

Role of Nitrogen fertiliser to lift lamb weaning weights

A recent study confirmed that lamb weaning weight is king when it comes to sheep profitability. Weaning percentage is important too, but a 1 kg increase in weaning weight is equivalent to a 5% increase in lambs weaned. With lambing just around the corner there is management decisions to be made now to ensure a high weaning weight.

This year farmers are reporting that scanning percentages are very good following a good autumn. Attention is now turning to getting the ewes through winter in good body condition and then getting them onto good pasture covers for lambing. With more lambs expected there will be a need to be more focus on planning for lambing so that weaning weights are at least maintained.

Undoubtedly higher weaning weight means more lambs sold off mum at a higher dressing out percentage, selling on a higher schedule price, and freeing up feed for other stock classes through summer.

Research shows that a high level of feeding through late pregnancy and lactation will improve weaning weights, however achieving this is easier said than done as feed supply over early spring is typically limited by low pasture covers.

Pasture cover is the most important management driver of lamb weaning weight. The study found that if average pasture cover at lambing is below 1,350 kgDM/ha, equivalent to 3 cm pasture height, this will restrict ewe intake and consequently will reduce lamb weaning weight. This aligns with other research which suggests weaning weight of twin bearing ewes is reduced if covers are below 1,400 kgDM/ha.

Nitrogen presents an opportunity to improve feed available, however the cost of applying the fertiliser must be outweighed by a lift in profit. This challenge was addressed in a recent study completed with Ballance Agri-Nutrients looking at the production, economic, and environmental impacts of applying nitrogen prior to lambing. The aim of the study was to lift pasture cover and therefore increase lamb weaning weight and farm profit without jeopardising the farms environmental status.

The key messages from the study is that nitrogen can serve a valuable role. Outlined below are insights for those considering the use of nitrogen:

1. Pasture Cover at lambing

The use of nitrogen when covers were below 1350 kgDM/ha lifted weaning weights by 0.8 kg to 1.3 kg depending on the pasture cover, ewe weight, and genetics. Nitrogen fertiliser was applied to the full 340 ha lambing area at a cost of \$52/ha or \$17,680 total. The lift in farm profit (after accounting for the full cost of fertiliser) ranged between \$15,000 - \$26,700 or \$29 - \$52/ha over the full farm area of 511 ha. The use of nitrogen fertiliser indirectly affected cattle performance, as steers were set stocked in with ewes to control feed late spring and their growth rates were also improved following the use of nitrogen. In short spending \$1 on nitrogen fertiliser returned \$1.84 to \$2.50, it was worthwhile spending.

However, if pasture cover was above 1350 kgDM/ha the use of nitrogen fertiliser was not economic and it did not improve lamb weaning weights. To harvest the extra feed produced additional steers were purchased however the margin on the steers was at breakeven with the cost of nitrogen fertiliser.

2. Area of application

Ideally before applying nitrogen a feed plan should be completed so the right amount of nitrogen fertiliser can be applied. However when it's known that covers are already low 1-2 month from lambing then you need to be proactive, the decision tree gives some rules of thumb for areas to apply nitrogen to based on pasture cover.

For the study nitrogen was applied over the whole sheep area at 35 kgN/ha (75 kg Urea/ha). However, there were cases where this was more than was needed and as noted a short-term steer trade was used but was not economic.

3. Timing of application

Applying nitrogen as early as practical to generate a good growth response is important, the rule of thumb suggested for the study was 1 month before the mid-point of lambing. Pasture grown during early lactation is the most valuable feed as pasture growth is still rising and the extra feed can be fully utilised by stock. Further into the spring harvesting the extra feed grown will become more challenging as pasture growth for hill country farms typically outstrips animal demand and pasture quality deteriorates.

Furthermore, if conditions are right and soil temperature is above 6 degrees nitrogen can be applied more than a month before lambing.

4. How frequently are pasture covers below target at lambing?

While nitrogen is an option to get through spring, if needed, we would also suggest looking at the bigger picture. If pasture covers at lambing are frequently low then nitrogen fertiliser is not recommended as the solution, there are a range of other strategies to consider:

- Subdivision – is subdivision and mob sizes adequate for an effective winter rotation so ewe feed intake and pasture covers can be managed to reach lambing targets.
- Soil fertility – are there other nutrients limiting pasture growth that if remedied could enhance feed production over the winter spring period (e.g. phosphorus and sulphur)
- Stock policy – is there enough flexibility in the sheep and cattle policies to cope with variation in pasture growth, is the lambing date matched to pasture growth, is there enough feed carried into winter.

