NEW SOUTH WALES
LIFETIME WOOL
MAXIMISING THE GENETIC POTENTIAL OF YOUR FLOCK

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INSIDE

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Dry offers no break from worms

Stephen Love, NSW DPI State Worm Control Coordinator, Armidale

Although worm egg counts are often lower in a drought, sheep can become very wormy, very quickly for a number of reasons. Woolgrowers should not become complacent about internal parasite management just because of dry conditions. Rapid increases in worm numbers can occur due to management changes, declining immunity and localized weather events, such as short sharp showers, which can produce localized run-off and a fresh batch of infective larvae – and green pick – over parts of a paddock. In dry times in liver fluke country, sheep tend to spend more time foraging in 'flukey' parts of a farm where there is still some green feed.

Some round worms are better than others at handling dry conditions, for example small brown stomach worm (*Ostertagia/Teladorsagia*) and thin-necked intestinal worm (*Nematodirus*). Other worm species can quickly take advantage of conditions when they improve, notably barber's pole worm (*Haemonchus*), which is able to multiply rapidly.

During dry times, sheep can be more susceptible to worms because of nutritional stress, particularly late pregnant or lactating ewes, and young lambs. Worm infections can have a significant and costly impact on livestock performance. Sheep health is one of the easiest inputs into wool production to manage, and deserves to be given a high priority. During dry conditions, sheep producers should

- Keep up regular worm egg-count monitoring.
- Be guided by general worm control guidelines for their area and expert local knowledge.
- Check on the effectiveness of drenches used – if a full-blown drench-resistance test has not been done recently, at least do a DrenchCheck (a simple worm egg count 14 days after a routine drench). If long-acting drenches are used, a second worm egg count 28 days after treatment is also recommended. Many farmers unwittingly use drenches that have become ineffective due to worm resistance.
- Use grazing management – for example, spelling or rotational grazing with cattle – and other non-chemical management strategies - to avoid excessive worm challenges for susceptible classes of sheep.

These are the four major principles recommended by Wormboss, which was developed by the Australian Sheep Industry Cooperative Research Centre Sheep and Australian Wool Innovation to help producers meet the challenges of worms in their sheep enterprise. The WormBoss website offers the livestock producer information on worm egg counts, immunity, nutrition, drenches, drench resistance and good management practices. It also features 'Ask the Boss', which allows users to ask questions regarding internal parasites in sheep and obtain advice on which steps to take. Producers can also register to receive monthly Worm Updates via email newsletter, with up-to-the-minute recommendations and research results.

For more information visit the Wormboss website www.wormboss.com.au

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The importance of ewes to drought recovery

Dr Sue Hatcher, NSW DPI Senior Research Scientist

Since this drought began, sheep producers have had to make some tough decisions regarding their Merino flocks:

- How many stock can I run?
- What is the best flock composition?
- Which animals to I keep and which do I sell?
- Which ones to feed and how much to feed?

At this point in time you would have invested quite heavily in the ewes that you retained on farm. Given the historically small size of the Australian sheep flock, progeny born during 2007 will be more valuable than in most years- due to the relatively high cost of replacement stock. So what have we learnt from the Lifetime Wool project that will maximise the productivity of your flock post drought?

The previous edition of this newsletter (Volume 3, Issue 1 January 2007) highlighted the fact that the condition, liveweight or fat score, of your ewes at joining sets the potential number of lambs to be born into your flock. Across NSW, mating for a spring lambing is either already underway or about to commence, so there is little to no opportunity to increase the potential number of lambs to be born in 2007 by manipulating ewe fat score prior to joining.

The focus now needs to be on ewe management strategies to maximise the productivity of your breeding flock for the rest of this year. Actively managing the condition of your flock to fat score targets during the breeding cycle can have positive impacts on all aspects of the flock:

- improved ewe fat score at lambing will minimise ewe mortality and increase lamb survival
- increased progeny birth weights will improve lamb survival
- increased progeny growth rates will increase weaner survival
- positive impacts on the lifetime wool production and quality of the progeny.
- set your ewes up for joining in 2008.

