

Why stay in wool sheep?

Improving what you know delivers more value than moving to what you don't.

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Background

At an industry level, wool production has declined over time since the 1990's. Grower response to changing wool market conditions and technological advances in crop systems and soil management, which have driven land use capability change, are partly responsible for the change in production historically.

More recent motivations for enterprise change include a perception of superior profitability, lower workload and easier management in alternative livestock enterprises. This report considers the motivations for change, whether the perceptions are real, and what the wool industry can do to retain wool growers when they are considering a change of enterprise.

Relative financial performance of wool enterprises

Enterprise level financial data from the Agrista benchmarking database between 2019 and 2023 has been used to assess variability in economic performance of four livestock breeding enterprises. The livestock breeding enterprises compared include beef breeding herds, dual-purpose sheep flocks, prime lamb flocks and wool flocks. This data is collected from mixed enterprise farm managers primarily located in eastern Australian states.

Trading herds and flocks were excluded from this analysis because they are typically complementary enterprises managed to consume surplus feed when available. This means that many of these enterprises are small in scale, and they are run in conjunction with other enterprises. Results from trading livestock enterprises are excluded because they potentially deliver a bias comparative sample. This occurs because trading numbers are prominent in high rainfall years when surplus feed is bountiful and insignificant in low rainfall years as there is little surplus feed.

Dual purpose sheep flocks typically consist of a merino ewe joined to a terminal or maternal sire but there are also a minority of data points that include dual purpose type breeds such as Dohne sheep.

In this analysis, wool flocks are typically categorised as a merino ewe joined to a merino ram. Most wool systems in this analysis are self-replacing flocks joining ewe hoggets to lamb at 24 months of age. The distribution of wool income relative to sheep meat income within the pool of wool flocks can vary considerably from greater than 70 percent to less than 50 percent depending on management objectives and prices.

Wethers represent approximately 20% of the total energy consumption of the flock as assessed by the proportion of total dry sheep equivalents however there is a large range. Average flock size is approximately 11,000 dry sheep equivalents consisting of an average of approximately 4,300 ewes joined with the remaining numbers being progeny, wethers and rams. Over the five year period assessed wethers as a proportion of total dry sheep equivalents declined by 3 percent indicating a trend towards more businesses foregoing wool income from wethers to pursue meat income.

A prime lamb enterprise is characterised as a specialist lamb meat production enterprise consisting of composite ewes joined to composite or terminal rams or Merino cross Border Leicester ewes mated with terminal rams. Wool usually makes up a very small proportion of the gross income in prime lamb enterprises. In this analysis, Prime lamb enterprises consist of the following flock types: First cross ewes (typically Merino x Maternal e.g. Border Leicester) joined to terminal meat rams, composite ewes joined to composite or terminal rams, shedding sheep breeds. The majority of the data represented in prime lamb flocks (>75%) is from composite flocks.

Differences in financial performance between livestock enterprises within year are typical when assessing pooled comparative financial data such as that generated in farm benchmarking data sets. These disparities are often due to specific market factors, the locality of farms in the pooled data set and differences in cost or seasonal conditions that may favour some enterprises over others in specific years. The discrepancies between enterprises usually decline when data is averaged over a broader analysis period.

By assessing average performance over a longer period than a year, market and seasonal effects, which could benefit or hinder different enterprises in specific years, are minimised. A five-year period is regarded as a medium-term analysis. During this period significant seasonal variations (including "El Niño" and "La Niña" events) and extreme market fluctuations (changes in agricultural outputs and inputs prices), were observed reinforcing the need for the longer-term analysis.

Operating profit (\$/DSE) has been used as the measure to compare financial performance across enterprises. This indicator is calculated by subtracting operating costs (enterprise and overhead costs) from the gross profit (sales less purchases plus inventory change).

Enterprise comparison is possible as the results are expressed per dry sheep equivalent (DSE). The dry sheep equivalent relates to the amount of energy required to maintain a 45 to 50 kilogram male castrated merino sheep. The energy requirements (DSE ratings per head) of livestock are dependent on the class, stage of reproduction and rate of weight gain among other factors. These factors are used to apply differential DSE ratings. Financial metrics presented per DSE are therefore a measure of financial performance per unit of pasture energy consumed.

