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Finding Western Australia's most profitable merino flocks

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Wether trials across Western Australia are showing significant differences in Merino flock productivity, which have important implications for whole-farm profitability. David Windsor reports on how wool growers in the 21st century can maximise productivity by combining superior management skills with the best available genetic material.

The downturn in wool prices during 1998 has highlighted the need for woolgrowers to ensure their flocks are performing as efficiently as possible. It is imperative that woolgrowers seriously consider the profitability of their flocks and how this can be improved.

Sheep and pasture management activities such as Woolpro and Prograze are providing farmers with skills to grow better pastures and to convert them into wool more efficiently. A growing number of Western Australian woolgrowers are now seeking to identify the most profitable sheep to graze those pastures by determining relative strengths and weaknesses of flocks through wether trials.

To demonstrate the importance of the production differences shown in wether trials, Agriculture Western Australia has undertaken two analyses using trial results, its Model of an Integrated Dryland Agricultural System (MIDAS), and other relevant factors. The aim of the exercise is to show how woolgrowers can put an accurate economic value on these flock differences and make more informed decisions about improving farm profitability.

These analyses indicate that differences in performance between wether trial teams could, when translated onto a typical farm in the Great Southern, result in differences in whole-farm profit of up to $80,000 per year.

What is a wether trial?

A wether trial involves running randomly selected wether weaners from the flocks of participating woolgrowers as a single flock. The production of different teams is then monitored at various stages to compare the productivity of each woolgrower's flock.

The value of wether trials for flock comparisons has been enhanced by the entry of genetic link teams at each trial site by Agriculture Western Australia's Wool Program. Link teams provide a statistical baseline to compare against other teams entered at different sites.
The baseline compares performance differences between each site resulting from the environment and management.

Dr Bronwyn Clarke produces a unique combined analysis which growers can use to compare their flocks with all the flocks entered at linked trial sites and with their "home" site.

The 1998 combined analysis used the results of 75 teams at five sites. The growing interest in wether trials means that the year 2000 combined analysis will include nearly 300 teams from more than 20 sites.

The four-tooth fleece weight and fibre diameter results from the first set of linked trial sites are shown in Figure 1. Woolgrowers need to be aware that individual wether trial results are an indication of a flock's performance, but do not measure the performance of that flock's ram source.

It is hoped that increased wether trial participation by Western Australian woolgrowers in the future will allow comparisons to be made between the State's ram sources through the New South Wales Agriculture Merino bloodline analysis. The analysis compares the performance of Merino bloodlines from hundreds of ram sources participating in wether trials throughout Australia.

**Getting the most out of wether trials**

The wether trial results shown in Figure 1 highlight the large range of production characteristics between Western Australian Merino flocks. Clean fleece weights differ by up to 2kg, while the differences in fibre diameter can be as great as six microns.

The most common approach used in assigning an economic value to flock differences has been to multiply price per kilogram (determined by fibre diameter, length, strength and style) by clean fleece weight, to calculate a fleece value. Individual values are then averaged to obtain a value for the site team. However, this method has a number of weaknesses.

The prices chosen for comparison are often spot market prices which may over or under estimate the importance of individual fleece characteristics (particularly fibre diameter) in the overall market. The process also has a tendency to over-value finer flocks.
In addition, no specialist wool producer has a flock consisting entirely of four-tooth wethers. Gross fleece values also do not consider the costs of growing or marketing wool when comparing flocks.

To overcome these problems, Agriculture Western Australia used a set of five-year average wool prices spanning January 1993 to December 1997. These years included periods of high and low prices, as well as relatively high and low values for fine wool.

The prices used were based on fibre diameter and did not include style or staple strength as these characteristics did not vary much in the four-tooth wether teams used for the analysis.

Four-tooth wether performance was combined with research results from the Great Southern Agricultural Research Institute Base Flocks to estimate the production characteristics of other classes of sheep from the same flocks. This provided an overview of the differences in production for different types of sheep within a single flock.

Using MIDAS and wether trials to determine flock profitability

The overview of whole-flock characteristics formed the basis of the MIDAS analysis for each wether team.

