

Case Study 2

Profitability and productivity

Biosecurity and veterinary roles

Reproduction & Annual management

- https://unimelb.padlet.org/srbarber/where_are_you_now_21

A “mixed bag” week

- Diverse range of topics in extensive livestock production this week
- During case studies questions you are asked may have information direct from notes but in a number of cases you will need to do some online research.
- It is OK to break up tasks within your group if you wish, just make sure everyone knows what they are doing to then put together a final answer
- It normally takes at least a few weeks for groups to work well together

Before we start the case study - Assessment

- Mid semester quiz is Wednesday morning of week 7 (after Easter)
- Our first quarterly quiz will be following the case study next week
- Each of these quizzes (worth 2.5% each) will be open for 12 hours for you to complete but you will only have 6 minutes to complete it once you have opened it.
- Each will consist of 5 multiple choice questions drawn from a pool of questions
- I will provide a mock quiz by tomorrow morning (Melbourne time) as a practice and will send an announcement once ready


Groups in upcoming weeks

- We may have some students in North America choose to work in relevant time zone groups in coming weeks due to the difficult time gap between Australia and the USA/Canada
- This will mean some groups will potentially have 1-2 less students
- If for any reason you find that you don't have any group members in a breakout zoom (e.g. others are ill etc) please let us know so we can allocate you to a different group for the day – not much fun doing group work on your own!

Biosecurity

- A farmer has recently purchased this pen of sheep at Wycheproof Sale <https://www.stockandland.com.au/story/7146404/wycheproof-special-sheep-sale-to-390-a-head/?cs=4594>



 RECORD PEN: These ewes were sold for a record price at the Wycheproof Special Store sale.

Terminology

- Some sheep were sold NSM – what does this term mean? (you may need to look it up)
- What/who are Auctionsplus?
- What does the term “in good condition” mean with reference to sheep being sold at sales?
- What does SIL mean in reference to Merino ewes?
- If someone is purchasing a Border Leicester cross Merino, which of these breeds is most likely the sire of the animal, and why?

Suggested answers for terminology

- Some sheep were sold NSM – this term means “Not Station Mated” or ewes not exposed to rams (but generally not guaranteed by pregnancy test, just they weren’t “running” with a ram)
- What/who are Auctionsplus?
- <https://auctionsplus.com.au/> are involved in buying and selling online of livestock (primarily). The company is owned by Nutrien and Elders the two largest stock and station agents in Australia.
- What does the term “in good condition” mean with reference to sheep being sold at sales?
- In good condition refers to condition score. If advertised in good condition they would generally be score 3 or better (but this can be a loose definition so always worth checking in the sales pen. For auctionsplus a condition score or fat score would be quoted to be more objectively accurate)
- What does SIL mean in reference to Merino ewes?
- SIL = scanned in lamb. The ewes have been checked by ultrasound and are pregnant. They may or may not be separated into groups having singles and multiples.
- If someone is purchasing a Border Leicester cross Merino, which of these breeds is most likely the sire of the animal, and why?
- Merino are the most common breed in Australia hence far more likely to be a BL ram mated to Merino ewes given you can join one ram to maybe 100 ewes.

Biosecurity

- What steps should the farmer take when purchasing these ewes :

A) At the saleyards (prior to purchase)

B) Once the stock arrive at the property and in the weeks/months following?

Suggested answers for biosecurity

- Saleyards
 - Assess the vendor declaration and any LPA data
 - Assess the sheep in the pen – lameness, pulled wool, range in condition score, general health
 - Agent any knowledge of vendor? History?
 - Research any sale lots if possible prior to sale (store stock generally advertised beforehand)
- Home
 - Quarantine, quarantine and quarantine!
 - Assess stock on return to property
 - Keep away from other stock until likely to have expressed signs of disease e.g. if worried about Footrot need to wait until weather has been warm and wet to assess for spread

Potential disease

- List five relatively common endemic diseases of sheep in Australia that the property owner would NOT want to bring onto their farm when buying these ewes – you will need to research what these might be presuming you don't have background in the industry. (The main diseases they wouldn't want cost significant money and are difficult or expensive to eradicate/prevent)
- What is one sign for each disease you have listed that the farmer might see if the disease was present in her flock?
- List two exotic diseases for sheep in Australia and signs you would expect to see if stock had them.

