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The profitability of a lamb meat system is greatly influenced by lambing time

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Abstract: The profitability of a lamb meat system is greatly influenced by lambing time. The most profitable lambing date optimises income from lamb meat and costs per hectare to produce it. It also involves labour availability and synergies with cropping systems and different pasture systems. This analysis does not include labour, and cropping and is only based on an annual pasture system. The base farm is located in Wagga Wagga. It is a single enterprise running a first cross ewe flock joined to terminal rams. It consists of annual ryegrass and sub clover pasture. The base farm uses a July lambing system without production feeding. The system is run and validated and analysed using GrassGro[®] by overlaying several variables including lambing date from April to September, store lamb and finishing systems plus two grain and lamb prices. The analysis clearly shows that lambing in June on an annual based pasture with and without production feeding is the most profitable system. It optimises fecundity as a result of breeding season and fat score at joining, sale weight as a function of pasture utilisation and production feeding and minimal supplementary feeding of ewes. These results are based on a fixed sale date and sale weight.

Keywords: modelling, sheep enterprise, lamb meat, joining, gross margin.

Introduction

Selecting a lambing date is arguably one of the most important and hardest management decisions made in a sheep enterprise. It is a balance between optimising the number of lambs weaned per ewe, the number of lambs weaned per hectare, the kilograms and value of lamb and wool sold per hectare at the lowest cost of production per hectare. It's not surprising that lambing date varies greatly across the state and within regions.

The sheep industry is experiencing a shift in emphasis from wool production to meat production following a trend of lower wool prices and increased sheepmeat prices.

The prolonged drought in much of NSW has forced producers to become more experienced with grain feeding and resulted in a greater acceptance of the potential benefits of supplementary feeding to meet animal production targets.

Commonly, extension efforts have been targeted at spring lambing with the belief it is more profitable due to the potential for increased stocking rates coupled with the reduced need to supplementary feed during late pregnancy and early lactation.

However, as prices and attitudes change lambing time might be driven more by the requirements of the lamb as that of the ewe.

Method

A farming system based on a first cross ewe flock (Merino ewe joined to Border Leicester ram) joined to terminal rams was modelled using GrassGro[®] a computer based decision support tool (Moore et al. 1997).

The region analysed was Wagga Wagga and soils and climatic data typical for that location were selected. The period analysed was 1 January 1980 to 31 December 2007. The

pasture consisted of annual ryegrass and sub clover.

Replacement ewes were purchased and all lambs sold. Lambing occurred in July and lambs were sold during December for \$3.00/kg <18kg carcass weight (cwt) and \$4.00/kg for lambs < 22kg and \$4.20 > 22kg cwt. All animals by class were supplementary fed when the thinnest animal fell to condition score 2. From January to March ewes were fed a maintenance ration when their condition fell to condition score 2.5. Barley was fed at a value of \$185 per tonne.

The profitability of the system was analysed using different lambing dates starting in April and going through to September. Ewes were run at 4, 5 and 6 per hectare. Fecundity rates varied from the same for all joining dates to varying by as much as 40 lambs per 100 ewes from November to April (see Figure 1). Lambs were either sold in December when pastures were insufficient for weight gain or on different dates to try to achieve a similar sale weight for all lambs except the pasture-finished lambs.

Results

The first analysis involved lambing over six months from April to September overlaid with three stocking rates, 4, 5 and 6 ewes per hectare. For this run the natural fecundity was held constant for each month of joining (50% singles, 45% twins and 1% triples). Lambs were sold on 10 December and 25 December.

With a stocking rate of 4 ewes per hectare the liveweight of lambs at sale in December was calculated. They ranged from 52 and 62kg for ewe and wether lambs respectively born in April to 30 and 32kg born in September (see Figure 2).

The liveweight of lambs for a stocking rate of 6 ewes per hectare was similar to 4 ewes per hectare (see Figure 3). This is an indication that lamb growth rate at the higher stocking rate is not being restricted by the pasture.

For the second analysis the natural fecundity was varied for each month of joining except for April, which was the same as March (Warne et al. 2006). The sale date for all lambs was set in December when pastures could no longer sustain weight gain. As a result the earlier lambing dates achieved a much greater gross margin (GM) (see Figure 4).

June lambing achieved the highest GM because it produced the most lamb product per hectare which was a combination of more lambs born and a greater sale weight. April/May lambing had a greater sale weight but lower number of lambs born resulting in less lamb produced per hectare.