Kojonup consultant John Young used the Great Southern MIDAS model to examine the profitability of flocks with the different fleece weight, fibre diameter, and live weight values observed in the combined wether trial analysis. The characteristics of the MIDAS farm on which the flocks were hypothetically ran are shown in Box 1.

The first MIDAS analysis kept crop and pasture areas constant, allowing a total flock size of 12,000 dry sheep equivalents (DSE – a standard measure of stocking rate). This is equivalent to a stocking rate of 13.8 DSE per winter-grazed hectare, which is above the district average but well within the range of local practice.

Roland and Sylvia Ritson inspect wethers for entry in the Superfine Woolgrowers wether trial. (see far left)

Box 1 - The MIDAS "farm". (see left)
Separate whole-farm profit analyses were conducted for each of the 75 wether teams used in the wether trials and incorporated the fleece weight, fibre diameter and live weight characteristics for each team. The results are shown in Figure 2.

The different coloured symbols on the graph represent the different levels of farm profit associated with different flock characteristics and productivity levels. The effect of flock performance on farm profitability is dramatic, with whole-farm profit ranging from less than $20,000 for the least productive flocks to more than $80,000 per year for the best flocks. Within the middle third of flocks, predicted farm profit varied by up to $25,000.

The difference in profitability highlights the importance of breeding decisions, such as setting breeding objectives or selecting the best ram sources to maximise flock productivity. This is strongly supported by the results of the New South Wales bloodline comparison, which shows a range of gross margins from $10.50/DSE to −$20.90/DSE for different Merino ram sources.

Figure 2 also shows that the most profitable flocks all cut more wool than the average. None of the most profitable third of flocks was more than a micron broader than the average. Six of the eight most profitable flocks combined an above average wool cut with a fibre diameter that was average or finer.

In addition, bigger sheep did not cut more wool. This meant that smaller animals, more of which could be carried per hectare, more than compensated for lower sheep sale values by increasing farm profitability through increased wool cut per hectare.

The second MIDAS analysis adjusted the mix of cropping, pasture, and flock size on the farm to maximise whole-farm profit. This meant that MIDAS would respond to having less productive sheep on the farm by increasing crop area to compensate for lost wool income. The results of this analysis are shown in Figure 3, which compares...
gross fleece value per head for each of the 75 wether teams with the optimal crop area recommended by MIDAS.

Once again, the analysis shows large differences between the results of the different wether teams. Optimal crop area for the most productive teams (based on the 1993-1997 average wool prices) was about 7.5 per cent of the farm area less than the average. A woolgrower running the least productive flock would have to crop 13 per cent more of the farm (about 130 hectares) each year to optimise farm profit.

In fact, the difference in optimal crop area for the least and most productive flocks is about 20 per cent of the whole farm. Enterprise mix is, of course, governed by more than just gross margins. The low wool prices and wheatbelt frosts of 1998 both demonstrate the importance of enterprise diversity for managing risk.

Conclusions

Woolgrowers will be able to seriously consider the profitability of their flocks and the possibility of improvement through increased participation in wether trials. Participation will mean more and better information on flock performance and the ability to make more accurate comparisons between ram sources.

In addition, further MIDAS modelling will increase the relevance of the whole-farm profit comparisons to woolgrowers outside the Great Southern region. Both these developments will assist with better genetic decision-making by Western Australian flock managers.

In summary, these results show the significant effects that flock performance can have on whole-farm profit and the low level of return likely to be generated by many Western Australian flocks.

MIDAS assumes a high level of management skill for both sheep and crop enterprises and achieves high stocking rates and high crop yields. Even with this level of management, unproductive flocks would have low profitability.

This situation reflects the experience of some woolgrowers that cropping has been underwriting unprofitable sheep flocks for much of the 1990s. However, these results also show that a Merino flock with the best available production characteristics can still be one of the most profitable enterprises on the farm. This clearly shows that for the woolgrower, genetic decisions are important decisions.

Further reading

How to choose the most profitable Merino bloodline. Aglnsights 3.0 Holmes and Sackett & Assoc., Wagga Wagga NSW.

Merino bloodline performance. NSW Agriculture, Orange NSW.