Is it important to manage ewes to CS targets?

John Young, Farming Systems Analysis Service, Kojonup, WA

ABSTRACT

The Lifetimewool project is a flagship project for AWI with aims to determine the optimal allocation of feed resources and develop profitable ewe management guidelines for woolgrowers across Australia. The project has developed relationships between the condition score profile of the ewes and the survival and production of their progeny. This information has been used in the economic component of the project to develop CS targets for ewes. MIDAS was selected as the modelling tool for the economic component of the project because it represents the whole flock and it includes a powerful feed budgeting module that optimises animal and pasture management across the whole farm.

For a spring lambing flock including the production relationships alters the outcome about the most profitable nutrition strategy for ewes. The targets are to join in CS 3, allow slow loss of condition to day 90 and regain the condition back to CS 3 by lambing. The targets for an autumn lambing flock are not affected by including the production relationships and the targets are to join ewes in CS 3, allow ewes to lose 0.4CS up to day 90 and regain the condition after lambing.

AIMS

The Lifetimewool project has developed relationships between the condition score (CS) of ewes at critical times of the year and the survival and productivity of their progeny. Ewes that are in better condition at joining will have progeny that cut more wool and are heavier at birth. Gaining (losing) condition between joining and day 90 of pregnancy and between day 90 and lambing results in progeny that are heavier (lighter) at birth and cut more (less) wool that is finer (broader) (See Table 1 for the magnitude of the changes measured). Twin born progeny that are heavier at birth have a higher survival in the first 48hrs after birth.

Table 1 : Coefficients fitted in the statistical model that explains progeny production from Ewe CS at joining and change in CS during pregnancy and lactation.

	CFW (kgs)	FD (μ)	Birth Weight (kgs)
Ewe CS at Joining	0.10	0.0	0.27
Ewe CS change			
Day 0-90	0.19	-0.31	0.33
Day 90-lambing	0.19	-0.36	0.45

The aim of the economic component of the project was to utilise this information and determine the optimum CS targets for ewes lambing in spring and ewes lambing in autumn.

METHOD

The calculations were done using the Great Southern version of the MIDAS model (Young, 1995). The features of MIDAS that make it suited to this task are that the model includes the value of production of the whole flock and it also includes a powerful feed budgeting module that optimises animal and pasture management across the whole farm.

The model represents a 'typical' 1000ha farm in the Great Southern region of Western Australia. The analysis is based on a self replacing merino wool producing flock utilising a medium wool genotype and running 6500 ewes. Surplus ewes and all wethers are sold as hoggets off shears at 1.5 years old. Cast-for-age ewes are sold at 5.5 years. The pasture production is based on a mixed sub-clover, annual grasses and herbs pasture typical of farms in the region.

RESULTS

Including the biology that has been quantified as part of the Lifetimewool project in the economic analyses alters the outcome about the most profitable CS targets for July/Aug lambing ewes. The optimum targets are allowing slow loss of condition during early pregnancy and then regaining the lost condition on green feed prior to lambing. Achieving these CS targets for ewes at day 90 and lambing increases profit by up to $46 000/farm (Figure 1). Achieving the lambing target ($28 000) is relatively more important than achieving the day 90 target ($14 000 - $16 000) so if the condition cannot be regained on green feed after day 90 then it is better to maintain condition between joining and day 90.

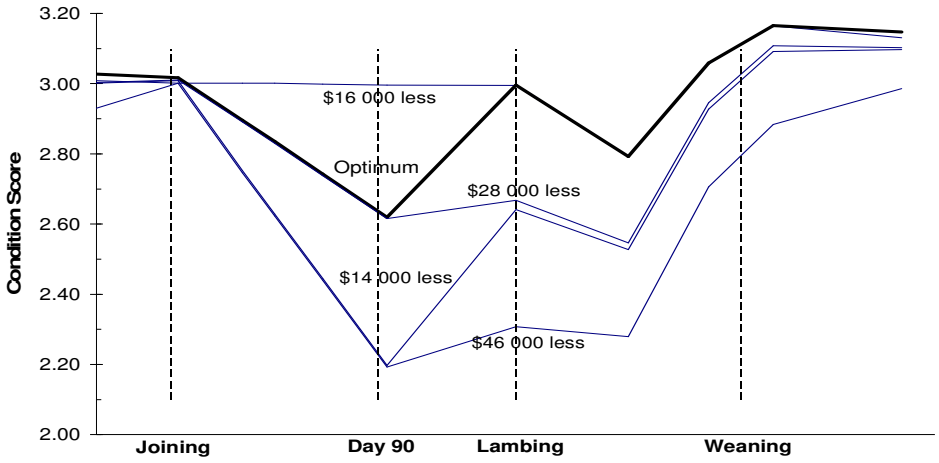

Figure 1: Change in profit if CS targets aren't achieved (July/Aug lambing).

The target at joining (not shown in Fig 1) is less important for profit than both the day 90 target and the lambing target with a value less than $6 000 per farm. However, allowing ewes to be light at joining results in the minimum CS of the ewes at day 90 being lower with resultant higher death rates of ewes and lambs. This effect would be magnified in a poor year and therefore aiming for CS 3 at joining has a lower risk than aiming lower. If higher CS is volunteered in a good season this will increase profit.

The optimum profile for autumn lambing flocks (join ewes in CS 3, allow ewes to lose 0.4CS up to day 90 and regain the condition after lambing) is unchanged by inclusion of the Lifetimewool effects. This is because there are only limited opportunities to adjust the ewe profiles other than by using grain feeding and this is more costly than the benefits received from improved survival and production.

CONCLUSION

The optimum targets for a spring lambing flock are to join in CS 3, allow slow loss of condition to day 90 and regain the condition prior to lambing. This profile has a high profitability and the survival of ewes and progeny is high. The optimum targets for an autumn lambing flock is to join in CS 3 or higher, allow slow loss of condition to day 90 and then maintain to lambing. The difference in profit between profiles for the autumn lambing flock is smaller than for spring, so the targets are less critical.

Decision support tools are currently being developed that will allow the profitability of achieving CS targets for individual flocks to be calculated.

KEY WORDS

Ewe nutrition, MIDAS, economics

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