Investigating farmer practices and concerns around grazing crops in south-eastern Australia

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Executive Summary

There has been significant research and extension materials developed from the Grain and Graze program to aid farmers in grazing crops. However there is the perception amongst those extending the research messages that adoption has not been as widespread as expected and that adoption may have plateaued. Funding was allocated in the current Grain and Graze program to understand why many crops are not being grazed and what activities could address these barriers.

Data was collected from 155 producers across south east South Australia, the Wimmera-Mallee, south west and northern Victoria. Local grower groups and consultants (Ag Consulting Co., Birchip Cropping Group and Southern Farming Systems) used various avenues to survey farmers, either through face-to-face interviews, a keypad survey or focus group discussion. Participants were generally actively involved in grower groups, attending field days and training events and/or actively seeking out information. Even so there was a range of levels of adoption of grazing crops.

Respondents were grouped into two broad clusters, those who graze their crops only when needed to fill a feed gap and those who graze their crops strategically, as an integral component of their business. At this level, grazing crops involves the planning across the whole system. Most farmers surveyed occupy the first group.

A reoccurring theme, was the tension or trade-off between the value gained from grazing crops to fill a feed shortage with the potential for grain yield loss. Respondents found it easy to identify the downside (loss of grain yield, animal deaths) but struggled to quantify the benefits. Although grazing crops was initially presented as being a ‘free lunch’ from a traditional cropping program with little or no yield loss, subsequent research and farmer experiences showed this to not be the case. Many agronomists who advise farmers in their crop production also fear the potential yield loss through grazing and commonly don’t recommend the practice.

Another insight was the influence a farmer’s preference for either crop or livestock had on the attention they paid to the wellbeing of each. Those with a strong preference for livestock would accept a potential grain yield loss, whereas those with a cropping focus were reluctant
to add another potential risk to the crop. The consideration of what and how to value the pros and cons in the cropping and livestock enterprises was very individual.

The primary motivation to undertake this market research was to understand why more farmers were not grazing more of their crops. We conclude the amount of grazing crops has plateaued with the current approach to grazing crops, even though it will fluctuate from year to year depending on the feed gap. However we believe there is two significant opportunities to increase the amount of crops grazed. The first requires a substantial shift to earlier sowing and grazing based on early season opportunities. Currently most farmers miss these opportunities by accepting grazing has to fit into the timing of their traditional cropping program. Secondly there needs to be greater development of early warning triggers to minimise the risk of grazing crops too late when they are likely to encounter moisture and heat stress (aspire to a no grain yield loss grazing system).

Finally the survey results suggest that grazing decisions made by the first two groups is overwhelmingly tactical rather than strategic. Decisions are opportunistic and while this is a legitimate approach to take, it prevents the full potential from grazing crops to be realised. A fully integrated approach to grazing crops is required to capture the gains. If a commitment to direct future investment at the strategic ‘frontier’ is not made, then the practice of grazing winter crops is anticipated to remain around 3 to 4 million hectares, with limited impact at a whole farm level.

Four recommendations are made to encourage more grazing of crops. These are:

Recommendation 1: Undertake trialling and development of new messages (flags or triggers) around opportunist early sowing and grazing of crops

Recommendation 2: Pilot the development and implementation of a support package to enable farmers to consider the full implications whole farm integration of grazing crops.

Recommendation 3: Approach the GRDC and MLA to continue investment in grazing crops but with a systems approach to achieve positive livestock and crop outcomes.
Recommendation 4: The Grain and Graze program seek funding based on the successful Carbon Farming Knowledge model to develop advisor skills in a systems approach to grazing crops.
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1. **Background**

Grain and Graze has been investigating mixed farming systems since 2003. A key theme of the program has been to improve integration of livestock and crops through grazing cropped land.

The initial promotion of grazing crops (Grain and Graze workshop notes 2008), was as a ‘free lunch’ from a traditional cropping program, providing extra fodder during winter and maintaining grain yield, as long as certain ‘rules’ were adopted. It was seen and promoted as an opportunity to ‘take the pressure off’ pastures in winter.

A 2013 survey indicated there were approximately 3.2 million ha of crops grazed across 19,000 mixed farms in Australia. Nearly 60% of all farmers surveyed were grazing crops, however the area grazed only represented 13% of all crops sown in that year (Healy et al. 2013). It highlighted that many farmers were grazing crops, but the area grazed was not very large.