Figure 1 shows performance by enterprise by year. The variation in prices and seasonal conditions has been significant during this five-year period. It is the combination of these factors in addition to management that delivers the range in financial performance of each enterprise over the period.

Beef, dual purpose and prime lamb enterprises ranked highest for profit per DSE in at least one of the five years, while beef and dual purpose sheep flocks also ranked lowest for profit per DSE in at least one of the five years. In this five year period, livestock profits were affected by drought in the 2019 and 2020 years due to the cost associated with pasture feed deficit. Droughts typically affect beef herd profits by a greater magnitude than sheep profits.

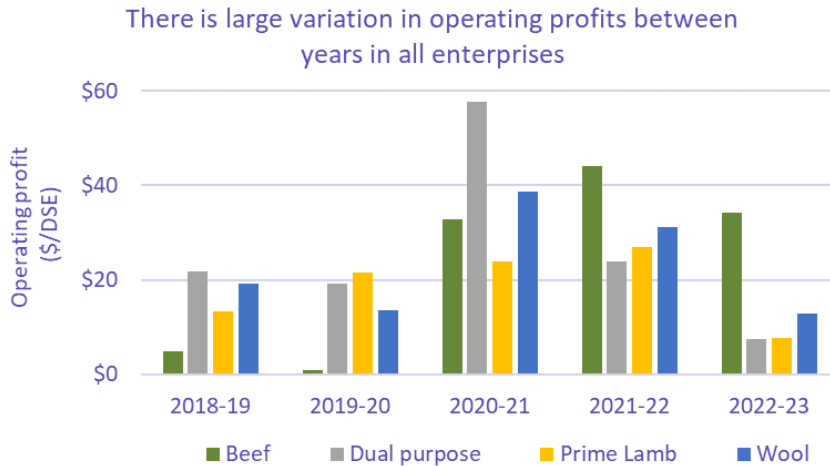


Figure 1. Each enterprise has its ups and downs due to price and seasonal factors.

Figure 2 shows the 5 year average net profit per DSE of the pooled benchmarking performance for all data (the average) and the top 20%. The top 20% in this data equates to the average net profit of those participants whose profits sit in the top 20% of all data by year. The annual variations between enterprises observed in Figure 1 disappear when data is averaged over a five-year period (Figure 2).

The difference between enterprises is calculated by comparing the five-year average values (light green bar). The greatest difference between enterprises equates to \$7.30 per DSE. This is the difference between the dual purpose sheep and prime lamb enterprises. This between-enterprise difference is small when compared with the difference of approximately \$30 per DSE seen in all enterprises between the average and the top 20%. This is the difference shown by comparing the light green with the dark green bars.

The variability within enterprise exceeds the variability between enterprises by an approximate magnitude of over four times in most enterprises. This suggests that, where the aim is to improve financial performance over the medium or long term, the primary focus should be on enhancing the results of the existing enterprise rather than moving between enterprises.

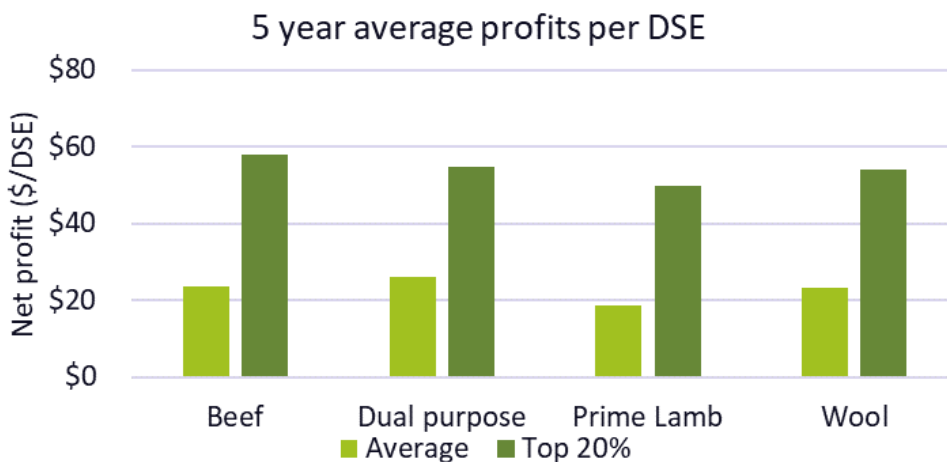


Figure 2 There is more to be gained by getting better at the existing enterprise than moving between enterprises.