What are the fat score targets?

Your NSW Lifetime Wool team has developed three target fat profiles based on the energy requirements of the ewe during pregnancy and the 'typical' seasonal pattern of feed availability in each region. Choose the one that best matches your production system based on which region your flock graze in and your time of lambing:

1. Southern and Central NSW - autumn lambing
2. Southern and Central NSW - late winter lambing
3. Northern Tablelands - spring lambing.

Southern and Central NSW - autumn lambing

For autumn lambing flocks, the period between weaning and joining is critical to successful reproduction. During this time ewes need to increase their fat score to allow for a subsequent gradual loss of condition during pregnancy as pasture dries off and quality declines during summer and autumn (Fig 1). For autumn lambing flocks a target fat score of 3.8 is required at joining which should be maintained through to pregnancy scanning at day 90. This allows a gradual decline to 3.2 at lambing and falling further to a minimum of about 2.8 during early lactation. The availability of green feed prior to and following lactation should be used to re-build the fat score of autumn lambing ewes prior to their next joining.

A Lifetime Wool economic analysis of an autumn lambing flock in the Great Southern Region of WA concluded that the optimum profile was for ewes to lose a moderate amount of weight through to lambing and then regain this condition after lambing. It was not profitable for producers to regain the ewe's weight prior to lambing because the only feed available to achieve this is grain which was more costly than the benefits likely to be received from the improved survival and production from the progeny.

Southern and Central NSW - late winter lambing

For southern and central NSW, lambing in late winter provides a better match between ewe energy requirements during pregnancy and available pasture quality and quantity. For late winter lambing flocks, a target fat score of 3 or above is required at joining, this allows for a slow weight loss during autumn which can then be turned around prior to day 90 on green feed to achieve a target fat score of 3 at lambing (Fig 2). A moderate loss of condition

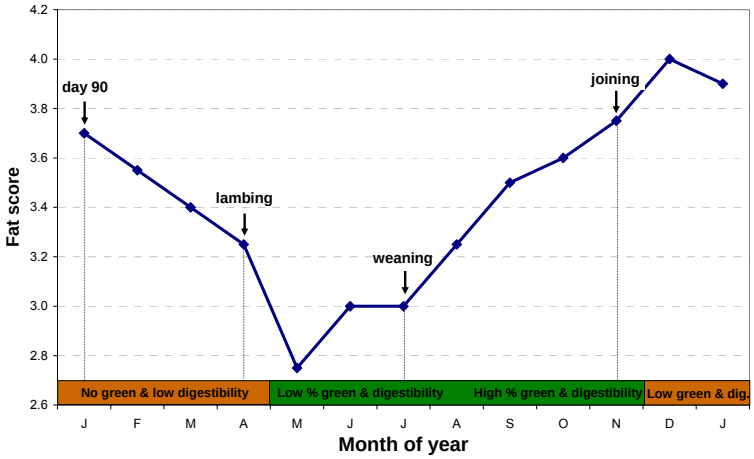

Figure 1: Target fat score profile for Merino breeding ewes in southern central NSW autumn lambing.

from joining to day 90 of pregnancy is acceptable, provided the condition can be regained prior to lambing. But it is important to be able to regain the lost fat score using available pasture - if supplementary feeding is required to regain the lost condition the cost of the grain will negate some of the increased production value from the flock.

If it is not possible to regain the lost fat score using pasture than it is important to ***maintain*** the ewes fat score between joining and day 90 of pregnancy. Fat score loss followed by regaining the lost condition uses three times the amount of energy as maintaining a constant fat score.

