



Fine tuning the time of lambing in spring: is it profitable?

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Selection of an appropriate time of lambing is a major profit driver in most pasture-based sheep breeding enterprises. In most of southern Australia lambing in late winter-spring ensures the best match between ewe nutrient demand and pasture supply (McLaughlin, 1968; Reeve and Sharkey, 1980, Lloyd Davies and Devaud, 1988). The question remains - what are the gains, if any, to be made from lambing at different times in spring?

The senior author approached CSIRO to examine lamb mortalities and lamb weaning weights for different lambing dates in spring using the computer decision support tool GrassGro™. The property in question was located at an elevation of 1000m on the central tablelands of NSW with a mean annual rainfall of 850mm. Low temperatures limit pasture growth until late September and threaten lamb and ewe survival.

GrassGro was developed by CSIRO Plant Industry to examine whole enterprise production risk for grazing enterprises in temperate zones of Australia (Moore et al, 1997). The program simulates pasture growth and predicts the intake of herbage by ruminants and their productivity using daily weather inputs and user-specified descriptions of soil type, pasture species, livestock and management.

Methods

GrassGro was used to test three lambing dates (15 August, 15 September and 15 October) for a self-replacing fine wool Merino flock grazing highly fertile pastures of cocksfoot, annual grass and subterranean clover at four stocking rates of 9, 12, 15 and 18 ewes/ha. For each option, lambs were weaned at 12 weeks and sold on 14 February. Ewes were fed a maintenance supplement of oats whenever the total amount of available pasture fell below 600 kg DM/ha. The water holding capacity of the red dermosol soil was estimated from soil samples taken on the property. Using local weather records, GrassGro generated predictions of annual gross margins over 20 years from 1978 to 1997, for each lambing date.

Results

At a stocking rate of 12 ewes/ha GrassGro predicted that changing the lambing date from 15 September to 15 August increased average annual lamb mortalities by about 5%. Lambing later on 15 October reduced average mortalities by about 10%. The average weaning weight of lambs was similar for the different lambing dates simulated. Increasing the stocking rate from 12 to 18 ewes/ha decreased average lamb weaning weights by 2-3 kg. At a stocking rate of 18 ewes/ha GrassGro predicted higher weaning weights and lower supplement costs pre- and post- weaning for the October-drop lambs.

Stocking rate had a much greater impact on gross margins than time of lambing in



spring (Figure 1). For any lambing date, increasing the stocking rate from 9 to 18 ewes/ha increased the median gross margin by about \$200/ha although the risk also increased substantially above 12 ewes/ha. Supplement costs were similar for lambing on 15 August and 15 September but less for lambing on 15 October, reducing business risk for the later lambing date. The difference in the median gross margin between lambing dates at any one stocking rate was only \$20.

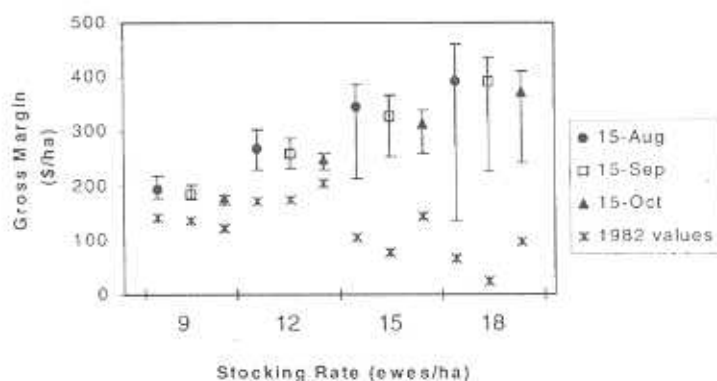


Figure 1. Gross margins over 1978-97 for lambing dates 15 August, 15 September and 15 October at stocking rates of 9, 12, 15 and 18 ewes/ha on the central tablelands of NSW.

For each combination of lambing date and stocking rate: the vertical line shows the range of gross margins, symbols indicate the median value and gross margins for 1982 (a serious drought year) are indicated by an asterisk.

Discussion and conclusions

In this analysis of winter-spring lambing, the primary profit driver was stocking rate rather than lambing date. At lower stocking rates of 9 and 12 ewes/ha there was little difference in business risk between lambing dates. October-born lambs in these simulations did not suffer the reduced pre-weaning growth rates of November-born lambs in the study by Lloyd Davies and Devaud (1988). At higher stocking rates the range in gross margin outcomes increased especially at 15 and 18 ewes/ha although lambing later reduced business risk within each stocking rate. However some caution is necessary in interpreting these predictions. While the greater gross margins from higher stocking rates reflect price premiums for finer wool, GrassGro's predictions of improved profitability may be subject to current limitations in modelling soil nutrients, loss of pasture species and wool strength.

As a result of the GrassGro analysis, the decision to delay lambing from September until October was made with greater confidence. We intend to monitor wool quality and pasture composition on-farm as stocking rates are gradually increased from 12 to 15 or more ewes per hectare. GrassGro provided a framework to explore the outcomes of several management options for a particular farm that would have been difficult to obtain otherwise.

Acknowledgments

GrassGro™ is distributed by Horizon Technology Pty Limited, PO Box 598, Roseville, N.S.W., Australia 2069. Internet address: <http://www.hzn.com.au>



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