Why do wool producers change enterprise?

There appears to be no data demonstrating why producers change from wool to alternative enterprises. It is plausible that the motivation for changing enterprise from wool to an alternative enterprise include the following perceptions.

1. Higher profitability
2. Lower labour requirements
3. Easier workload
4. Easier management

These issues, and some practical tips for addressing them prior to investing heavily in enterprise change are examined in more detail following.

Look before you leap

Many former wool growers have changed enterprise based on the perception that alternative enterprises would deliver higher profitability. This enterprise comparison data suggests that a change of enterprise is unlikely to deliver such a result and greater profits are more likely to be derived from improving performance within the existing enterprise than moving between them. This data also shows that specialist wool enterprises have delivered similar or superior profits when compared with alternative enterprises.

Given the extreme cost of changing enterprise (skill development equating to foregone profits, infrastructure investment and genetic investment) a starting point for wool producers considering changing enterprise should be to quantify the level of production and financial performance in their existing enterprise. This approach allows for the objective assessment of enterprise performance and identifies low cost opportunities to improve productivity and profitability within the enterprise before considering moves between enterprise.

Practical tip – financial and productivity assessment

Prior to changing enterprise ask yourself whether you have recorded and assessed the following measures. If the answer is no, then starting here might identify some large opportunities for improvement in profitability within the enterprise.

Do I have the following records?

1. Financial performance per dry sheep equivalent.
2. Wool production (sales less purchases plus inventory change) per DSE and per hectare.
3. Sheep meat production per DSE and per hectare.
4. Cost of production per kilogram of wool produced.
5. Labour efficiency. That is the number of DSE managed accounting for all labour days, including farm staff, shearing, crutching and contracting labour.

What are the key features that deliver greater profitability in a wool flock?

Over 85 percent of the financial resources necessary to generate a return in a livestock enterprise (assuming owned farm assets) consist of capital invested in land. Thus, it is appropriate to assess enterprise performance on a per hectare basis as well as a per DSE basis. The per DSE approach considers performance per unit of pasture energy consumed while the per hectare result assesses performance per unit of pasture energy utilised.

One of the key features of highly profitable wool enterprise managers, using long term comparative analysis, is that they typically deliver far more production and superior profits per hectare but only marginally greater production and profit per DSE. Examination of these high profit wool enterprises in south-eastern Australia, shows that the primary difference between these managers and the remainder is higher levels of feed utilisation. In these localities, approximately 60 percent of the pasture supply occurs over 25 to 50 percent of the year so implementing a livestock system that has high energy demands over this period is important.

The key output of higher relative feed utilisation is higher relative stocking rate. This delivers higher profitability by increasing the margin on each kilogram of wool and sheep meat produced. It does this by delivering cost efficiency by spreading the overhead cost structure over more wool and sheep meat production.

High levels of feed utilisation are unattainable with a system that does not match feed supply with feed demand. The simplest of systems changes typically comes from aligning lactation with a period of high supply and quality of pasture and reducing ewe energy demands to maintenance during the period of the year when pasture energy and supply are low.

Supplementary feed costs are also a feature of these high profit livestock enterprises. The supplementary feed serves the purpose not only of supporting the appropriate number of livestock moving into the period of high energy supply, but it also delivers the difference between the pasture energy deficit and the energy demands of the flock as pasture energy declines. Feed for the energy deficit is necessary irrespective of the level of feed utilisation of the manager.

The cost structure per DSE of high profit livestock producers is typically lower than the remainder. This difference occurs due to superior labour efficiency and the spreading of the overhead cost structure over more production.

Genetics plays a large role in improving productivity by delivering greater wool and meat value per unit of energy consumed. The value of the contribution of genetics is not easily discernible from wool enterprise data however general observations of the high profit cohort suggest that these producers invest heavily in this area.

Practical tips - Livestock system

Following are four questions wool producers can ask themselves to identify areas of opportunity for improvement in production and profitability.

If the answer to the following questions is no, then collecting this information will assist in identifying opportunity relating the livestock system.

