NEW SOUTH WALES
LIFETIMEWOOL
MAXIMISING THE GENETIC POTENTIAL OF YOUR FLOCK

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INSIDE

HIGHLIGHTS

Planning for spring 2006

Planning for spring 2006

Phil Graham NSW DPI Livestock Officer (Sheep & Wool) Yass

The seasonal outlook for the next six months is extremely poor due to a lack of soil moisture and the low chance of receiving any reasonable rainfall. Added to this is both the financial and mental impact of the past few dry years. Sheep producers need to make major decisions now regarding flock composition and how many animals can be carried over spring and summer. These decisions will be largely guided by available water supplies and the cost of feeding. All members of your farm business should be involved in these decisions as well as banks and other advisors who can provide critical pieces of information.

NSW DPI has recently released Stockplan®, Decision Support Tool (DST), to assist with drought planning. Stockplan® has been used to derive the following information to provide the data required to make decisions on flock composition and size as well as feed requirements and cost for this spring and summer.

Water audit

Across many parts of NSW a critical issue is a lack of groundwater water, both from dams and streams. Carting of water for stock is not sustainable, so the first action is an audit of your dams.

Performance based culling

The second action could be to cull 15% across all age groups - to ensure that only the most valuable sheep are retained to be fed. Most flocks can recover from this level of culling in following years simply by increasing the number of maidens retained for joining. If you have previously collected fibre measurements, these can be used to identify the lower performing animals to be culled.

Cost of feeding and tonnes required

The Drought Pack component of the StockPlan® DST has been used to look at the cost of feeding and the quantity of grain required for the base ewes.

All runs have used $300/t landed as the grain price. The forecasted poor 2006 harvest in NSW is putting upward pressure on prices. In 2003, prices for grain seemed to peak at $300 as this was the breakeven cost of importing grain. The cost of feeding the grain has been set at $15/t. Feeding will be required from January and will continue for 6 months to June. The following assumptions were used for each run:

(a) 1000 ewes, August lambing – provide 100% of their requirements from grain and maintain them at FS 3 to ensure reproductive performance. Total cost $33,800 using 108 tonnes of grain.

(b) Same as above except allow ewes to lose 0.5 FS by the time of joining. Total cost $28,900 and 93 tonnes of grain. This run will result on 8% fewer lambs and a 5% adult death rate.

(c) 1000 ewes, May lambing – provide 100% of their requirements from grain. Total cost $51,400 and 164 tonnes of grain.

(d) 1000 ewes, August lambing – allow ewes to lose 1 FS and thus accept a lower reproductive performance and lower wool returns – all feed requirements from grain. Total cost $25,500 and 81 tonnes of grain. This run allows for 14% fewer lambs and a 7% adult death rate.

All the above runs were based on providing all livestock requirements from grain, therefore putting no pressure on pastures. The following run assumes the ewes are still on pasture, thus slightly reducing the supplement required, but carrying the risk of long term damage to pastures.

(e) 1000 ewes, August lambing – on pasture, but supplemented to maintain their FS. Total cost $30,300 and 97 tonnes of grain. This run is the same as (a) except that the stock are on pasture. The difference is $3,500, or $3.50/ewe and a saving of 11 tonnes of grain over the 6 months.

A strategy for a May lambing could be to delay lambing. Comparing (a) with (c) gives us a saving of $17,600 and 56 tonnes of grain by delaying lambing to August.

australian wool another innovation limited

Longer Term Financial Impact

The previous section does not show the longer term financial impact on the farm business. The ImPack module of StockPlan® shows the 5 year impact of each run. It must be remembered that ImPack is based on enterprise Gross Margins and therefore does not take into account any fixed costs for the farm. The following values were used in the analysis:

- Net wool return per ewe of $22
- Culled ewes sold for $20
- Wether and ewe hoggets sold for $30
- Variable costs of $12 per ewe
- 85% lambs weaned (standard)
- 12% weaner and 3% adult death rate
- Feeding costs are included for all stock
- Retain 15% more hogget ewes to increase flock to base year numbers

Figure 1 shows the gross margins for each run, made up of ewes plus 800 followers. The solid line is the yearly gross margin pre-drought ($29,810/year). Over the 5 year period the variation between the strategies is approximately $10,000. For all the scenarios there is a substantial cash loss in the year in which the strategy is adopted. Your present cash position or attitude of your financial institution will have a large bearing on the strategy you choose to adopt.