Potential disease - endemic

Disease	Sign
Footrot	Lame sheep
Lice	Pulled wool
Johnes disease	Scouring, tail to mob, death
Multiresistant parasites	Lack of response to drench, scouring and/or death
Brucellosis	Swollen testicles in rams (no signs in ewes but may harbour for limited duration)

As we are buying in ewes in this instance and no rams then brucellosis is much less of a concern, however it would be useful to know that if the ewes had been joined the rams that were used were from an accredited free property
<https://agriculture.vic.gov.au/support-and-resources/newsletters/sheep-notes-newsletter/spring-2015/ovine-brucellosis>

Potential disease - exotic

- You could choose a large range of disease for this one! Thankfully Australia is free of a range of nasty sheep diseases (we do of course have our own challenges with the nasty fly *Lucilia cuprina* which is not present in some other countries with sheep). I have just picked two below that are very important – can check via the OIE list of disease.
- Foot and Mouth disease – may see lameness but not all sheep express many signs, particularly compared to pigs or cattle where vesicles in mouth and feet are far more common.
- Maedi Visna (Ovine progressive pneumonia) – caused by a lentivirus. Pneumonia and/or wasting disease. We do have the caprine version (CAE) here

Reproduction Case Study – Property 1

- A new owner has taken over a property in central Victoria (Seymour) that runs both sheep (Merinos) and cattle (Charolais).



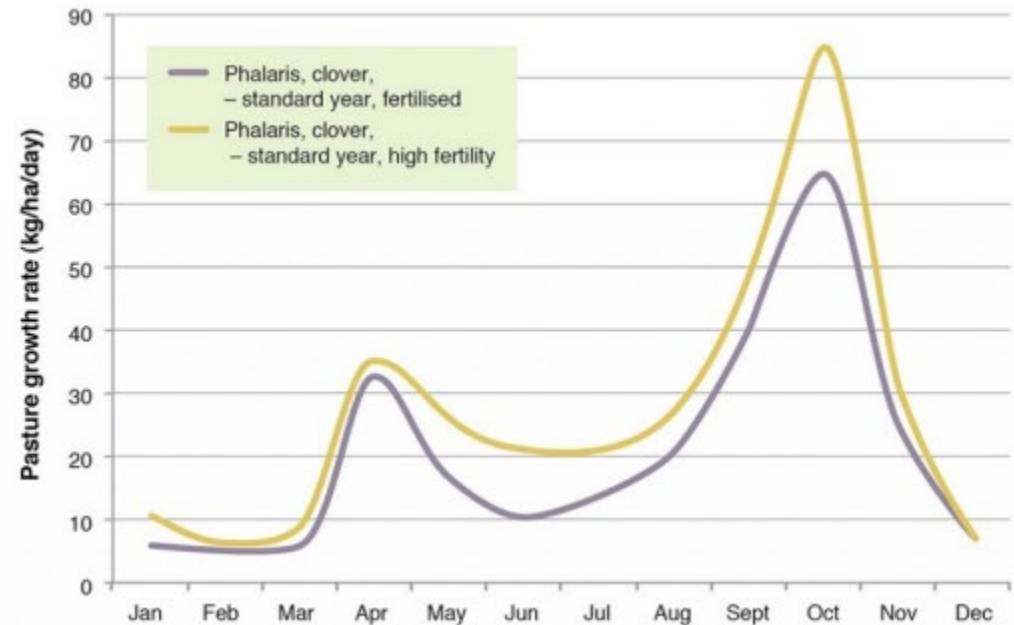
Merinos (mernowiepollmerinos.com)



Charolais cattle (<http://www.chenucharolais.com.au/>)

Pasture Growth Curve

- The farm has a pasture growth curve that is typical of south-eastern Australia with peak pasture growth in mid-October.



Seymour Pasture Growth Rate

(<https://www.evergraze.com.au/library-content/regional-pasture-growth-rates/>)

The change plan

- The new owner wants to move away from the current year-round reproductive system (where bulls and rams are left in the same paddock as cows and ewes all year) to make better use of pasture growth.
- Peak nutritional needs will be at 6 weeks post lambing start date for ewes and 10 weeks post calving start date for cows.
- The new owner will take over on March 1st.
- Sheep gestation 145 days (5 months)
- Cattle gestation 283 days (Gestation = time from mating to birth)
- Sheep oestrus cycle 17 days. Join for 2 cycles
- Cattle oestrus cycle 21 days. Join for 2 cycles (Oestrus is the time when the female is receptive to being mated by the male)