1. Do you produce a feed supply curve for your business annually?
2. Do you produce a feed demand curve for your business annually?
3. Is your feed demand curve aligned with your feed supply curve?
4. Could you increase feed utilisation by changing the timing of the reproductive cycle on the calendar of operations?

Challenges faced by wool growers

Stress and animal welfare

Three of the last five years analysed (Figure 3) have experienced rainfall greater than 20 percent higher than the long term average while two experienced rainfall approximately 20 percent lower than the long term average. The wet conditions presented managers of wool sheep with significant operational challenges. Wool growing flocks without adaptation to high rainfall were hit particularly hard.

Low rainfall environments turned into medium rainfall environments and medium rainfall environments turned into high rainfall environments. Floods were also experienced in some localities resulting in some sheep mortalities and challenges in accessing livestock requiring animal health treatments.

This presented managers with a range of animal health conditions including lameness due to feet problems, high internal parasite levels and high external parasite levels. The wet conditions required timely assessments, additional time to monitor livestock health proactively, additional time to treat livestock health issues proactively and additional time and labour to treat livestock health issues reactively. These animal health and welfare issues placed a significant mental burden on wool producers because operational labour was pushed to the limits.

To have three successive year-on-year seasons where year-analysed rainfall is 20 percent higher than long term average rainfall is improbable. While these events deliver a high workload in wool enterprises, they present different challenges in alternative livestock enterprises as well. It is important to put the years in the longer term perspective.

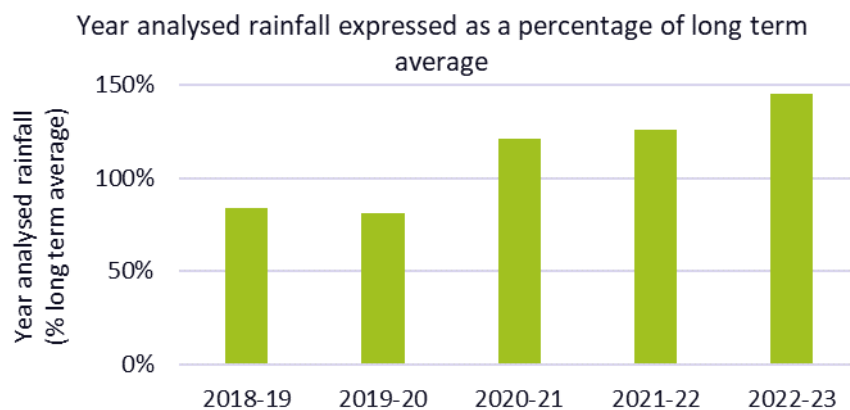


Figure 3 Three of the five years in the period assessed have been excessively wet and two have been excessively dry.

Practical tips - Livestock health and welfare

Some practical approaches of dealing with the mental stress caused by unavoidable high workload include:

1. Becoming aware of the impact of the stress on you and your family
2. Planning and time management. Start with a list of tasks and priorities and set a calendar for completion of important tasks.
3. Develop a network who you can share your challenges with and request support if needed.

4. Take time out of the business. This can alleviate negative thoughts.

Contract labour requirements

Wool enterprises have the highest labour demand of all the livestock enterprises. The shearing and crutching of wool sheep utilise approximately 35 percent of the total labour demand while approximately 65 percent is spent on the remaining operational tasks. This demand declines in dual purpose sheep enterprises due to fewer progeny shorn and ease of progeny shearing. Specialist lamb producing sheep are quicker to shear and fewer progeny require shearing, so the proportion of labour utilised by shearing declines to approximately 20 percent of the total labour demand.