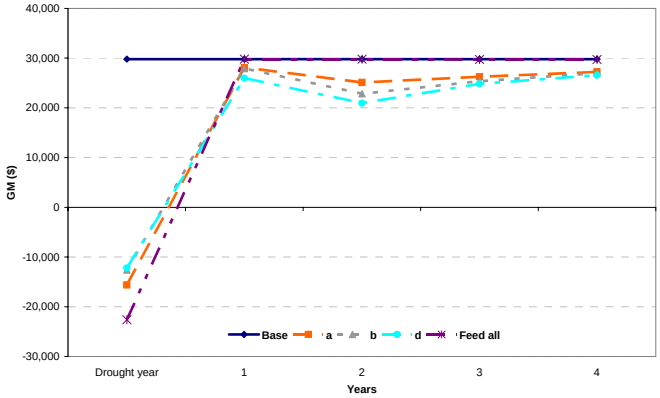

Figure 1. Gross margins for each run.

Figure 2 shows additional runs with heavier rates of culling (45% culled and feed remaining and 80% culled and only retaining maidens with no feeding) - these could be strategies people use because of a lack of water. It also shows a late action strategy – let ewes lose condition and feed at 1.5 FS. The consequences of the late action strategy are: i) lambing percentage of 50%; ii) adult death rate of13%; and iii) weaner death rate of 20%.

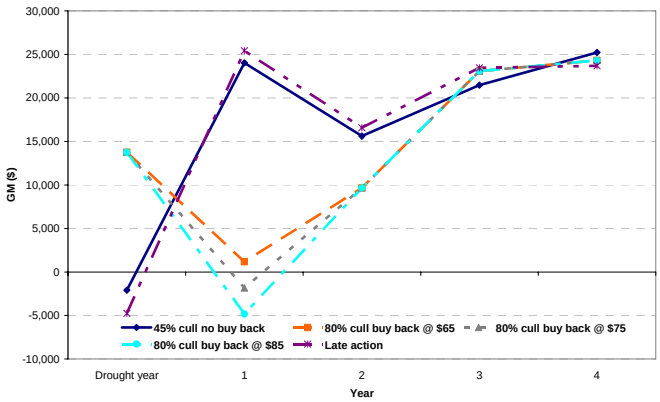

Figure 2. Gross margins for additional runs.

The aim of this article is to provide information to assist you in making decisions. There is no one right decision. All options have been covered from feeding all stock in good condition to letting them slip then feeding. Feeding costs and quantities are provided and the likely longer term impact on gross margins given for all options plus the impact of a high and extreme destocking strategy.

The actions needed now are:

1. Water audit – this could be set the destocking levels on some properties.
2. Financial health of the business – combine your current position with the likely costs outlined in this article. Is there the money available to feed, if so how many? This will set a destocking level.
3. Mental robustness of the business partners – Are you prepared to face another round of feeding? Some people are saying no.
4. Sourcing grain and hay supplies.

This article has supplied some basic outputs. We cannot cover all situations. NSWDPI has developed the Stockplan® workshop to allow producers to tailor the outputs for their own situation. Stockplan® workshops will be run on demand across the state. Contact your local NSWDPI office.

Sheep enterprise profit and breeding ewe management.

Phil Graham NSW DPI Livestock Officer (Sheep & Wool) Yass & Dr Sue Hatcher NSW DPI Senior Research Scientist

While many wool producers accept that optimised ewe management during the breeding cycle will have positive benefits for both the ewes and the lifetime performance of their progeny, they are questioning the economic benefits of achieving and maintaining the fat score targets. At present it is not known whether actively managing the fat score profile of breeding ewes will have a major or minor impact on profitability. Preliminary economic modelling of early work in this area suggested that targeted nutritional management of breeding ewes at key times of the reproductive cycle can increase whole farm profit - potentially by more than $5 per ewe per year. That early work found the effects on the lifetime wool production of progeny accounted for more than 80% of the increase in profit from feeding ewes more during pregnancy. However the likely economic benefits from optimised nutritional management of breeding ewes will vary with region due to differing lengths of the pasture growth seasons, stocking rate and flock genetics (i.e. fine versus broader wool types).

The GrassGro™ model was used to determine the sensitivity of sheep enterprise profit, gross margin per hectare ($GM/ha), to how breeding ewes are managed during the reproductive cycle for 2 regions in NSW representative of predominately grazing (Yass) or sheep/cereal (Parkes). GrassGro™ simulated the performance of 3 target fat score (FS) profile flocks (ie FS2.5, FS3-4% extra lambs compared to the FS2.5 flock and FS3-10% extra lambs). The 4% and 10% extra lambs represent the variation in conception response achieved by the ewes being 0.5 FS better condition at joining compared to the FS 2.5 flock. For each location each flock was run on the same fertilized pasture comprising annual grasses with 10% legumes with historical weather data and soil types typical of the regions used to ‘grow’ the pasture. Each simulation was modelled using the same

pasture, soil and weather parameters in a paddock of 100 ha with a stocking rate of 8DSE/ha.

