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Value adding grain through livestock

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Introduction

Grain producers are frequently at the mercy of domestic and international trade and currency exchange values and, in the majority of cases, continue to trade commodities and therefore cannot or do not differentiate their product. Value adding of a base grain product is possible, be it through providing additional information in terms of quality parameters (an example being vitamin and mineral content), through processing or manufacturing to arrive at an end-product removed from the base products original form or simply through using their grain in a livestock program to increase the grains commercial value.

It is possible to significantly increase the farm gate value of cereal, pulse or oilseeds through intensive feeding programs for livestock. This paper's focus will be on value adding grain through a lamb feedlotting program. While value adding through supplementary feeding is possible, difficulties in estimating the assignment of costs to pasture versus grain make it difficult to determine any value adding advantage overall, and for this reason supplementary feeding is not discussed.

The information contained within the following few pages has been generated using a Lamb Feedlotting program I initially developed several years ago. This program has been fine tuned to now include capital costs not included within the analysis outlined. The Lamb Feedlot Calculator program is now available free on-line from the National Sheep CRC website (www.sheepcrc.org.au/articles.php?rc=311).

Value Adding through Feedlotting

Feedlotting enables producers to meet specific market specifications, control feed availability, limit soil erosion and seed contamination and improve stock condition (Anon 1998). Consumer pressure for a more consistent supply and quality of lamb has renewed interest in intensive grain feeding (McIntyre et al 2004), as have current drought conditions across NSW (Duddy 2005). Feedlotting continues to also be seen as a means by which producers can utilise surplus or damaged grain (Thatcher 1994) or, depending on the margin between store and finished lambs, utilise higher priced grain to generate additional cash flow and improve the farm gate grain value.

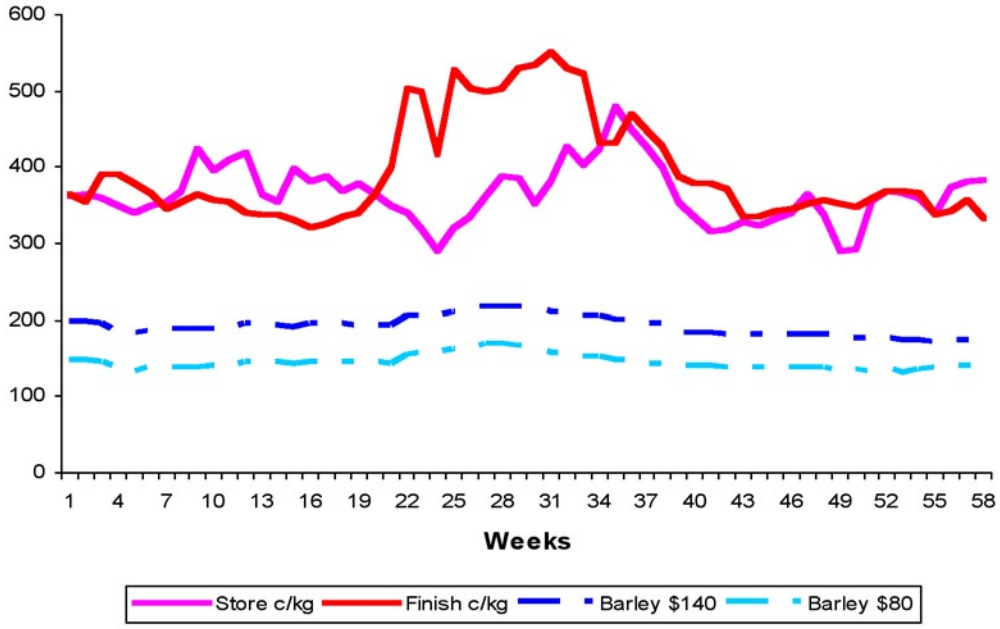
While feed cost, initial and finished lamb prices will generally have the greatest affect on profitability, specific lamb and management issues may also have a direct influence on profit margin. Lamb specific issues include genetic potential, sex and live weight, intake and feed conversion efficiencies, average daily gain, health and disease status, skin quality and values. Management related issues include feedlot design, ration suitability, labour availability and cost, equipment on-farm, transport and livestock commission rates etc.

It is essential that producers understand the impact many of the above have on production potential and monitor and modify if necessary specific lamb or management issues if feedlotting is to meet production objectives, (which may include a grain value adding component) and ultimately improve profit margins.