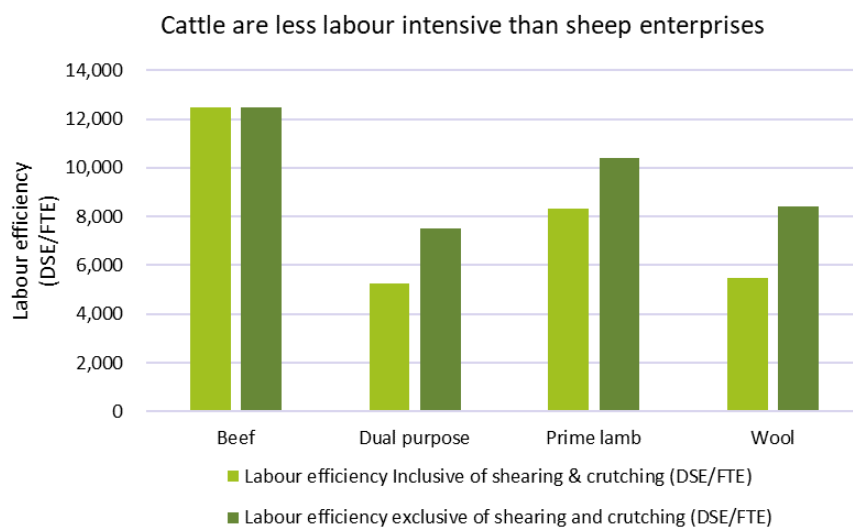


Figure 4. Wool and dual purpose sheep are the most labour intensive livestock enterprises.

Figure 4 shows the pooled average labour efficiency data by livestock enterprise for the Agrista farm benchmarking data set for the 2022/23 year. The data has been shown with and without shearing and crutching labour to demonstrate the extent to which shearing and crutching contributes to total labour requirements. Beef has the highest labour efficiency followed by prime lamb followed by specialist wool producing enterprises.

Fewer dry sheep equivalents can be managed in specialist wool growing flocks, even exclusive of shearing and crutching, relative to beef and prime lamb enterprises. It is likely that the additional labour required in specialist wool flocks relates to the inferior maternal characteristics of the ewes and the proportion of the year that progeny are managed relative to prime lamb flocks. This means that labour costs are higher in specialist wool producing enterprises and much of that labour is related to shearing.

The necessity to rely on contractors to conduct a large proportion of the workload is seen as a point of frustration to some managers. There is a lot of unjustified blame shifting from wool producers with regards to shearing contractors. Successful contracting relationships depend on delivering on the expectations of the counterparty. To deliver on the expectations it is critical to first understand those expectations.

Practical tips – Livestock contractors and shearing teams

Some simple but potentially effective solutions to building lasting relationships with shearing contractors follow.

1. Ask the contractor what is important to them and ask how you can help them to deliver on the things that are important to them.
2. Pay contractors on, or before, the date invoices are due.
3. Plan well and be prepared for the operation and have a contingency plan by considering how a change in circumstances might be managed.
4. Demonstrate your character and commitment to success by presenting a clean shed, having all shearing requisites on hand and make sure that sheep are in the shed ready for shearers with lead time.
5. Being prepared presenting a clean shed and having processes are all ways that demonstrate your expectations of the team.
6. Write down a list of the things that are important to you and articulate your expectations of the shearing team.
7. Make sure your shearing contractor is aware of farm policies and procedures. This includes presenting biosecurity, animal welfare and workplace health and safety policies to the contractor.
8. Invest in facilities that demonstrate the business values the comfort and safety of the shearing team.

Workload and physical demands

Some infrastructure and sheep handling investments have been shown to significantly improve labour efficiency while potentially delivering high returns on investment. Many of these investments also serve the purpose of attracting or retaining staff and making tasks less physically demanding or more pleasant under a range of circumstances.

Investments in laneways, sheep handlers and lifters, covered work areas, sprinklers for dust suppression are just some examples of investments that can deliver value.

Practical tip – infrastructure to manage physical workload

Conduct an audit of infrastructure and handling equipment and apply a rating from 1 (near new) to 5 (needs replacing). Consider where there may be equipment where small investments or repairs could make large differences to labour efficiency or workplace enjoyment.

System complexity - keep it simple

The stress experienced by a proportion of wool growers has been induced by adding unnecessary complexity to the enterprise. As a biological system wool growing is an already complicated and complex enterprise and additional activities only exacerbate complexity. Multiple joining dates within year, multiple shearing dates within year and joining ewe lambs are just a few examples of management practices that can deliver a greater degree of complexity in a wool growing enterprise. These practices require a higher level of operational and logistical management in an already complicated business.

The pursuit of fertility without understanding the extent of the additional pasture energy to maintain ewes bearing multiple lambs and the extent of the additional labour to manage a greater proportion of lower birthweight lambs can also present challenges.