Those involved in the delivery of the Grain and Graze program expected more crops to be grazed by 2013, especially given the extension effort during the second phase of the program (2009 to 2013). Two thoughts were offered as to why the area grazed was lower than expected.

The first was that grazing crops was initially promoted as a ‘free lunch’, to employ when a feed deficit was encountered. Therefore it was not surprising to observe the area of crop grazed to vary between years and regions depending on the season. A national benchmarking study (Pakula et al. 2010) and a subsequent evaluation report of the same farmers three years later (Healy et al. 2013) showed large fluctuations in the area of crop grazed between regions (figure 1). This result would support the belief that grazing was being used as an opportunistic venture rather than a strategic, whole farm practice.
The second thought was that the ‘free lunch’ concept also meant the opportunity for grazing was relatively small if the ‘rules’ developed at the time were adhered to. Using a traditional sowing time and the need to cease grazing by the start of stem elongation, this typically limited grazing to between two and eight weeks (Nicholson et al, 2015). While rotations across several paddocks could be employed, the grazing limits prevented any long term changes in stock numbers across the farm.

While the ‘free lunch’ approach to grazing crops is a valuable tactical response to a feed deficit, it is unlikely such a practice will result in major change to the ‘bottom line’ of the business. Modelling conducted in south west Victoria that mimicked the opportunistic use of crops in winter when pasture supply was scarce, did improve the feed supply in that year (Creelman, unpublished data). However the benefits to whole farm profitability were small because a loss of grain yield often negated the benefits to the livestock operation.

Trial work conducted pre 2008 rarely resulted in a grain yield loss after grazing. Most of this trialling was conducted in years where seasonal conditions post grazing were favourable, except for the 2006 drought year. However further research conducted after 2008 and farmer experiences revealed an increasing number of examples where grain production declined.

Figure 11: Change in area of crops grazed 2010 and 2013.
after grazing, even when the ‘rules’ were followed. Recent research and modelling is pointing to the capacity of a crop to recover sufficient biomass after grazing as a major determinant on subsequent grain yield. This means the concept of a ‘free lunch’ is not without risk, because the decision to graze or not to graze has to be made before the conditions for crop recovery are fully appreciated.

Yet the practice of grazing crops is considered by some to have significant potential to improve whole farm productivity if approached in a different way. A study by Bell et al. (2015) indicated productivity gains of 10% to 20% and profitability increases of $50/ha to $100/ha were achievable. Farmer case studies where a whole farm approach has been adopted support this potential gain (refer to the Fowler and Demeo case studies in Nicholson et al, 2015). To capitalise on this opportunity requires significant change in the approach many farmers and advisors have to utilising winter crops. The ‘free lunch’ thinking needs to be transitioned into a farm systems approach if the full potential of grazing crops is to be realised.

Changing a farm system is more complex that just opening a gate and letting livestock graze a paddock. Changes that may appear relatively easy on the surface, such as earlier sowing, selecting different varieties to sow and increasing stock numbers, often have hidden consequences and flow on effects. Appreciating the interactions is more demanding and often daunting to implement. This survey was intended to understand the thinking and attitudes behind the more common ‘free lunch’ approach and the challenges in transitioning to a more systems approach to grazing crops.
2. Methodology (data collection)

Data collection was a collaborative effort between Southern Farming Systems (Simon Falkiner, Zoe Creelman, Annieka Paridaen), Ag Consulting Co. (Penny Roberts Craig) and Birchip Cropping Group (Alison Frischke). Each entity customised their data collection method to capitalise on available opportunities, with both qualitative and quantitative data being collected.

Questions were designed to identify grower motivations, attitudes, knowledge, ability and the decision support tools they use when grazing crops. A common set of questions were used to guide data collection (appendix 1), which researchers adapted to best fit their situation.

In total, 161 farmers and advisors were involved in the study. Data collection methods and the number of participants are detailed in table 1, with their respective locations shown in figure 2.

