LAMB PRODUCTION IN SOUTH WEST VICTORIA: IS 1000 KILOGRAMS PER HECTARE POSSIBLE?

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A simulation exercise was carried out using the GrassGro decision support tool (version 2.0.3.b) to investigate prime lamb production systems in south-west Victoria. This work was prompted by the target of 1000 kg of lamb liveweight per hectare that has been set by the south-west prime lamb group for their focus farm at Condah.

The weather data used was from a range of local sources covering the period 1970 to 1998. Annual rainfall averaged 815 mm. The soil description was based on soil tests from the focus farm. Animal and pasture inputs, management rules and cost and prices were chosen after discussions with the management committee of the focus farm. Supplementary feeding for maintenance was implemented in the paddock when condition score fell to <1.5. The total annual pasture production in the simulations averaged 12.4 tonnes dry matter/ha (range 6.7 to 17.6). The simulations were run in a factorial design. The factors were: (A) ewe fertility, 130%, 170% or 210% (conception rate at condition score 3); (B) stocking rate, 8, 12, 14, or 18 ewes/ha; (C) time of lambing, mid-July, mid-August or mid-September; (D) weaning age, 10, 12, 14, 16 weeks and (E) finishing system, sell at weaning, or hold on-farm for finishing at 24 weeks. These combinations gave a total of 288 simulations.

The most productive treatment was July lambing, weaning at 16 weeks, finishing lambs on-farm with high fertility ewes at 14 /ha. This had an average production of 847 kg of lamb /ha (range 619 to 1235) but only exceeded the 1000 kg target in one year. It had an average gross margin of $602/ha. The most profitable treatment was July lambing, weaning at 16 weeks, finishing lambs on-farm with high fertility ewes at 12 /ha. This had an average of 785 kg of lamb/ha (range 580 to 1104), but only exceeded the 1000 kg target in one year. This treatment had an average gross margin of $623/ha.

The results were then examined from the viewpoint of jointly maximising productivity (the top 25% of groups for liveweight of lamb produced per hectare), and profitability (the top 25% for gross margin per hectare), and considering risk aversion (excluding any of these groups which fell in the top 20% for standard deviation of gross margin per hectare). Thirty-two "best" groups were identified which met these criteria. The overall mean for these 32 best groups was 685 kg lamb liveweight per hectare and $504 gross margin per hectare. Table 1 gives the main effects, shown as the percentage within each cell that fell into this best classification.

Table 1. Main effects of treatment, shown as the percentage within each cell which met the joint criteria for best productivity, profitability and reduced risk

Time of lambing	Weaning age	Finishing	Fertility	Stocking rate
July = 18%	10 W = 7%	Held =14%	Low = 4%	8 = 0%
August =10%	12 W = 10%	Sold = 8%	Medium = 10%	12 = 19%
September = 5%	14 W = 10%		High = 13%	14 = 21%
	16 W = 18%			18 = 4%

There were indications of interactions involving time of lambing; e.g., with July lambing, holding for finishing on-farm with medium fertility and medium stocking rates tended to be the more successful treatments. For the later two lambing times, having high-fertility ewes and selling as stores, again at moderate stocking rates, tended to be more successful. The simulation has shown that a wide range of treatments can be utilised in productive and profitable lamb production systems in south-west Victoria.

The weaning percentages indicated a very large reduction between potential conception rates as set in the model and the actual number of lambs weaned, for example medium fertility ewes were predicted to average 116% and high fertility ewes 142%. This was not greatly affected by time of lambing. Reaching the target productivity will require an improvement in lamb survival and an improvement in nutrition though better supplements and pastures.

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