Some questions to consider and add to padlet

- Lambing time
- what approximate date range would you advise the following events should occur to have the ewes lamb at the ideal time?
 - a. Rams go in with ewes (start of joining period)
 - b. Rams removed from ewes (end of joining period)
 - c. Lambing start date
 - d. Lambing end date

Lambing

- Goal is to have lambing prior to the main pasture growth period of the year
- Actual date may vary with the type of sheep production we are talking about e.g. Merinos might be more like August/September, prime lambs may be a month or so earlier to ensure lambs can be sold before season “dries off”
- Ideally use a 34 day joining (2 cycles) for joining. Some prime lamb may use 3 (or more) focusing on total lamb kg, however makes management more difficult for limited extra lambs.
- Essentially the ram in and ram out date determines the lambing start and finish date – there is about 150ish days between these events.

Calving time

- what approximate date ranges would you advise the following events should occur to have the cows calve at the ideal time?
 - a. Bulls go in with cows (start of joining period)
 - b. Bulls removed from cows (end of joining period)
 - c. Calving start date
 - d. Calving end date

Calving time

- Similar to sheep the ideal calving time would be immediately prior to the seasonal abundance of grass so starting calving in August
- If moving from a year round calving there may be benefits in keeping 2 calving periods, maybe an autumn and spring and then gradually moving young stock into the spring option. This reduces total bull requirement and also keeps cash flow going in first few years of change
- Ideally calving should be kept to six weeks, but in many systems extends to 9 or even 12 (if using twelve weeks it means the bull goes in while some cows are still calving and those cows are unlikely to get pregnant for the following year)
- As per sheep the bull in time determines start of calving (so count back 280ish days from early/mid August for bull in) then add another 6 weeks for bull out date. Note that for this to work there should be adequate bull power (enough bulls per cow) and they should be reproductively sound

Changing reproduction timing

- While moving to a spring calving immediately has management advantages, the practical and financial implications are significant.
- What is/are the major practical issue/s for this change?
- What is the major financial issue for this change?
- Are there more options that could be considered apart from a single calving/lambing per year but not leaving rams/bulls out all year?

Managing change

- While moving to a spring calving immediately has management advantages, the practical and financial implications are significant.
- Practical issue will depend on current spread of calving – ideally we would have a histogram of weeks of year the herd calved this will allow us to work out how long cows will not be in calf for before joining as there is a cost involved in this. Should the farmer sell current herd and buy cows that have tighter calving? (Maybe, but don't forget biosecurity – what issues do the new cows come with)
- What is the major financial issue for this change?
- If we don't join cows until all cows are ready in November for joining there may be up to half a year lost income, still have to feed cows, can the cash flow budget survive this?
- Are there more options that could be considered apart from a single calving/lambing per year but not leaving rams/bulls out all year?
- As noted on previous slide we can move over several years to only calving spring. Could start with two calving periods of six weeks. Or could sell all cows at wrong stage and buy in new group of cows PTIC (pregnancy tested in calf)

Stocking Rate

- The property has 150 Charolais cows and allocates 100 hectares for cattle.
- Given the average rainfall on the property is 597mm, do you think the new owner should buy or sell cows?
- Cows in late gestation are equivalent to 11DSE. There is also slightly more than 1 bull for approximately every 40 cows, with each bull equivalent to 15DSE.
- $SR \text{ (DSE/ha)} = 1.3 \times (R-250)/25$

Are there enough cows? Yes, about right!

- Actual stocking rate in DSE at the moment is 150 cows * 11 DSE plus 4 bulls * 15DSE = 1710 DSE
- average rainfall on the property is 597mm and area = 100 ha
- $SR \text{ (DSE/ha)} = 1.3 \times (R-250)/25 = 18 \text{ DSE/ha}$ in winter
- Total ha = 100
- Potential stocking rate = $18 * 100 = 1800$
- So current stocking rate is about right, could be increased slightly but with new management it is OK, noting potential for slight increase as management experience grows (depends on attitude to risk)