The profitability of sheep enterprises ($GM/ha) at both Yass and Parkes were sensitive to how the breeding ewes are managed during the reproductive cycle. For both regions the FS3-10% flock had the highest gross margin but was also the 'riskier' in terms of variability in gross margin. The longer lower 'whiskers' of the box plots (Fig 3) clearly shows that for both regions, the variability of gross margin was higher in worst 25% of years compared that occurring in the best 25% of years. In fact, for 15% of the years at Yass and nearly one –third of years at Parkes during the simulation period the gross margin was less than the $100/ha overhead costs for all three fat score profiles.

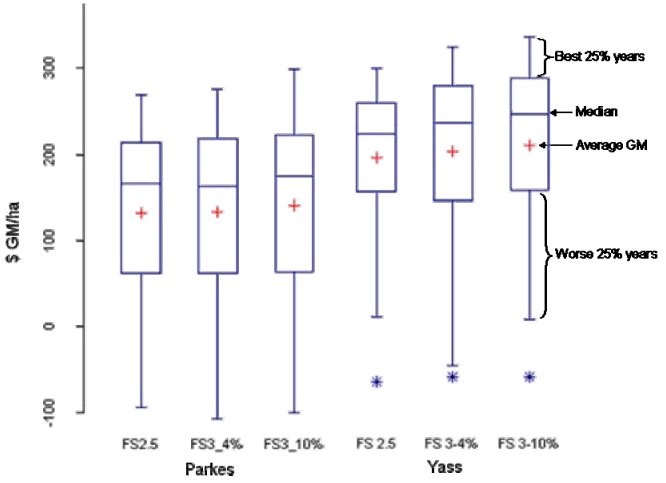

Figure 3. Variability of gross margin ($/ha) from the GrassGro™ simulations for Parkes (1971-2001) and Yass (1971-2003). The average GM is represented by the '+', the box represents the upper and lower quartile around the median and the whiskers above and below the box depict the statistical extremes of the distribution. Outliers are represented by an asterisk.

The key driver of gross margin for the various fat score target profiles across both regions was the amount of maintenance supplement required to achieve the fat score targets. There was a strong inverse relationship (r^2 = 0.93) between the amount of maintenance supplement fed and the resulting gross margin regardless of the particular target fat score profile or region. This highlights the importance of meeting the fat score targets using pasture and matching the breeding cycle to pasture availability as well as the significance of efficient use of supplements.

Producers can use this type of information to make an informed decision about the consequences of not feeding in dry (or riskier in terms of gross margin) years in order to manage year-to-year variation in gross margin. This decision will need to be made before joining and the break of the season. In dry autumns producers may need to accept a lower fat score target and acknowledge the production penalties (i.e. reduced conception and poorer ewe and progeny wool production and quality) that are likely to occur as a result with a view to balancing the impact of cost of supplements with gross margin/ha. In bad years the decision to feed should be controlled by ewe condition in relation to ewe survival especially if winter shearing is part of the management routine.

A comparison of the results of these simulations to other potential flock management decisions (ie reducing stocking rate) found that the overall impact of reducing stocking rate is to reduce income in good years which more than outweighs the benefits of a lower stocking rate in the poor years. This clearly shows that a balance must be reached between optimising stocking rate from an economic perspective versus managing a flock for maximum individual performance. Optimisation of whole farm stocking rate in the face of fluctuating feed supplies will undoubtedly lead to sub-optimal management of the breeding ewe to achieve less than maximum rates of production for both herself and her progeny. The Lifetime Wool project is seeking to quantify the full range of consequences occurring from manipulating ewe nutrition to increase our ability to predict whole system outcomes from changes in ewe management and fluctuating feed supply during the breeding cycle.

This article was summarised from a paper titled "Achieving fat score targets: the costs and benefits" the authors prepared for the 2006 Australian Farm Business Management Network Conference "Growing the business – setting a focus for tomorrow". A copy of the paper can downloaded from the website of the AFBMNetwork www.csu.edu.au/faculty/sciagr/rman/afbmnetwork/ . Click on the 'AFBM Journal' tab and then the 'Volume 3 – Number 2 – 2006' link.'

What drives the conception response to fat score at joining?

Dr Sue Hatcher, NSW DPI Senior Research Scientist

For adult ewes there is a strong relationship between fat score at joining and conception rate (see Volume 2 Issue 1 January 2005 of this newsletter), but does the conception rate of maiden ewes respond in the same manner?

Maiden ewe conception - it's all about bodyweight

Data from maiden ewes' at the three NSW paddock-scale sites (Carwoola, Kialami and Oak Hills) were combined with that from one of the NSW co-learning sites (Willawong). The analysis looked at the relationship between fat score and bodyweight of the maidens at joining with conception rate using their pregnancy scanning information.