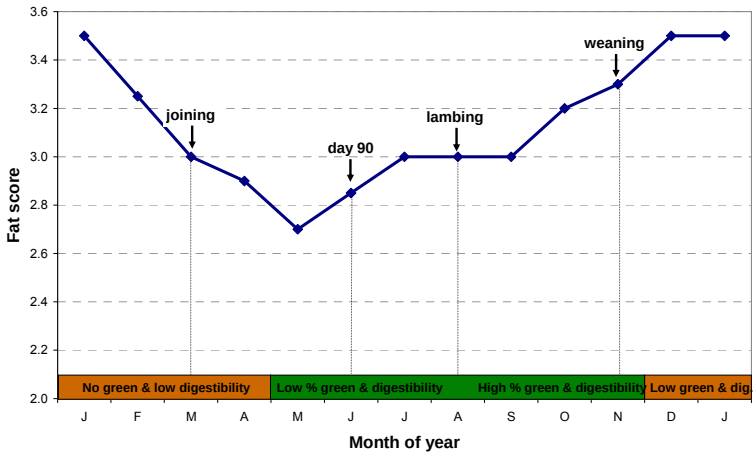

Figure 2: Target fat score profile for Merino breeding ewes in southern central NSW late winter lambing.

Northern Tablelands - spring lambing

The pasture quality and quantity profile for the Northern Tablelands region is very different to that in other parts of the state and has implications for breeding ewe management. The weaning to joining period is critical for successful ewe reproduction on the Northern Tablelands. Ewes should be at least fat score 3.5 at joining to allow for a decline in fat score during pregnancy. As approximately 80% of sheep producers in this region shear between day 90 and 100 of pregnancy, breeding ewes face the additional energy requirement of thermoregulation post-shearing on top of the energy demands of late pregnancy.

While the ideal would be to maintain ewe fat score from day 90 of pregnancy to lambing, this is unlikely given the typical pasture growth pattern at this time (Fig 3). Late pregnancy coincides with a trough in pasture growth and much of the feed available at this time is low quality carryover native pasture from summer and autumn. This will vary between properties, depending on the extent of pasture

improvement. While the target fat score profile shows an increase in fat score during lactation, this would be very difficult to achieve in practice - but gaining weight from weaning through to joining is generally not a problem in this region.

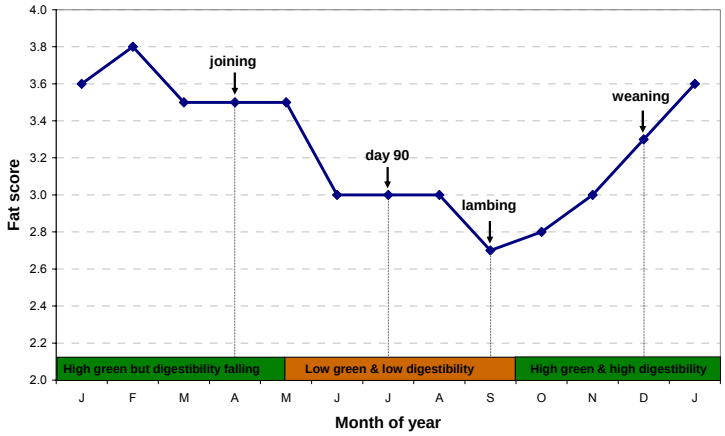

Figure 3: Target fat score profile for Merino breeding ewes in Northern Tablelands late winter lambing.

Monitoring the fat score of ewes at critical stages of the reproductive cycle in conjunction with regular pasture assessment will allow you to prepare more accurate feed budgets. This will ensure the differing nutritional requirements of the ewes at various stages of the reproductive cycle are met in the most cost effective manner. Remember that it is possible that your current management regime is close to these optimum fat score targets for breeding ewes - you need to regular assess the fat score of your ewes to determine where they sit in relation to the optimum profile.

The bottom line …..

Managing your ewes to the target fat score profile appropriate to your region will impact on farm profit by allowing you to balance the energy demands of ewes during pregnancy and lactation with feed supply. This will lead to cost-effective supplementation at critical stages of the breeding cycle as you will only be feeding those ewes that require the additional feed. Additionally you will not be compromising the production from your breeding ewes - the impact of reproduction on the ewe's own clean fleece weight and wool quality will be minimised. At the same time you will be maximising the reproduction response of your flock, from conception to lambs weaned and setting your ewes up for joining in 2008.

