

## CAN SUMMER-ACTIVE PERENNIAL PASTURE MATCH LUPINS FOR INCREASING OVULATION RATE IN MERINO EWES?

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Low ovulation rates of Merino ewes are a major constraint to reproductive performance (Croker *et al.* 1985). Increases in reproductive rate need to be achieved cost effectively, and in a way that satisfies the increasing consumer demand for a 'clean, green and ethical' product (Martin *et al.* 2004). Feeding lupin grain during the later stages of the oestrous cycle has been shown to significantly increase ovulation rate (Stewart and Oldham 1986; Telini *et al.* 1989) and has the potential to lift the frequency of twin ovulating ewes by 20-30 % (Martin *et al.* 2004). Although the mechanism of action is not completely clear (Martin *et al.* 2004), researchers postulate that short-term lupin feeding influences the reproductive system through increased glucose supply (Telini *et al.* 1989). If this is the case, summer-active pastures may provide a cost-effective alternative to feeding lupins. In this study, we assessed whether short-term grazing of lucerne and chicory increased ovulation rate similar to lupin supplementation.

The experiment consisted of 4 treatments: phalaris (control); phalaris and 500 g uncracked lupins/hd.day (*Lupinus angustifolius* L, cv. Quilnook); lucerne; and chicory; with 2 replicates. The control treatment was a phalaris pasture, providing 16 and 4604 kg/ha of green and dead dry matter respectively. Four hundred, 5-year-old Merino ewes of Centre Plus bloodline were divided into 8 groups after stratification based on liveweight and condition score. Oestrus was synchronised using intravaginal CIDR (0.3 g progesterone, EZI-breed<sup>®</sup> NZ) for 12 days. The second day after CIDR removal corresponded to ovulation and was designated as day 0. Ewes received treatment feeding from Day -9 to Day 0 of the oestrous cycle. Ovulation rate was determined by laparoscopy, 5 days after ovulation, where both ovaries were inspected for the presence of *corpora lutea*. A preliminary analysis of the data is presented (Table 1). Ovulation rates for each treatment were analysed using REML (repeated measurements analysis). The proportion of ewes in each treatment at each ovulation level (0, 1, 2 or 3 *corpora lutea*) was analysed using a chi-square contingency table.

**Table 1. The effect of short-term lupin supplementation or pasture grazing on ovulation rate, and the proportion of ewes with 0 to 3 *corpora lutea***

Treatment	Mean ovulation rate	Number of corpora lutea			
		0	1	2	3
Phalaris (control)	1.30	0.08	0.54	0.37	0.01
Phalaris + lupins	1.26	0.07	0.60	0.32	0.01
Chicory	1.28	0.09	0.53	0.38	0
Lucerne	1.48	0.06	0.46	0.42	0.06
P value	P=0.057*	ns**	ns	ns	ns

\*P value refers to data within columns \*\*ns, not significant compared to phalaris control within columns

Supplementation with lupin grain, and grazing lucerne or chicory, from Day -9 to Day 0 did not significantly affect ovulation rate. Furthermore, the proportion of twin ovulating ewes did not significantly change as a result of the treatments. The failure of lupins to increase ovulation rate or twinning rate concurs with the variability reported under experimental conditions (Croker *et al.* 1985). The lack of response to summer-active pasture was possibly due to low pasture availability, and so the question remains for the potential of summer-active pastures to increase ovulation rate. This study will be continued over the next 2 summers to identify the factors required for positive ovulatory responses to short-term supplementation and to provide reliable recommendations for producers.

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