

The effects of offering hay, pit-stored grass silage or big-bale silage to pregnant ewes on ewe and lamb performance

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Introduction Hay and pit silage have been used extensively for feeding sheep over the winter period, but in recent years, especially on smaller farms, big-bale silage has become increasingly popular. However, there is limited comparative information on the use of big-bale silage for sheep, especially in relation to the effects of chopping and growth stage at harvest. This study compared the performance of ewes offered hay, pit silage, or big-bale grass silage made from either chopped or unchopped grass and cut from the same field at the same time.

Materials and methods Sixty four twin bearing ewes were offered either unchopped or chopped big-bale silage, double-chopped pit silage or hay, supplemented with 400g daily of either a molassed sugar beet pulp or a barley-based concentrate in a 4 x 2 factorial design experiment for the last eight weeks of pregnancy in order to investigate feed intake, ewe weight and body score changes, colostrum yield and immunoglobulin levels. All forages were cut on the same day and wilted for 1 (pit silage), 2 (big bale) or 7 days (hay). The ewes were individually penned and offered the forages daily at proportionately 1.1 times each ewe's previous days intake. They were weighed and body condition scored at the beginning and end of the experiment and hand milked at 1-h, 10-h and 18-h post partum. The colostrum was fed back to the lambs. Colostrum and blood taken from the lambs at 24-h were analysed for immunoglobulin levels.

Results There were no forage x concentrate interactions and the data for forage composition and the main forage effects are presented in Table 1. There were no performance differences between the two concentrate types offered. The pit silage had a lower digestibility value. Ewes offered the pit silage had a lower intake of dry matter (DM), metabolisable energy (ME) and crude protein (CP) than any other treatment and these ewes lost more weight and tended to produce less colostrum. Intake and performance were very similar for the remaining three treatments with no significant differences in DM intake, ME intake and body condition score. Crude protein intake was however significantly higher for the two big-bale silages than for hay, whilst the loss in liveweight was greater for unchopped big-bale silage than for hay.

Table 1 Forage analysis and ewe performance data in relation to forage type

Forage type	Forage type		Big-bale silages		SEM
	Hay	Pit silage	Unchopped	Chopped	
Dry matter (%)	86.5	19.3	27.6	27.5	---
pH	---	3.92	4.28	4.18	---
Crude protein (g/kg DM)	73.7	90.9	92.5	91.4	---
Crude fibre (g/kg DM)	371	378	355	343	---
<i>In-vitro</i> DMD (g/kg DM)	64.2	60.2	65.1	64.0	---
Forage DM intake (kg/d)	1.26 ^a	0.86 ^b	1.15 ^a	1.17 ^a	0.06
Total ME intake (MJ/d)	16.2 ^a	12.3 ^b	15.2 ^a	15.4 ^a	0.42
Crude protein intake (g/d)	161 ^a	149 ^c	175 ^b	176 ^b	4.0
Weight loss d98-24h post-partum (kg)	-0.4 ^b	2.5 ^a	1.7 ^a	0.49 ^{ab}	0.88
Body score change (range 0-5)	-0.40 ^a	-0.30 ^{ab}	-0.19 ^a	-0.32 ^{ab}	0.090
Gestation length (d)	146.3	146.8	146.2	147.1	0.08
Litter weight (kg)	10.3	9.4	9.9	9.7	0.45
Colostrum yield to 18-h (ml)	2039	1753	1917	1974	152.2
IgG absorption (%)	21.4	21.4	21.8	24.4	2.46

^{a,b,c} Means with different superscripts are significantly different (P<0.05)

Conclusions The results demonstrate the higher intake of hay and big-bale silage over pit silage, even though the pit silage had been double chopped in the field and was basically produced from the same raw material. In relation to animal performance, chopping before making the big-bale silage did not appear to be justified. The lower protein content of the hay was partially compensated for by the higher intake. In this experiment, all forages were individually offered daily. This would have made access to the long forages easier and because they were wilted for a longer period and had a higher DM, could possibly have enhanced intakes in these treatments relative to intakes that would occur in many farm conditions.