The value of lambs greater than 24kg cwt was \$4.20 a kg, while lambs greater than 18kg cwt receive \$4.00 kg. This partly explains the difference between an April and May lambing as more lambs achieve greater than 22kg cwt. For lambs below 18kg cwt the value is only \$3.00/kg which also partly explains the sudden drop in GM after June lambing as more lambs are sold in this category.

The lamb values used favour an early lambing and discount a later lambing. Decreasing the heavy lamb values to \$4.00/kg while increasing those for light lamb to \$3.50/kg reduced the GM for April and May lambing by approximately \$25 while increasing the August and September GM by approximately \$50 (see Figure 5).

One of the key issues associated with selecting lambing is the amount of supplementary feeding required. Logically, lambing in spring will reduce this need as the nutritional requirements of the ewe during late pregnancy and lambing are most likely to be met through pasture.

Figure 6 demonstrates a clear relationship between the cost of supplementary feeding, lambing date and stocking rate. Lambing in April costs more by approximately \$40 and \$75/ha for 4 and 6 ewes per ha respectively compared to lambing in September.

The supplementary feed costs approximately \$55 more running 6 ewes per hectare compared to running 4 ewes per hectare when lambing in April. However, the increased production outweighs this cost as the GM is approximately \$130 per hectare greater. In this analysis the grain price used was \$185.

In a lamb finishing enterprise, lambing later is likely to involve production feeding to enable lambs to reach a minimum of 45 kg liveweight. To assess the benefit of production feeding, sale date was varied and a production feeding rule applied.

Lambs were fed *ad libitum* from 15 December to 10 April when pasture biomass fell below 500kg green/ha and ceased when it exceeded 500kg green/ha. Table 1 lists the sale dates used for each month of lambing.

The resulting sale weight of lambs is shown in Figure 7. The sale weights are similar for each month except of April. April and May had minimal production feeding and their sale weight was driven by pasture.

Including production feeding in the analysis has greatly increased the GM of the later lambing enterprises (see Figure 8). For an enterprise running 6 ewes per hectare the GM has increased to approximately \$280 from \$160/ha for a September lambing.

Lambing in June has the greatest GM. Even at 4 ewes per hectare it has a similar GM to lambing in September with 6 ewes per hectare. Lambing in April or May at 5 and 4 ewes per hectare has a similar GM to lambing in September running 6 and 5 ewes per hectare respectively.

The combined cost of feeding can be seen in Figure 9. Lambing later clearly has a greater feed cost and will subsequently be more sensitive to grain prices. The cost of production feeding for lambs born from July onwards is greater than the cost of supplementing ewes lambing in April/May.

Increasing grain price to \$250 has decreased GM by approximately \$65, \$55 and \$50 per ha for September, August and July lambing respectively (see Figure 10). The GM decreased by approximately \$40 and \$30 for an April and May lambing respectively.

June remains the most favourable lambing date with a GM approximately \$50/ha higher than a July lambing and approximately \$65 and \$75 higher than a May and April lambing respectively. Lambing in August and September resulted in GMs approximately \$90 and \$155 below a June lambing.

Natural fecundity has a large impact on GM (see Figure 11). A June lambing has the best balance between maximising the number of lambs born per hectare and the sale weight of lambs while minimising production feeding of lambs and supplementary feeding costs of ewes. The natural breeding season greatly reduces the fecundity of April and May lambing, resulting in less lambs being born, which impacts greatly on the kilograms of lamb produced per hectare.

Discussion

Selecting the most appropriate lambing date in a sheepmeat enterprise is based on optimising income from lamb produced per hectare and costs per hectare to produce it.

Income is a function of the number of kilograms of lamb produced and its monetary value. Traditionally the market pays less per kilogram for store lamb while the price varies between export and domestic lambs.

Lambing in April at 4 ewes per hectare with lower fecundity rates and finishing lambs is as profitable as lambing in August running 6 ewes per hectare with higher fecundity producing store lambs (Figure 5). This analysis was based on store lamb value of \$3.50/kg, which some would consider as high.

Lambing in April maximises the weight of each lamb at sale in December at the expense of producing less lambs per hectare. It also reduces the amount of hand feeding as the need for production feeding is almost eliminated.