The impact of underfeeding breeding ewes

Dr Sue Hatcher, NSW DPI Senior Research Scientist

The growing foetus provides a large 'sink' for energy and protein during pregnancy. While the ewe will do her best to meet the increased energy demands through increasing her intake of feed, this won't always meet the demands of the foetus particularly during late pregnancy and early lactation. The amount of protein and energy taken by the foetus is unregulated and can leave the ewe with nothing to maintain herself on. In this situation energy and protein will be mobilised from the ewe's internal fat and muscle stores.

The timing and degree of mobilisation of ewe's energy reserves will vary according to the quality and quantity of available feed as well as the stage (ie days from joining) and type of pregnancy (ie singles versus twins). Data from the three NSW Lifetime Wool paddock-scale sites was used to calculate the changes in maternal weight of the ewes. The maternal (or fleece- and foetus-free) liveweight of each ewe was calculated using the joining date, days from joining, previous fleece weight and pregnancy scanning information (ie dry or carrying a single or twin lamb/s). The change in maternal weight relative to the dry ewes in the high and low nutrition groups represent the degree to which maternal body reserves were mobilised to meet the demands of pregnancy and lactation.

The negative deviations indicate that the dry ewes were lighter at joining than those ewes that conceived (Fig 4). A positive value indicates that the pregnant ewes had a lower maternal weight than the dry ewes and were mobilising their own body reserves to provide the energy and protein required by the growing foetus.

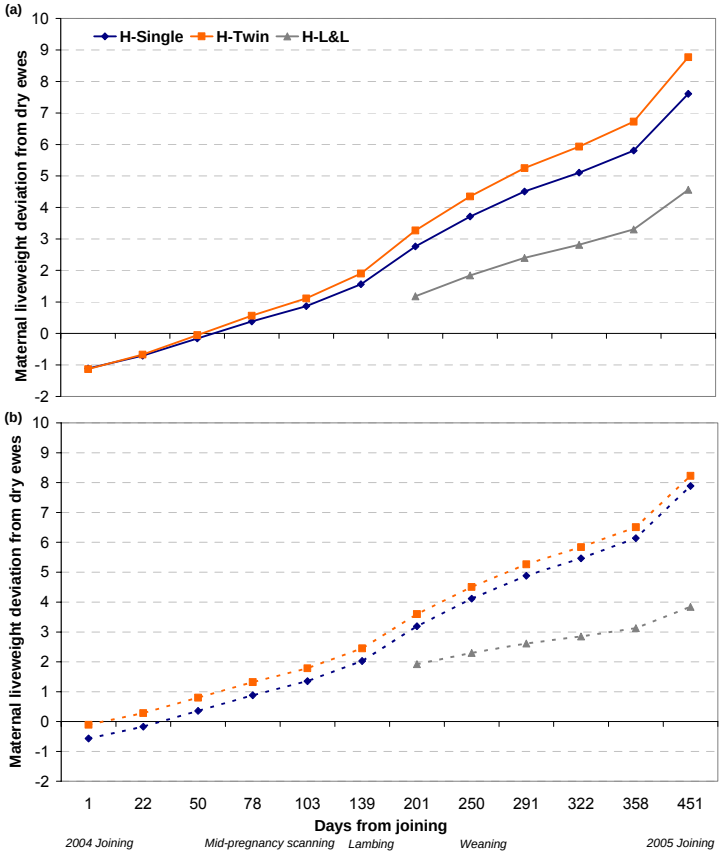

Figure 4: Maternal (fleece & foetus free) liveweight of breeding ewes in a) high and b) low nutrition treatment groups from joining in 2004.