One feature of highly profitable livestock managers is their ability to streamline operations to deliver simplicity. Examples of operational practices that deliver simplicity include single lambing dates within year, single shearing dates within year, the joining of ewes as hoggets and the inclusion of multiple age groups of wethers to reduce the number of weaners that must be managed.

System complexity and simple but wrong solutions

Wool enterprises are complex biological systems with many interdependent systems components. Understanding the interdependent components of the system and how they interact is difficult because it often requires time to analyse a range of different options. It also requires critical thinking which not only takes time but requires the expertise to take a contrarian view to consider issues that may not align with conventional thinking.

A psychologically rewarding but inappropriate method of dealing with systems complexity is to simplify the problem by taking a component-based approach. Such an approach proposes to deliver a simple solution by solving a problem with part of the system in isolation of the interactions and dependencies of other system components. Typically the outcome of this approach is unintended consequences which occur due to the dependencies of the system on the proposed solution component.

An example of one such simplistic, component based solution is the joining of merino wool growing ewe lambs to improve income in wool enterprises. The simplistic theory is that by joining an extra age group of breeding females that have just reached breeding age (maturity), income will increase due to the additional lambs born and accelerated genetic progress.

This simplistic approach to the complex problem should not be assessed based on the relative income, rather it requires a partial budget analysis to establish the marginal difference in profit and the factors that influence it due to the change in practice. The partial budget should include the following considerations as these all have a potential impact on the outcome.

- The amount of additional feed (energy), and associated labour, required to ensure ewe lambs reach a suitable joining weight within 8 months of age.
- The extent of the loss in wool income due to the ewe lamb partitioning energy into the lamb during pregnancy and lactation.
- The proportion of ewe lambs fed relative to the proportion rearing live lambs.
- The change in flock energy requirements (DSE ratings) between a flock joining the earliest age group as ewe hoggets versus ewe lambs.
- The additional energy required to ensure ewe lambs deliver a single or multiple lambs as hoggets (second lambing).
- The additional management required to ensure lamb survival in ewe lamb mobs.
- The level of skill of the manager necessary to deliver an adequate number of lambs weaned to ewe lambs joined to warrant the investment in additional energy supplied.
- The extent and cost of the labour required to manage ewe lambs and their progeny.
- The logistics and operational factors associated with the change.

The key message is not that joining ewe lambs won't work, rather it is not to underestimate the complexity of biological systems and to take the time to think of the factors that may not readily come to mind. Simple solutions to complex problems rarely come without poorly considered consequences.

Remain astute – assess system changes over time

The increase in prices for sheep meat and lamb experienced over the period from 2013 to 2023 has seen a change in flock structure. Some high wool value enterprise managers, formerly running several age groups of wethers, have changed to ewe dominant flocks with a low tolerance for dry sheep.

The result is a reduction in wool production over the flock due not only to fewer of the highest wool yielding animals in the flock, but also due to the increased flock energy demands associated with lactation. The upside in these flocks is a greater number of lambs weaned which delivers potentially greater sheep meat income. The net value of the marginal sheep meat income should exceed the net value of the loss in wool income to warrant the change assuming a financial motive.

One, often overlooked, outcome of changes to flock structure is the change in demand for operational labour. More ewes joined, typically with a greater focus on weaning percentages, means more merino weaners to manage from a higher proportion of twins or triplets. This can place extreme demands on labour and requires extremely judicious and skilled management to execute successfully.

It is not uncommon, after a few seasons of duress under this system, for managers of ewe dominant wool flocks to move lambing date to alleviate the challenge of managing low weaner weights during periods of declining feed quality. This has the impact of increasing flock energy demands during a period of typically low feed supply and the response to this is to manage fewer ewes leading to lower profits.

This chain of events shows how a perceived small system change can deliver lower profits over time where business discipline and financial scrutiny is not well practiced.

Practical tip – simplifying complexity

Assess the operational calendar and establish whether there are multiple activities occurring with limited or no marginal benefit. Develop an operational calendar and see whether there are handling operations that could be combined to reduce unnecessary work. Ask yourself the following questions.