Minimising costs per hectare is a factor of lower hand feeding costs. Figure 9 clearly shows that whilst lambing in April has the highest supplementary feeding cost per ewe, the total cost of production was greater for later lambing systems. However, increased feeding costs can be outweighed by greater income as a result of increased production (Figure 8). The key is to balance costs with production.

The analysis clearly shows that lambing in June with or without production feeding is the most profitable system. It optimises fecundity as a result of breeding season and fat score at joining, sale weight as a function of pasture utilisation and production feeding and supplementary feeding of ewes. As lambs' sale weight was standardised it removed the price variable between store, domestic and export lamb prices. June lambing in the production based system had the lowest total feed cost except for a May lambing. As a result, varying grain prices is more likely to impact on the other lambing dates.

While pasture utilisation has not been discussed or analysed specifically during this analysis, pasture utilisation rates were well below 50%.

Further analysis is needed for lucerne and perennial grass based pasture systems. These systems provide green feed at times of the year when annual pastures are insufficient for lamb growth. As a result, the relative profitability of the different lambing systems may be altered.

References

- Moore AD, Donnelly JR and Freer M 1997, GRAZPLAN: Decision support systems for Australian grazing enterprises. 111. Pasture growth and soil moisture sub models and the GrassGro DSS. *Agricultural Systems* 55, 535-582.
- Warne L, Webb Ware J, Salmon L, Donnelly J, and Alcock, D 2006, Analysis of the profitability of sheep wool and meat enterprises in southern Australia. Final report for project 1.2.6 (The Australian Sheep Industry CRC).

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Appendix

Table 1. The date of sale for lamb at varying months of lambing

Lamb	April/ May	June	July	Aug	Sep
Sale 1	10/12	1/1	25/1	10/2	10/3
Sale 2	25/12	10/1	10/2	25/2	25/3

Figure 1. Fecundity profiles used in the report

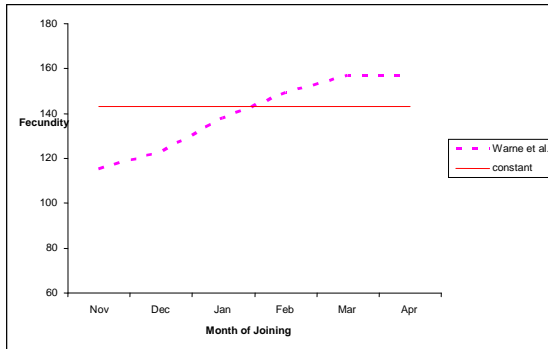


Figure 2. The impact of different lambing dates on the weight of ewe and wether lamb sold in December at a stocking rate of 4 ewes per hectare

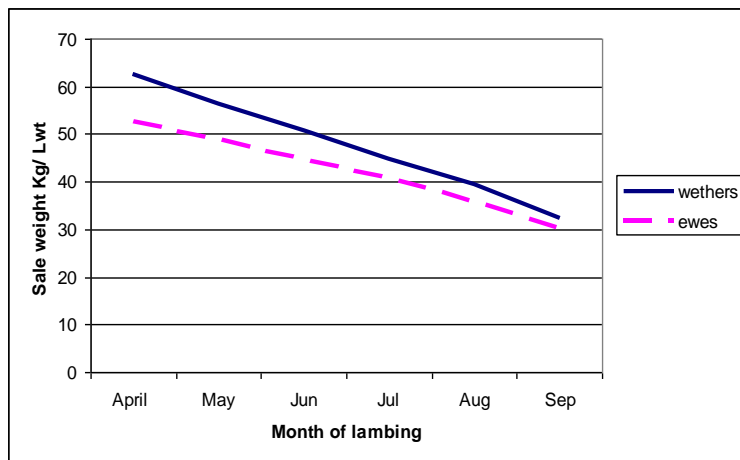


Figure 3. The impact of different lambing dates on the sale weight of ewe lambs sold in December at a stocking rate of 4 and 6 ewes per hectare