In the high nutrition group (Fig 4a) single and twin bearing ewes had essentially the same maternal weight as the dry ewes to day 50 of pregnancy. But by day 78 they were both lower relative to the dry ewes and had started to mobilise their body reserves. The maternal liveweight of the single and twin bearing ewes was similar to mid-pregnancy but began to diverge at day 103 from joining with the difference increasing over time. This reflects the fact the twin bearing ewes must mobilise more of their body reserves to meet the higher energy requirements of their two foetuses. In fact the deviation of both single and twin bearing ewes from each other and the dry ewes persisted until pregnancy scanning the following year. This pattern was also evident in the low nutrition group, but ewes in this group, both single and twin bearing, began to mobilise their body reserves about 4 weeks earlier than high nutrition ewes (ie day 50 from joining versus day 78 for the high nutrition ewes).

Pregnancy toxaemia is the most noticeable consequence of the ewe metabolising her own energy reserves to satisfy the

demands of her foetus. The by-products of this process (ie ketones) as well as a reduced energy supply cause the ewe to become sick and show signs of the disease. However other production consequences will also occur including reduced wool cut and a decreased likely hood of conception at her next joining if the ewe can't regain the energy and protein reserves mobilised during pregnancy.

Drought recovery - getting your finances back on track

Phil Graham, NSW DPI Technical Specialist Livestock Grazing Systems, Yass

The impact of this drought has been so severe to many farm businesses that decisions made about recovery will be critical. How are you going to recover your farm income? Stock numbers are down, and this has a long carry over effect, especially with ewes. Are you going to use crops to cover decreased livestock income, or agistment, or trading, or will you buy back ewes? The following examples demonstrate the impact of some possible strategies:

i) The base strategy is to feed all the ewes a full ration for 7 months and breed back to pre-drought numbers. The farm does not achieve its pre-drought (2002) financial level until 2013 for this strategy (Fig 5).

ii) This strategy involves feeding the core ewes a full ration for 7 months, buying back ewes at $95 per head and breeding back wether numbers. This strategy initially increases the level of farm debt due to the ewe purchases before recovering to 2002 level by 2010.

iii) The second of the two buy strategies is similar to the first but also includes trading aged wethers. This second buy strategy increases farm debt more than the first buy strategy as both ewes and wethers are purchased but the pre-drought financial level is achieved sooner in 2009 due to the additional income generated by the wether trading.

iv) The last strategy is where producers have let ewe condition drop to a level that resulted in a very poor 2007 joining. While this strategy has a much lower feed bill in 2007, the subsequent ewe losses and poor lambing have a significant negative impact on farm finances in 2008 and 2009 which continues to 2012. This strategy highlights the importance of breeding ewe management - even in drought conditions.

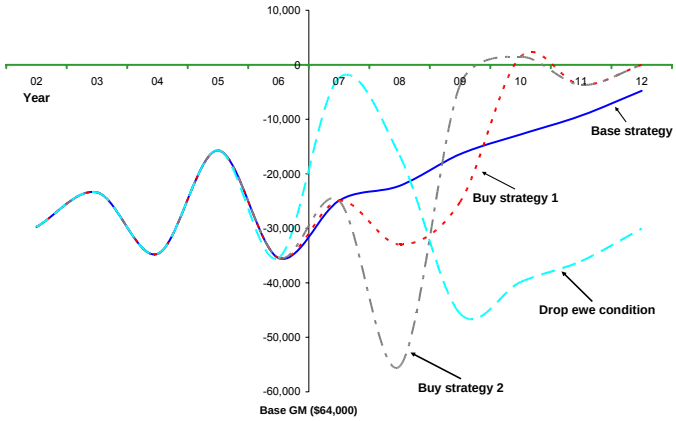

Figure 5: The financial impact of various stock selling and feeding strategies.

These examples have been carried out using the ImPack module of the Stockplan® suite of decision support tools. Impack is a decision support tool that uses a static modelling approach to allow producers to explore the financial impact of a wide range of options related to selling off parts of the flock and recovering stock numbers over the following years. There is no one correct answer - it depends on your own particular situation.

Stockplan workshops are being run throughout Southern NSW now. For further details contact your local NSW DPI Livestock Officer (Sheep & Wool).

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