For maiden ewes both bodyweight and fat score had a significant impact on conception rate (lambs scanned/100 ewes). But bodyweight was the more important factor as it explained more of the variation in conception rate. For every 5 kg increase in bodyweight of maidens at joining an additional 8 lambs were scanned (Fig 4).

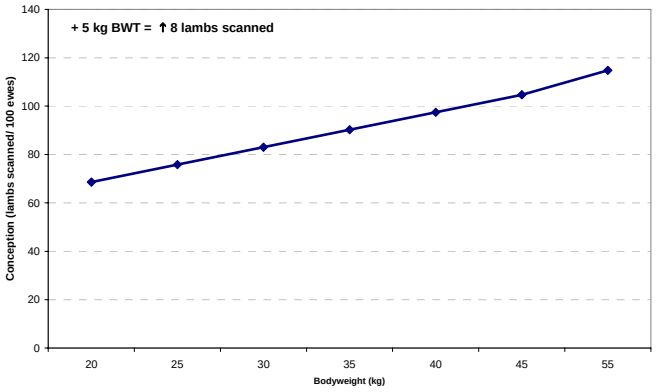

Figure 4. Maiden ewe conception rate has a linear relationship with increasing fat score.

What drives the conception response?

In order to determine what is driving the conception rate response to either bodyweight (maidens) or fat score (adults ewes) at joining, data from both classes of ewes were used

to analyse the probability of a ewe being dry, or conceiving single or multiple lambs based on their bodyweight and fat score at joining.

Adult ewes

For adult ewes liveweight at joining had a significant impact on the probability of a ewe being dry and conceiving multiples. As bodyweight at joining increases:

i) the probability of a ewe being dry increases significantly to about 42% at 65 kg
ii) the probability of a ewe conceiving a single lamb declines to 10% at 65 kg.
iii) the probability of a ewe conceiving twins increases to about 48% at 65 kg (Fig 5).

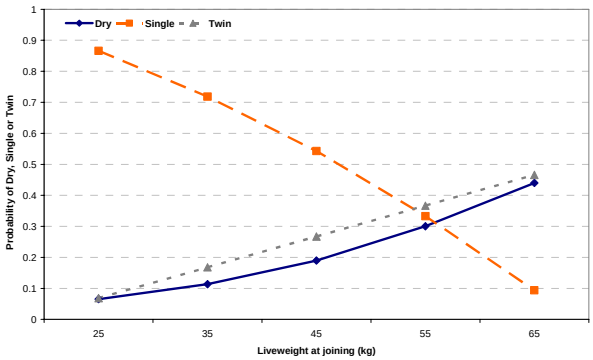

Figure 5. The probability of an adult ewe being dry or carrying a single or twin foetuses.

Therefore the increased reproduction rate of adult ewes with increasing liveweight and/or fat score a joining is largely due to a greater proportion of ewes conceiving multiples, ***not*** through less ewes being dry. As a result the overall reproduction rate of adult ewes (see Volume 2 Issue 1 January 2006 of this newsletter) decreases at higher liveweights – at high liveweights there is very little difference between the probability of a ewe being dry and the probability of a ewe conceiving twins.

Maiden ewes

For maiden ewes liveweight at joining had a significant impact on the probability of a ewes being dry but had no significant impact on the probability of ewes conceiving multiples. As liveweight at joining increases the probability of a maiden ewe being dry drops, as does the probability of her conceiving a single lamb (Fig 6). However the probability of her conceiving twins increases. For example, at 45 kg, nearly 80% of the ewes will conceive singles, 10% will conceive twins and more than 10% of the maiden ewes will be dry.

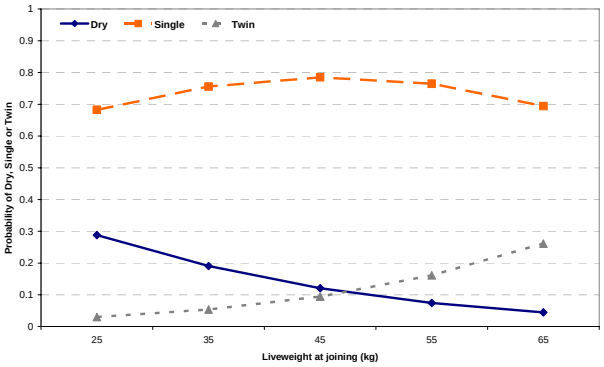

Figure 6. The probability of a maiden ewe being dry or carrying a single or twin foetuses.

Therefore the impact of liveweight at joining on reproduction rate is to increase the probability of maiden ewes conceiving twins ***and*** decrease the probability of them being dry.

The bottom line …

Improved body condition (either fat score or liveweight) at joining for both maidens and adult ewes will result in more twin lambs being born into the flock. This will require thorough planning and management following pregnancy scanning to ensure optimal survival and lifetime production from these additional twins.

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