Multiple enterprises

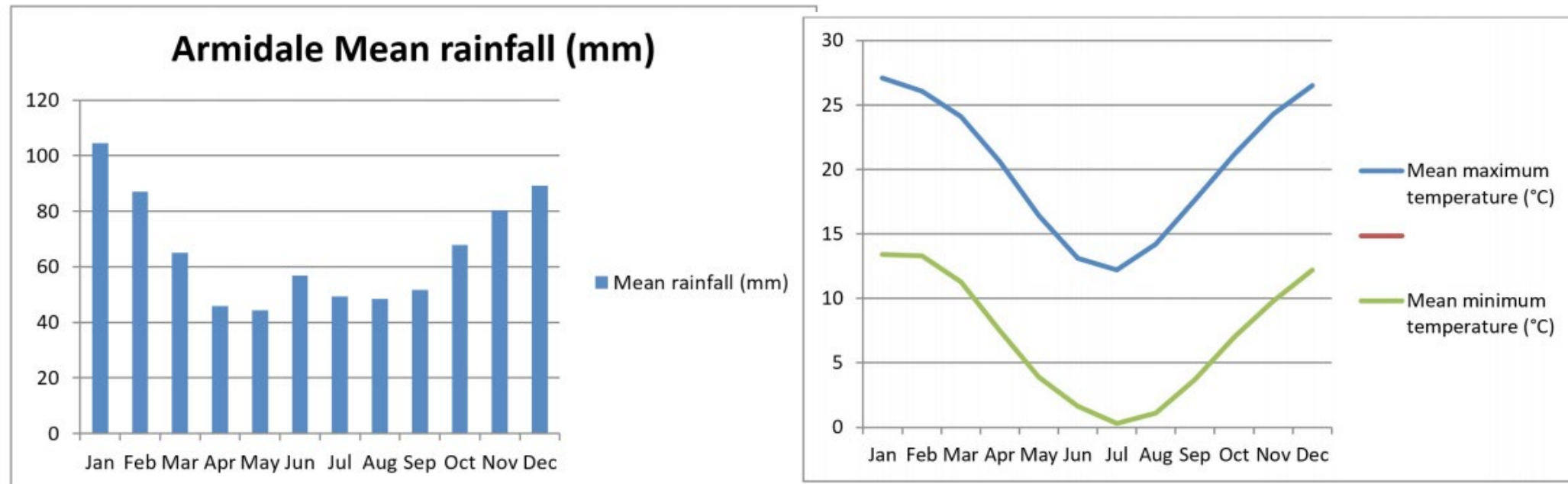
- The new owner would also like to plant some winter crops to fill the winter feed gap.
- In June/July & August what variable/s is/are likely to restrict pasture growth?
- In December/January & February what variable/s is/are likely to restrict pasture growth?
- Explain how the three different operations (sheep/beef/crop) on the farm may act to reduce overall risk for the enterprise. List these factors.
- What winter crops might be an option for the farmer to sow for the property to be grazed and also produce feed later in the season for storage/sale?

Multiple enterprises

- There are pro's and con's (good and bad points) for having individual or multiple enterprises on one property
- For multiple enterprises = spreads financial risk to multiple outputs, potential synergies between enterprises e.g. cropping and livestock, ability to increase/decrease as market analysis suggests.
- For single enterprises = if really good at something and enjoy it, do lots of it!
- In June/July & August what variable/s is/are likely to restrict pasture growth?
- Temperature likely to restrict growth (plenty of rainfall generally during winter)
- In December/January & February what variable/s is/are likely to restrict pasture growth?
- High temperature and lack of rainfall generally restricts summer growth if irrigation is not available (varies from year to year such as the La Nina year with increased rainfall in some areas)
- Explain how the three different operations (sheep/beef/crop) on the farm may act to reduce overall risk for the enterprise. List these factors.
- Integration between enterprises can aid overall production e.g. cattle and sheep may be able to graze crop during winter/summer. Sheep and cattle may be swapped to reduce parasite burden. Supplies three different markets to reduce price risk – can increase or decrease one of the three enterprises if external conditions change.
- What winter crops might be an option for the farmer to sow for the property to be grazed and also produce feed later in the season for storage/sale?
- Mostly cereal crops would be common choice, possibly rye/clover.

Reproduction Case Study – Property 2

- Property in northern NSW, close to Armidale. That area has a very different climate from Victoria. Rainfall is primarily in the warmer months with the highest totals between October and March as shown below. It is very cold during winter so that temperature limits pasture growth.