The Lamb Feedlot Calculator allows producers to insert known values and/or use default values for all lamb and management inputs. The following inputs were used to analyse the profitability of finishing store (16-18kg, 2 score) lambs to heavy trade (20-22kg, 3 score) weights between November 2003 and February 2005. Rations consisted of 75% barley (valued at $80 and $140/tonne), 10% lupins, 10% clover hay plus additives, providing 12Mj/kgDM and from 14-16% Crude Protein. Standard intake (3.5% of Lwt), feed conversion efficiency (6 to 1) and average daily gains of 280g/h/d were applied.

Store and heavy trade lambs averaged 366c/kg and 395c/kg respectively for the period analysed, peaking at 479 and 553c/kg in July and June 2004 as shown in Figure 1.

Figure1. Lamb Feedlot Cost:Benefit Analysis (November 2004 to February 2005)



Rations with barley at $80/t averaged $144/t (range $130 to $168) or 20c/h/d. Feedlotting was profitable for 85% of the period with an average profit margin of $15.53 compared to if the producer had sold the lambs as stores. Profits greater than $10 per lamb were generated for 66% of the period.

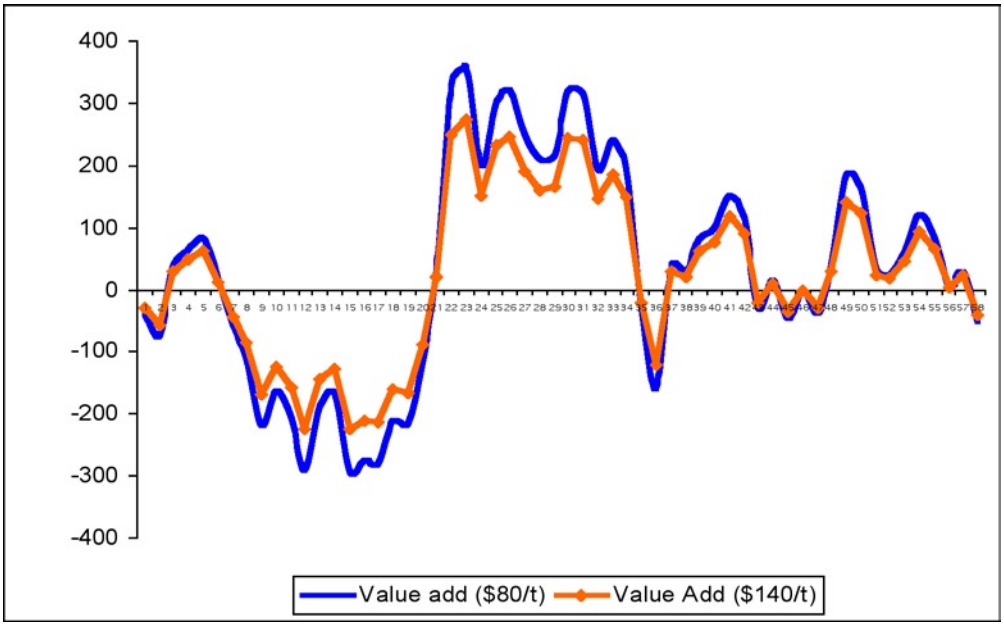
Rations with barley at $140/t averaged $190/t (range $171-$217) or 27c/h/d. Feedlotting was profitable for a 14 week period starting in mid April 2004 through to mid July, 2004. Averaged across the period analysed feedlot finished lambs lost $9.03 compared to sale as store lambs, showing profits for only 22% of the time based on weekly sale values.

While ration costs are undoubtedly important there was little variability in either ration price across the period analysed (barley at $80 versus $140/t). Ration price therefore had less of an effect on profitability in feedlotting systems compared to the initial and finished values for lambs finished within feedlot systems.

Profit margins, while important, are however not necessarily the main driving force behind the recent surge in feedlotting systems. Producers have used feedlotting as a 'vehicle' to value-add their on-farm grain and fibre reserves.

When barley was priced at $80 per tonne in the above analysis value adding of all ration components was as high as 300%, averaging 29% during the period analysed as illustrated in Figure 2. This equates to an average increase of $41.76 per tonne of feed.