1. Could I change my enterprise to make it easier on myself while maintaining profit?
2. Does my production calendar reflect simplicity?
3. Does my production calendar include multiple operational activities that could be combined.
4. Am I measuring my production and profitability year on year?

Wool enterprise strengths

Under workplace duress and profit dissatisfaction it is easy to overlook the strengths of the wool enterprise for the greener grass of the alternative enterprise. Following are some strengths worthy of consideration.

Wool enterprise strengths - Flexibility

Diversity of income is a strength of wool production enterprises which is not shared by all other livestock enterprises. Wool enterprises have multiple income streams including wool, sheep meat and, in some cases, lamb. Income from beef and goat enterprises is dependent solely on

production of meat. While prime lamb enterprises have multiple income streams, wool currently accounts for a very small proportion of the total enterprise income depending on the ewe breed.

The proportion and price of the respective income generating products drive the proportion of income delivered by each income stream in the enterprise. The flexibility offered by this diversity in income is the ability to adapt the enterprise based on market signals, resource suitability or management preference. This allows the enterprise manager to choose the direction of the enterprise.

For example, some wool growers have moved from managing flocks containing several age groups of wethers (castrated males) to managing more ewe dominant flocks. Ewe dominant flocks typically deliver a greater proportion of income or gross profit from sheep meat and less from wool while a flock with a higher proportion of wethers delivers a greater proportion of total income from wool relative to sheep meat.

Enterprise benchmarking data shows that it is possible to derive high levels of profit over the long term from either approach however results can be skewed in individual years where prices favour one approach over the other.

Enterprise strengths - Income generation during drought.

Droughts are financially devastating for livestock businesses. The financial cost of drought, outside of the psychological effects on managers, can be high. The cost is in supplementary feed and labour to keep retained livestock productive, rebuilding the flock post drought, purchasing replacement livestock post drought and in foregone income due to lower production.

A strength of wool and dual purpose sheep enterprises, relative to meat producing enterprises is their low maintenance energy requirements and their ability to produce a fleece even in a drought. This ability to produce a fleece, of reasonable value, regardless of season, means that the reduction in income due to drought is lower when compared to livestock enterprises dependent on meat production.

Enterprise strengths - Maternal flexibility.

The merino ewe has the flexibility to be joined to a merino to produce progeny with high capability of growing wool. It can be joined to a maternal sire (eg Border Leicester) to produce progeny for mating to a terminal ram. It can be joined to a terminal sire (eg Suffolk/Dorsett) to produce progeny for meat production. It can also be managed as a dry (non-lactating) sheep with lower energy requirements and higher wool production relative to a lactating ewe to produce a high value fleece.

Enterprise strengths - The value of wethers and dry ewes

As there is no reproductive demand for energy, wethers (male castrated sheep) are a feed efficient animal. These animals are well-suited to land classes supplying low energy feed due to the pasture types found on these land classes.

The lack of fluctuation in energy demand of a wether within the production cycle also means that this class of livestock is ideally suited to environments with little seasonal rainfall pattern. Where seasonal feed supply varies little over the year a sheep system carrying a proportion of wethers reduces the variation in total livestock energy demand.

Key messages

If the first response to the delivery of low profits or high workload in wool enterprises is to change enterprise, then think again. Wool enterprises have had less profit volatility than specialist meat enterprises and have delivered solid operating profits when compared to other breeding livestock enterprises over the last five years.

When considering enterprise change there are a number of other considerations that generally aren't paid adequate attention as their costs and benefits are difficult to quantify. These include:

1. Switching enterprises requires investment in understanding the profit drivers of a different enterprise and the development of new skills.
2. Peak efficiency in a new enterprise is unlikely to occur instantly. There is usually a lag.
3. The requirement for capital can be significant. Investment analysis shouldn't just value the marginal benefits but also the up-front capital costs. Genetics, infrastructure and plant are usually the big ticket items.

There are large opportunities to improve wool flock profits even when wool prices are low, but they require a change to conventional thinking. Wool enterprise managers can start by measuring financial and production performance to identify the greatest rewards from the lowest cost. Examining the feed supply curve and aligning energy demands over the year is the next step.

Simplifying operations within the system and examining infrastructure for opportunities to delivering higher levels of labour efficiency will also go a long way to improving enterprise profitability and satisfaction.