Graphs derived from BOM data



Armidaale

New South Wales 2350

Partly cloudy · 27°C
1:38 PM



Directions



Save



Nearby



Send to your
phone



Share

Photos



Photos

Quick facts

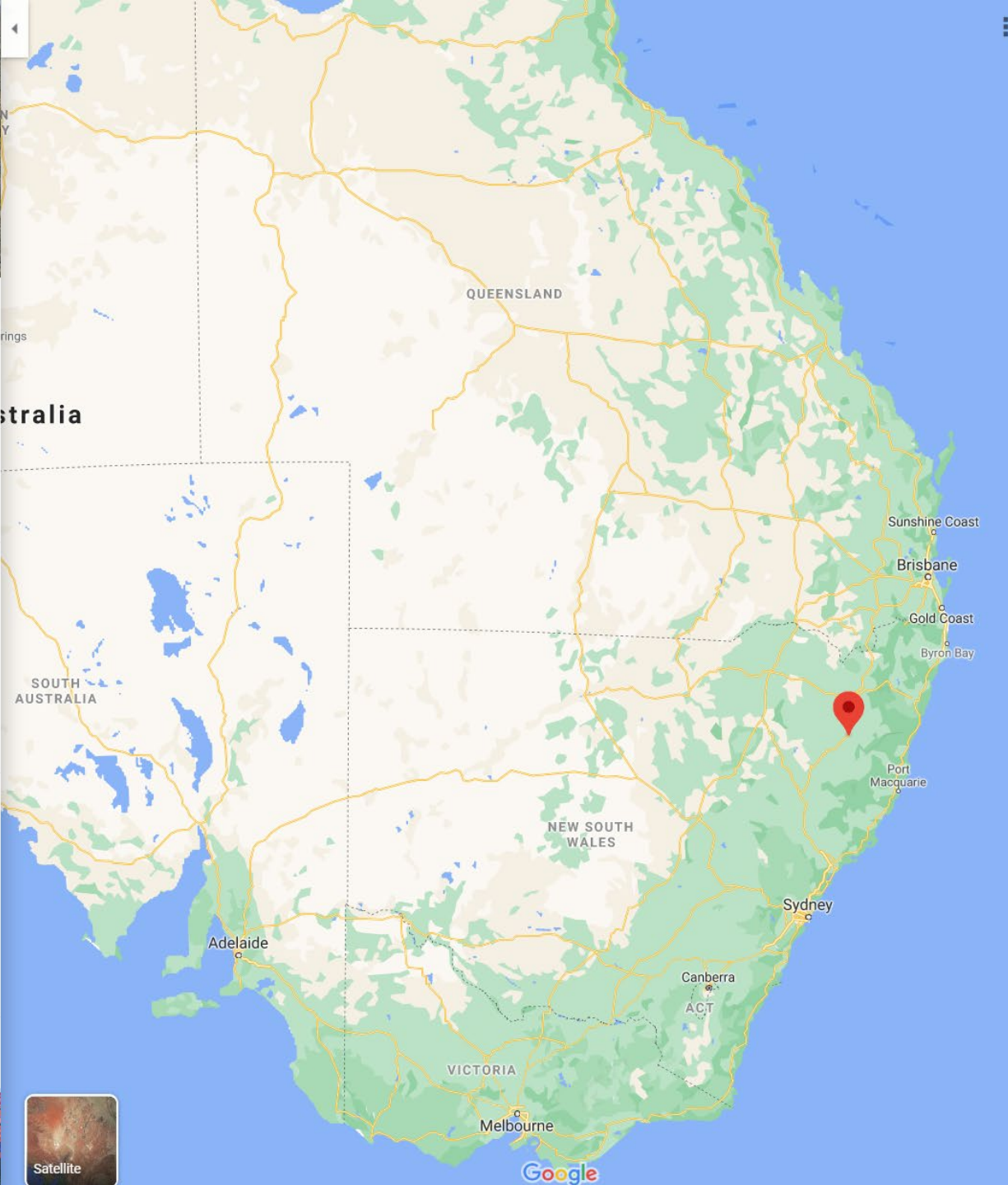
Armidaale is a city in the Northern Tablelands, New South Wales, Australia. Armidaale had a population of 24,504 as at June 2018. It is the administrative centre for the Northern Tablelands region. It is approximately halfway between Sydney and Brisbane at the junction of the New England Highway and Waterfall Way. [Wikipedia](#)