Figure 2: Percentage Increase in Grain Value ($80 and $140/tonne barley rations)



Despite an average difference of $46 per tonne across the period analysed between the 2 ration prices the dearer ration (barley at $140/t) displayed similar returns in terms of an increase in grain value, averaging 22% for the period analysed. This equates to an increase of around $41.80 for the higher priced ration per tonne of feed consumed.

The difference between starting and finished lamb values obviously has a large impact on profitability and grain value adding returns. It is therefore essential that producers seek advice and do a thorough budget prior to entering a lamb grain finishing program. Historical price charts may assist with the feedlot decision process as will the Lamb Feedlot Calculator. Using the latter producers can enter a number of finished lamb prices to estimate likely profit, cost:benefit and grain value adding figures.

Which grains offer the greater value adding potential?

Cereal grains generally make up between 70 to 80% of a lamb feedlot ration. They therefore offer producers the greatest opportunity to improve farm gate values via feedlotting. Pulses such as lupins may constitute from 5 to 20% of a ration depending on required protein levels which are dependent on the rations total energy value, a lamb's age and weight. Potential for significant value adding is therefore lower, although no less important than with cereal grains. Oilseeds are generally not widely used due to availability and issues with oil contents affecting rumen function and feed digestibility. They may however be incorporated into a ration in a meal form to improve protein levels.

Damaged (frosted, high screenings, mouldy or sprouted) grains may, in most circumstances, offer a far greater value adding and improved profit margin potential than higher priced grain. Richardson et al (2001) have shown that frost affected wheats have only slight changes to nutritive value in most cases with a 1 megajoule/kg dry matter drop in energy value. Frosted grains may however have higher protein, fibre and sugar levels. Higher protein value may off-set the use of lupins etc, while additional fibre and a reduction in starch (with a corresponding increase in sugar) will reduce acidosis or digestive upset risk. Why then were such grains so undervalued as a feed source and penalised heavily in terms of farm gate value? Recent years have seen the true values of such grains recognised by producers with on-farm storage, however penalties still exist for affected grains.

Moulds, particularly vomitoxin, can cause severe health problems or even death in monogastrics (specifically pigs and horses). Ruminants however can tolerate reasonably high levels of infection within grains without deleterious effects. How often is corn and, to a lesser degree cereal grains, affected and downgraded for mould related reasons? These grains, with careful management can potentially comprise 20% of a ruminants diet, reducing overall ration cost and allowing the producer greater value adding opportunities. Indeed trials (Wagner 1993) have shown that up to 40% of vomitoxin infected wheat or barley can be fed to cattle and lambs without any adverse affects on intake, feed conversion efficiency or carcase parameters. If used as part of a feedlot ration it is extremely important that mould type, infection level and grain feed value be analysed to minimise health and production losses. Mould affected grains will generally have reduced starch and fat contents (lowered energy), lower digestibilities and may have some palatability issues (Blaney and Williams 1991). Use as a small percentage of total grain components may however be feasible and profitable.

Weather damage to Australian wheat crops is estimated to average 8% annually, but may be as high as 30% (Blaney and Williams 1991). This equates to around 2.24 (average) to 8.4 (high estimate) million tonnes of damaged grain ready to be value added within a feedlotting program.

What does the future hold?

Feed grains are, and will increasingly become, a scarce commodity in eastern Australia due principally to growth in the intensive livestock industry demand for feed grains. Australia produces around 28 million tonnes of feed grain annually of which the beef feedlot industry requires an estimated 10m tonnes or roughly one third of supply. Seventy (70) percent of the national barley crop alone is used as feed grain (Fox 2006). Demand from the livestock sector alone is projected to increase from 11.4m tonnes (2005) to 13.1m, 14.8m and 16.8m tonnes by 2010, 2015 and 2020 respectively. Upward price pressure may restrict your ability to significantly value add grains within a lamb feedlot program – time will tell.

What also of the predicted increase in prices from ethanol production? Locally there is the likelihood that an ethanol production plant could be established at Coleambally, what additive affect will this have on grain prices? If, as predicted, all fuels contain 10% ethanol by 2010 it is likely that an additional 4.8m tonnes of grain will be needed nationally (Australian Pork Ltd) – can we supply and how will increased prices affect the intensive livestock industries in the long term? Can use be made of products such as tallow to fill the void?

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