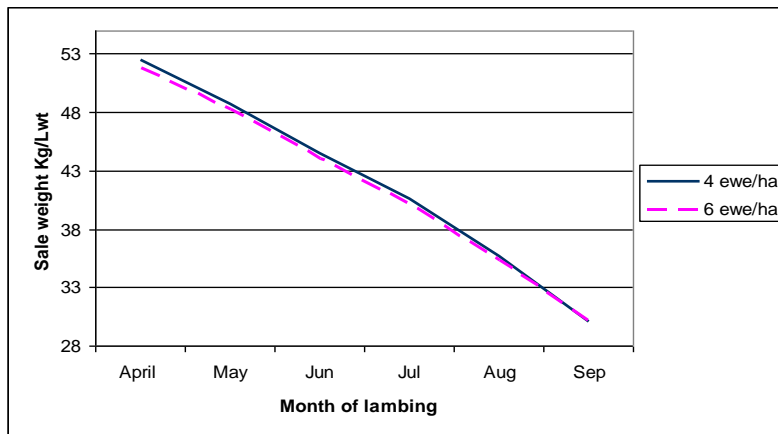


Figure 4. The impact of different lambing dates on GM with lambs sold in December at a stocking rate of 4, 5 and 6 ewes per hectare with a sale value of \$3.00/kg <18 cwt, \$4.00/kg <22kg/cwt and \$4.20/kg >22kg cwt

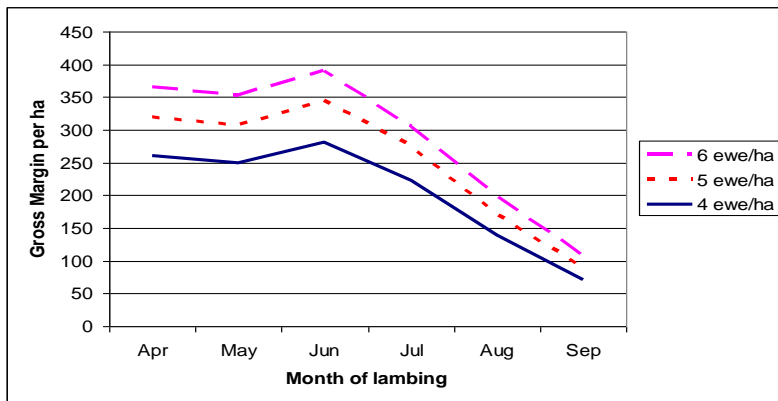


Figure 5. The impact of different lambing dates on GM with lambs sold in December at a stocking rate of 4, 5 and 6 ewes per hectare with a sale value of \$3.50/kg <18 cwt and \$4.00/kg >18kg/cwt

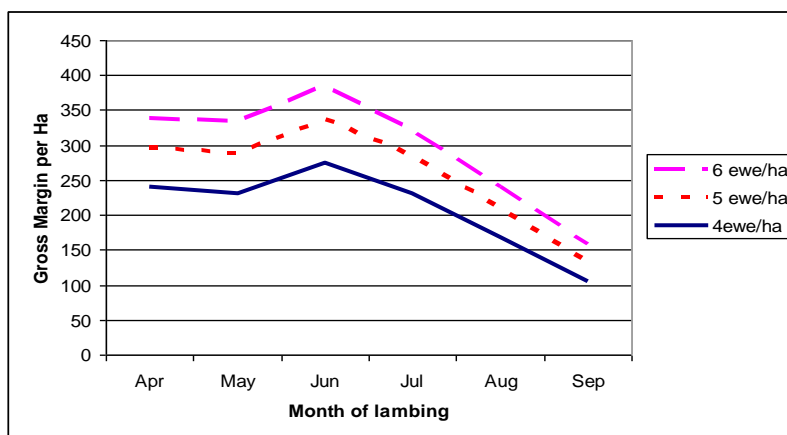


Figure 6. The impact of different lambing dates on supplementary feeding costs of ewes at \$185/tonne

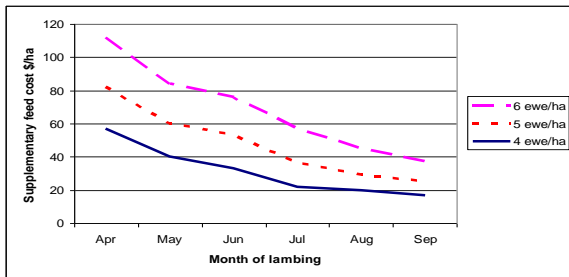


Figure 7. The weight of lambs sold for varying lambing and sale dates and amounts of production feeding.