Hotels

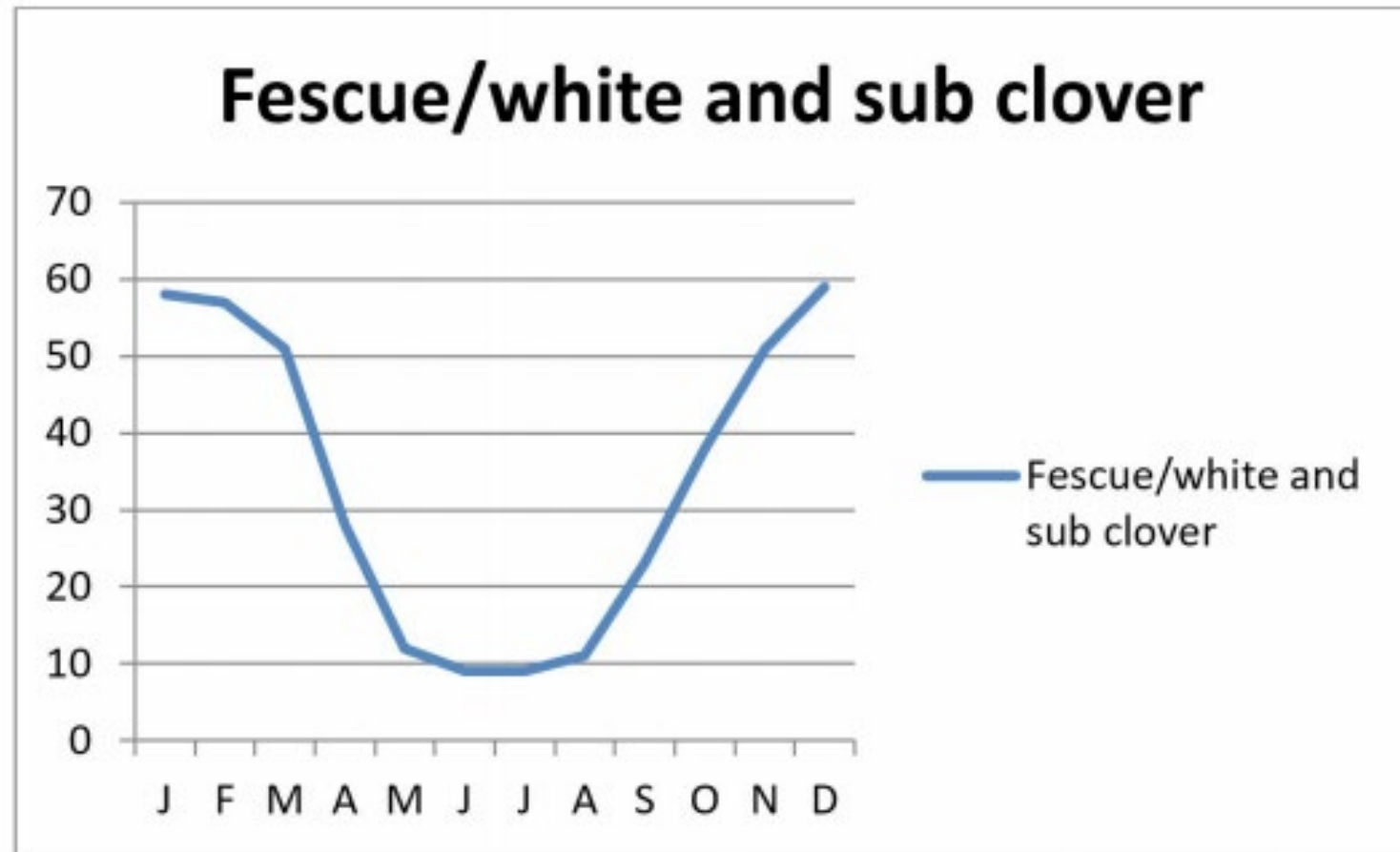
About pricing ⓘ



Satellite



Pasture growth rate



Pasture growth curve Armidale. Pasture is measured in kg DM/ha/day. Graph created with data from:
http://www.makingmorefromsheep.com.au/turn-pasture-into-product/tool_8.2.htm

- Based on the pasture growth curve shown in the previous figure, what approximate dates would you advise the following management procedures should occur to have the sheep lamb to maximise pasture use?
- Peak nutritional needs will be at 6 weeks post lambing start date and 10 weeks post calving start date.
 - a. Rams go in with ewes (start of joining period)
 - b. Rams removed from ewes (end of joining period)
 - c. Lambing start date
 - d. Lambing end date

Lambing

- Lambing can start later in this enterprise to allow lambs to be finished or old enough to be weaned before the relatively harsh winter arrives
- October/November is likely lambing time, depending on enterprise type (we will discuss this more in weeks 9-12)
- Once we have worked out when we want to lamb we then need to go back 150 days to join rams
- Rams are joined for whatever lambing period we have chosen (note lambing period will always be slightly longer than joining due to variation in gestation length, we generally don't worry about this but it is important from a practical point of view to ensure stock are still being checked)

