentration was lowest in B2 (Table 1).

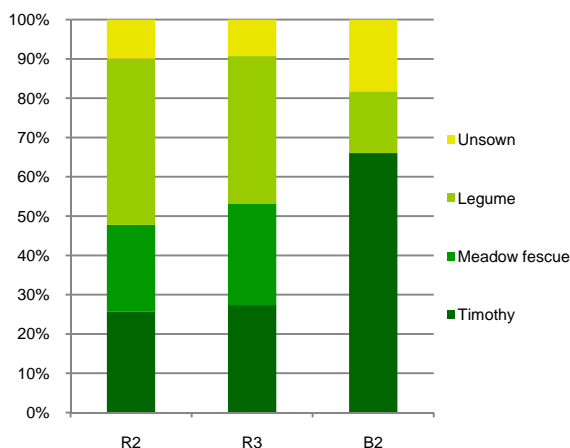


Fig. 1. Botanical composition of silage mixtures red clover/grass silage two-cut system (R2), red clover/grass silage three-cut system (R3) and birdsfoot trefoil/grass silage two-cut system (B2).

Milk yield was on average 27.4 kg ECM day⁻¹ for all treatments. There was no difference between milk fat, protein and lactose concentration between the diets (Fig. 2). Urea concentration in milk was lower in milk from all experimental diets in comparison with mean values in milk delivered to Swedish dairies.

Table 1. Concentration and intake of NDF, crude protein (CP), crude fat (CF), starch and NDF digestibility for red clover/grass silage two-cut system (R2), red clover/grass silage three-cut system (R3) and birdsfoot trefoil/grass silage two-cut system (B2).

	R2	R3	B2
NDF (g/kg)	533	518	532
NDFD (% of NDF)	68	71	72
CP (g/kg)	152	164	117
CF (g/kg)	34	37	30
Starch (g/kg)	15	20	14
Silage intake (kg DM)	14,7	12,8	15,4
Concentrate intake (kg DM)	5,4	5,4	5,4
NDF intake (kg/day)	8,8	7,7	9,2
CP intake (kg/day)	3,5	3,4	3,1
CF intake (kg/day)	0,9	0,9	0,8
Starch intake (kg/day)	1,8	1,8	1,8

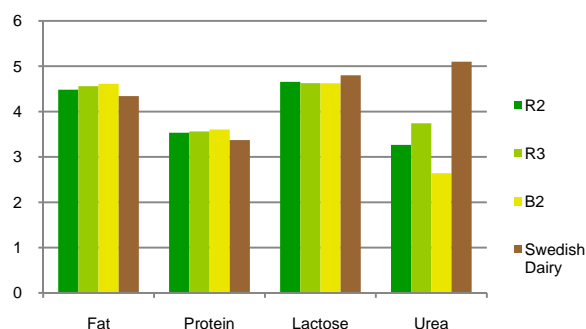


Fig. 2. Fat, protein, lactose and urea concentrations in milk with red clover/grass silage two-cut system (R2), red clover/grass silage three-cut system (R3) and birdsfoot trefoil/grass silage two-cut system (B2) in comparison with milk delivered to Swedish dairies (Lindmark-Månsson et al., 2003).

Acknowledgements

The authors would like to thank A.W. Bergstens donation for financial contributions

References

Lindmark-Månsson, H., Fonden, R. & Pettersson, H.E. (2003) Composition of Swedish dairy milk. *International Dairy Journal* 13(6), 409-425.

