FIVE LAMBINGS IN THREE YEARS IN NEW ZEALAND

S.T. MORRIS, P.R. KENYON, G. de NICOLO, P.C.M. MOREL, D.M. WEST, P.D. KEMP, W.E. POMROY and I. SCOTT

Institute of Veterinary, Animal Sciences, Massey University, Private Bag 11-222, Palmerston North New Zealand.

Traditional lamb production systems in New Zealand are usually matched with the seasonal pattern of pasture growth. Many industry leaders and especially processing companies looking for continuity of supply have suggested that year-round lamb production systems would be desirable. One such system is the "star system" developed in the USA (Lewis *et al.* 1996). New Zealand sheep breeds are seasonal breeders so any system used would require artificial induction of oestrus at least for part of the year. This paper reports on preliminary results of a field trial to provide proof of concept of a pasture based "star" accelerated lamb production system using 5 individual ewe lambings in 3 years (Morris *et al*. 2004). Two hundred and forty mixed aged composite breed ewes (50% East Friesian, 25% Poll Dorset and 25% Texel) and 240 Romney ewes were randomly assigned to either a "star" or conventional lambing system within a self contained 20 ha farmlet. In the "star" system ewes were joined with rams of their respective breeds after being primed with progesterone to synchronise oestrus on each of the 5 yearly breeding dates (14 January, 28 March, 9 June, 21 August and 2 November). PMSG was used at 400 IU at the January breeding and 800 IU at the August and November breeding. A ram/ewe ratio of 1:10 and a breeding period of 21 days were used. Ewes in the conventional lamb production system were bred on 28 March for 32 days. The conventionally bred lambs were weaned at an average age of 91 days and the star-bred lambs at 70 days. Forage crops were planted in the autumn and spring to meet feed demands in winter and summer. After 2 years the total number of individual lambings (from the original 240 per group) were 587 for the star-bred ewes and 449 for the conventionally bred ewes. Throughout the 2 years, ewe liveweights were higher in the star system compared with the conventional lambing system and East Friesian composite ewes were heavier than Romneys in both systems (Morris *et al*. 2004). Pregnancy rates in the conventional flock were higher than in the star system ($P<0.001$) (Morris *et al*. 2004). The lower average conception rate in the star system (0.69 for East Friesian composite and 0.59 for Romney ewes) was more than compensated for by the higher frequency of lambing (Table 1).

Table 1. Effect of conventional and star lambing systems on number of ewes joined, and lambed and the number of lambs born and weaned and total liveweight of lamb weaned from a 20 ha farmlet for East Friesian composite and Romney ewes

	East Friesian		Romney	
	Conventional	**Star**	**Conventional**	**Star**
No. of ewes joined	135	461	243	473
No. of ewes lambed	225	310	224	277
No. of lambs born	339	509	336	404
No. of lambs weaned	259	426	294	346
Kg lambs sold	7774	9060	7147	7230

The "star" system produced more lambs but at lighter individual weights (19.1 versus 28.2 kg). The East Friesian composite weaned a greater liveweight of lambs due to greater numbers born and weaned. When lamb liveweight is valued at $NZ2 per kg in both systems, returns per 20 ha farmlet were higher in the "star" system. However, this financial analysis did not include labour costs. The major constraint to performance in the star system was a low pregnancy rate (range 0.35 – 0.61) in January, August and November, the non-breeding season (Morris *et al.* 2004) although these are similar to those in other out-of-season breeding studies in New Zealand using exogenous reproductive hormones (Smith *et al.* 1988; Knight *et al.* 1989). It will be necessary to improve breeding performance within the "star" lambing system in the non-breeding season to make it more profitable.

KNIGHT, T.W., McWILLIAM, W.H., KANNEGIETER, S.G., SORENSEN, E.S., RIDLAND, C.J. and GIBB, M. (1989). *Proc. NZ. Soc. Anim. Sci*. **49:** 255-60.

LEWIS, R.M., NOTTER, D.R., HOGUE, D.E. and MAGEE, B.H. (1996). *J. Anim. Sci.* **74:** 1511-22.

MORRIS, S.T., MOREL, P.C.H., KENYON, P.R., KEMP, P.D., BURNHAM, D.L., WEST, D.M., PETERSON, S.W.M., GARY, D.I., SCOTT, I. and POMROY, W.E. (2004). *Proc. NZ. Grass. Assoc.* **66:** 215-9.

SMITH, J.F., CRUICKSHANK, G.F., McGOWEN, L.T., PARR, J. and MORTIMER, B.J. (1988). *Proc. NZ. Soc. Anim. Sci.* **48:** 99-102.

Email: S.T.Morris@massey.ac.nz