- Based on the pasture growth curve shown in the previous figure, what approximate dates would you advise the following management procedures should occur to have the sheep lamb to maximise pasture use?
- Peak nutritional needs will be at 6 weeks post lambing start date and 10 weeks post calving start date.
 - a. Bulls go in with cows (start of joining period)
 - b. Bulls removed from cows (end of joining period)
 - c. Calving start date
 - d. Calving end date

Calving

- A similar calving time could be chosen in this enterprise, possibly a month later to cope with cold overnight temperatures
- This allows maximum milk production to coincide with maximal pasture growth and gives adequate time to wean the calf before following winter

Profitability and productivity

The farmer at Seymour in case study 1 wants to assess how they are going with respect to profitability and productivity but are not sure how to go about doing this.

They have monthly cash flow data as well as a livestock schedule for their enterprises and have derived some farm benchmark data from this on the following page. Year data is from = 19/20

[Livestock Farm Monitor Project | Agriculture in Victoria | About | Agriculture Victoria](#)

[LFMP-annual-report-2019-20.pdf \(agriculture.vic.gov.au\)](#)

Reproduction Case Study – Property 1

- A new owner has taken over a property in central Victoria (Seymour) that runs both sheep (Merinos) and cattle (Charolais).



Merinos (mernowiepollmerinos.com)



Charolais cattle (<http://www.chenucharolais.com.au/>)