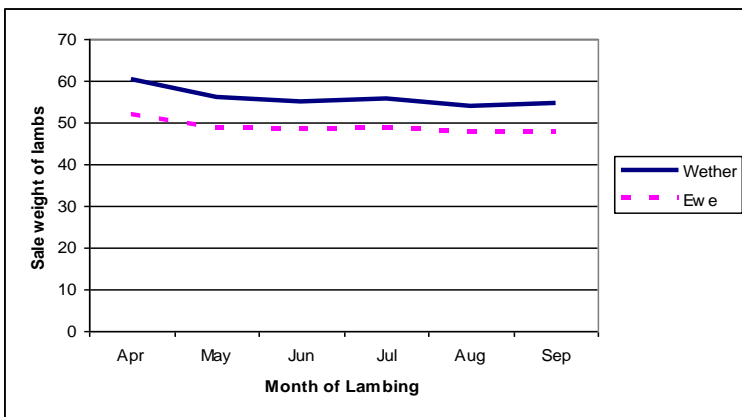


Figure 8. The impact of different lambing dates on GM with production feeding and different sale dates with a grain price of \$185/tonne

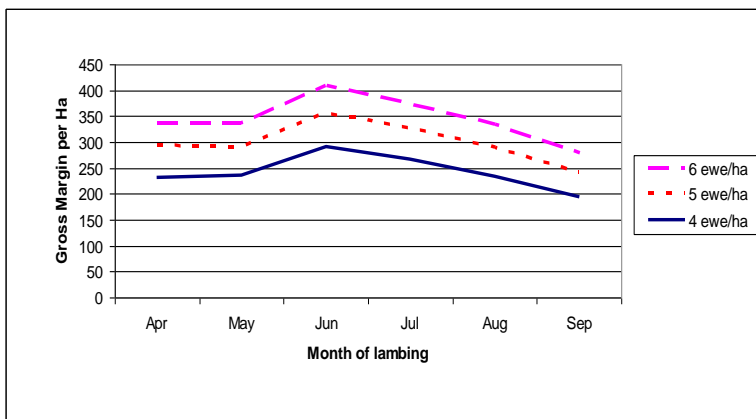


Figure 9. The impact of different lambing dates on supplementary feeding ewes, production feeding lambs and a combined feed cost running 6 ewes per hectare. Grain price \$185/tonne

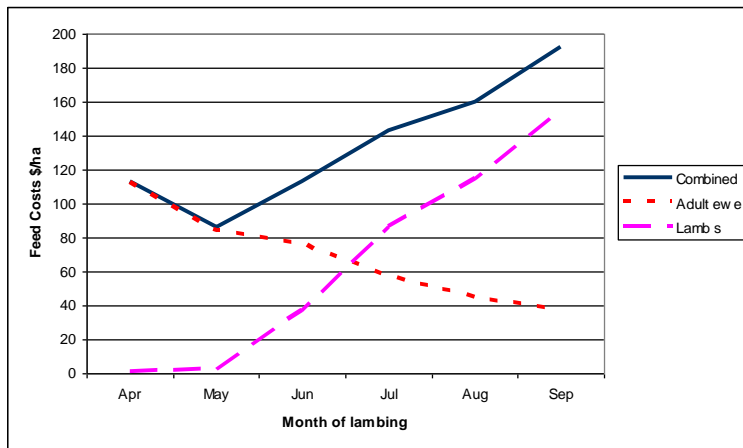


Figure 10. The impact of different lambing dates on GM with production feeding and a stocking rate of 6 ewes per hectare with grain at \$185 and \$250/tonne

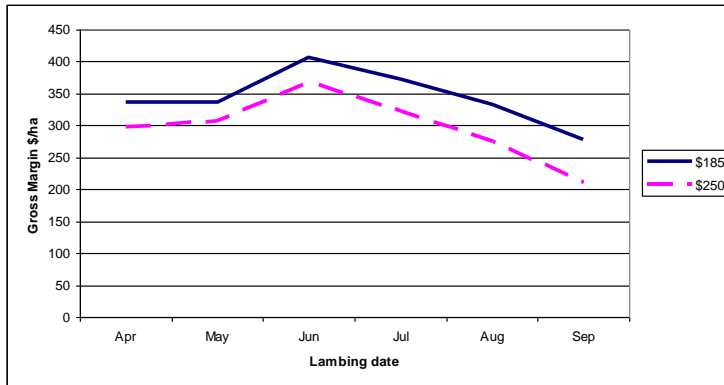


Figure 11. The impact of different lambing dates on GM with production feeding and a stocking rate of 6 ewes per hectare with a constant and varying monthly fecundity