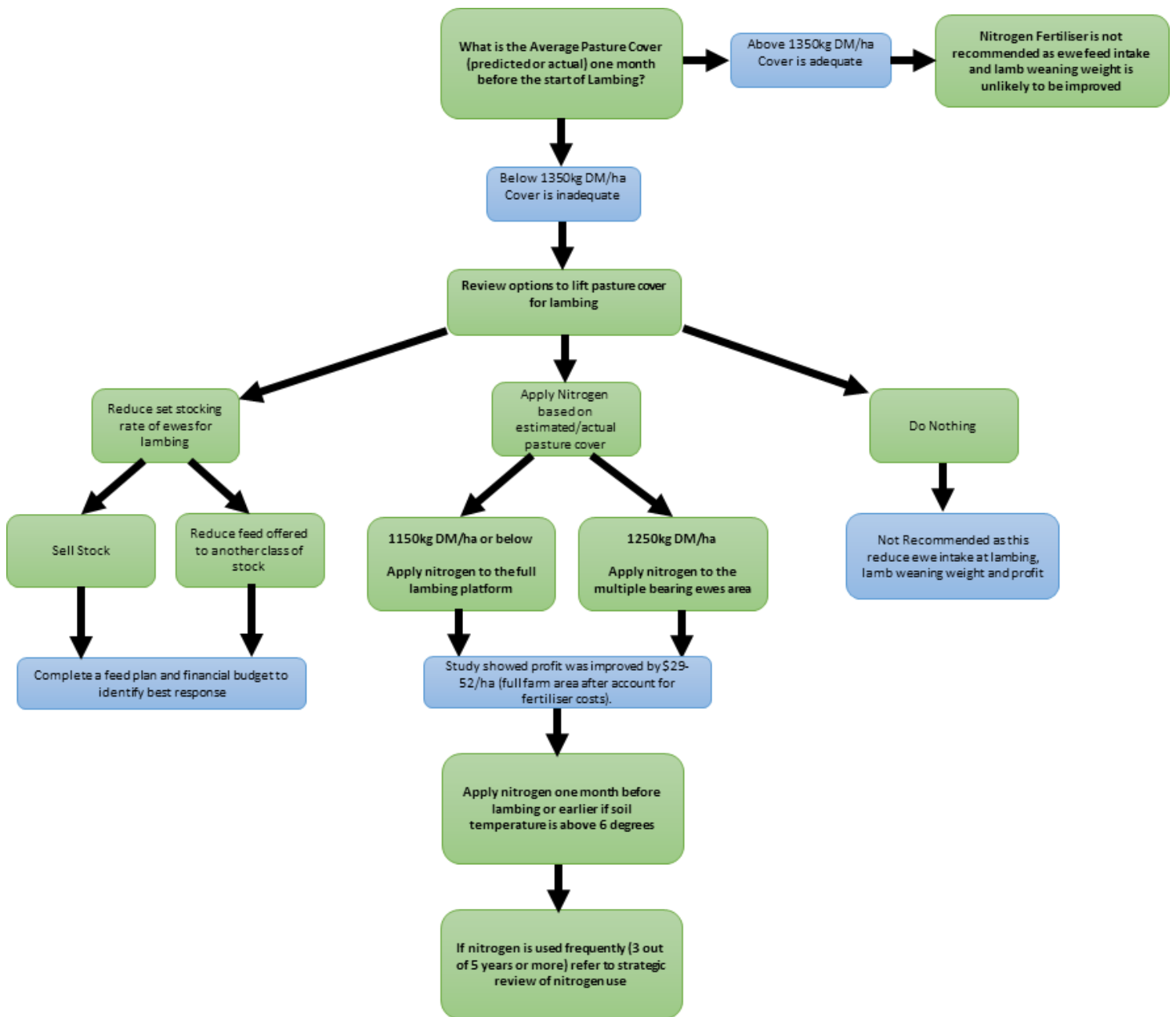
5. Environmental Impact

Regional councils throughout the country are implementing policy to manage freshwater quality and nitrogen is one of the nutrients in the spotlight with farmers needing to either halt further increases in nitrogen leaching or to reduce them.

For this study, following the application of nitrogen fertiliser OVERSEER indicated that leaching losses increased 2-4%. To put this in perspective without nitrogen fertiliser the farm leached 12.4 - 12.8 kgN/ha, and following the application of nitrogen leaching increased marginally to 12.8 - 13.2 kgN/ha.

With lambing fast approaching nitrogen fertiliser is a tool we have in the arsenal. If pasture covers are estimated to be below 1350 kgDM/ha at lambing then nitrogen is an economic option to lift lamb weaning weights. Planning is needed to complete a feed budget assess the area, and to apply nitrogen early. Lamb weaning weight is a key driver of the sheep flock so if covers are anticipated to be below target then start planning now.

Tactical decision tree to address the challenges with low pasture covers at lambing



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