Seymour

Victoria 3660



Mostly sunny · 18°C
11:09 AM



Directions



Save



Nearby



Send to your
phone



Share

Photos

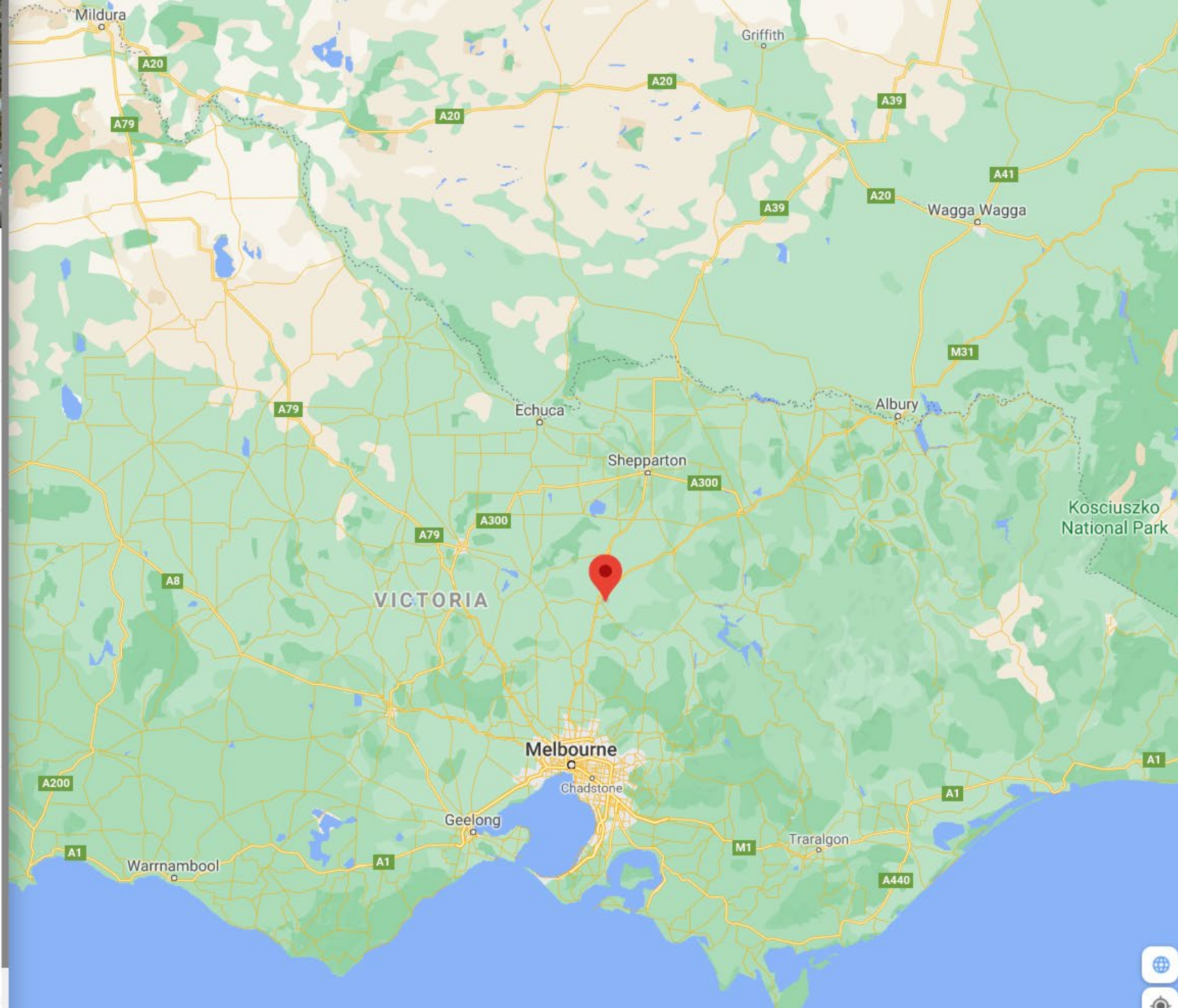


Photos



Quick facts

Seymour is a historic railway township located in the Southern end of the Goulburn Valley in the Shire of Mitchell, Victoria, Australia and is located 104 kilometres north of Melbourne. At the 2016 census, Seymour had a population of 6,327. [Wikipedia](#)



Sheep enterprise

- Managed on 250 hectares
- Total winter DSE = 12 DSE/ha
- Just moved lambing to July/August
- Wool gross margin = \$200/ha
- Phosphorous applied per hectare = 0
- Lamb price received \$8.50 per kilogram cwt
- Weaning percentage = 65%

Sheep enterprise

- Operating at well below optimal stocking rate
- In part this may be due to low fertility as no superphosphate (or source of P) is being delivered.
- Lamb price is about average, main driver of poor performance is stocking rate
- Retaining more ewes or purchasing ewes and increasing to that rate once fertility of soil is rectified (if low – need soil test) would significantly improve production/profit
- Significant room for improvement in reproductive rate

Cattle enterprise

- Managed on 100 hectares of the farm (separate titled property a few kilometres away from larger farm)
- Total winter DSE = 15 DSE/ha
- Weaning percentage = 80%
- Beef gross margin = \$350 per hectare

- Could increase stocking rate for cattle to meet benchmark although not as low as sheep stocking rate
- Room to improve the weaning percentage, particularly with tighter calving pattern to focus energy on critical time points.
- Gross margin is performing at industry benchmarks so if can increase SR and improve weaning may be relatively high ranking, maybe consider increasing percentage of operation that is beef?

Reviewing profit/production

- Review the farm information relative to industry benchmarks for that area
- What are the key areas that could be improved from the limited information you have been supplied with? (presuming your analysis suggests that they need improvement)
- What do you think are the most important factors that significantly impact a farms ability to reach or exceed benchmarks?

Reviewing profit/production

- A key driver of production/profit is stocking rate, this is one of the most important management decisions
- Stocking rate (SR) should not be too high or too low as both will lead to reduced overall pasture quality and also production/profit
- A SR that is too high will result in pasture damage and potentially land degradation. In an excellent year (good rainfall) SR could be increased to match (maybe taking on some agistment, being mindful of biosecurity)
- A SR that is too low will result in poor pasture growth and utilisation

On this property

- The sheep enterprise is being run at 66% of the optimal DSE for the rainfall
- This may in part be due to low fertility in the soil – noting there is no phosphorous being applied
- If pasture is being underutilised this would be key method to improve profit/production
- This would require more sheep, ideally from replacement young stock. This property has a low weaning rate compared to average so this also needs further investigation to improve or stock could be purchased

On this property continued

- The cattle enterprise is also being managed at less than optimal SR however not as low
- Overall GM/ha is about average which is an excellent outcome given the relatively low SR
- If can optimise SR likely to be above average GM. Also need to check soil fertility here if using 0kg P per hectare (P= phosphorous, usually applied as superphosphate
http://www.ccmaknowledgebase.vic.gov.au/shkb/brown_book/12_Superphosphate.htm)

Other factors

- A range of other factors can also significantly impact on production/profit
- Disease management – if disease is left unchecked it can severely damage profit, production and welfare
- Flock/herd age structure can also have large impact on production (older animals tend to have more health and production related issues, hence animals are regularly CFA or cast (sold) for age)
- Maximising the income – always important to ensure maximising income (most people are relatively OK at this, but may neglect the cost and management side of the equation)