Table 1. Data collection method and participation by region

<table>
<thead>
<tr>
<th>Research group</th>
<th>Method</th>
<th>Location</th>
<th>Rainfall zone</th>
<th>Context</th>
<th>Farmers (no.)</th>
<th>How long grazing has been practiced in the region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Farming Systems</td>
<td>Focus group discussion</td>
<td>Boorhaman, northern Victoria</td>
<td>High</td>
<td>BestWool - BestLamb group</td>
<td>9</td>
<td>&lt;5 years</td>
</tr>
<tr>
<td>Southern Farming Systems</td>
<td>Focus group discussion</td>
<td>Horsham, Western Victoria</td>
<td>Medium</td>
<td>BestWool - BestLamb group</td>
<td>13</td>
<td>&lt;5 years</td>
</tr>
<tr>
<td>Southern Farming Systems</td>
<td>Unstructured conversations</td>
<td>South West Victoria</td>
<td>High</td>
<td>Agronomists</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Birchip Cropping Group</td>
<td>Keypad survey</td>
<td>Birchip, Mallee</td>
<td>Low-medium</td>
<td>Wimmera-Mallee Sheep Management Showcase</td>
<td>118</td>
<td>Up to 20 years</td>
</tr>
<tr>
<td>Ag Consulting Co.</td>
<td>Face-to-face interviews</td>
<td>York Peninsula to Victorian border</td>
<td>Medium-high</td>
<td></td>
<td>15</td>
<td>5 - 45 years</td>
</tr>
</tbody>
</table>
Figure 2. Participating farmer localities. Yellow markers – Ag Consulting Co interviews; blue marker – Birchip Cropping Group survey; red markers – Southern Farming Systems

A summary report was collated after each round of data collection. This enabled responses to be considered in isolation from other regions before being drawn together. When collated the information provided a good overview by region and assisted in handling the large volume of qualitative and quantitative data. Graphs from the Wimmera-Mallee survey (appendix 2) and an overview of responses from the South Australian growers (appendix 3) are provided.

This report presents the collated data and explores the key issues against the responses collected. External information that supports the participant responses was also included in the findings where appropriate. Further discussion of the issues and recommendations are also presented.
3. Key findings

Survey results around grazing crops can be grouped into five major themes. These include the approach to grazing; the perceived trade-off between grazing value and grain yield loss; preference towards livestock; past experience with grazing crops; and attention to detail when grazing.

3.1 Farmers have different approaches to grazing crops

Farmers adopt two broad approaches to grazed crops. They either;

- make grazing decisions about the amount of crop to graze as the season unfolds
- fully integrate grazing crops as part of their overall farming system.

3.1.1 Farmers that decide to graze as the season unfolds

There are two sub groups using this approach. The first sub group of farmers grazed crops as a short term operational decision to manage challenging feed situations as they arise. Rather than have grazing crops as the focus of the operation, grazing provided a short term solution to a feed deficit, with decisions made in season rather than pre-determined from the outset. Many saw the potential benefits of grazing crops in expanding their system’s feed base should they need it during the year. Conversely, if pasture supply was adequate and there was little winter feed gap, then the relative need for grazing their crops declined so it was less likely to be practiced.

“It is based on how much stock feed is available.”

Farmer Vic

While crops were most commonly viewed as providing a feed supply, several farmers saw the potential of grazing also as a tool in managing other problems that may arise during the season, when alternative options were limited or more expensive.

“If a paddock needs a spell or weeds are too advanced compared to the crop, then I will graze.”

Farmer South Aust

“One place where grazing crops could have a good fit is where you have a crop with a lot of bulk and you have a bit of leaf disease it wouldn’t hurt to run the sheep in that paddock to tidy up the dead leaf, and then let the crop come back, and then spray it with a fungicide.”

Farmer South Aust
Farmers in this sub group were often hesitant to lock themselves into a particular course of action before they could see how the season would progress. They saw management flexibility had the advantage of providing additional tactics but with less planning. However the lack of early planning may have a downside that appears not to be fully appreciated. Using this approach may result in larger yield losses because of sub-optimal choices, such as having to graze a short season variety or a late sown paddock that struggles to recover adequately before flowering.

The second sub group of farmers still used grazing opportunistically but made conscious choices to increase their opportunity to graze crops should the need arise. This position was strongest from the farmers involved in previous Grain and Graze activities, with two thirds of the South Australian producers who currently graze crops making sowing choices (variety, time of sowing) to increase their feed base choices. However the subsequent decision of whether or not to graze the extra feed grown was revisited each year depending on the season.

There were varying levels of planning at the beginning of the season among this farmer sub group. Selection of crop variety was an important decision. As a general conclusion most farmers prefer to limit the number of varieties they have to retain and sow to avoid complications during a high stress seeding time, although about half of the Wimmera-Mallee survey respondents said they would select crop varieties to graze based on their characteristics (season length, spring/winter type).

Decisions on crop selection often went beyond just considering early season grazing. One South Australian farmer sowed crop with the intention of grazing, but the decision of whether to harvest or not was opportunistic. His paddocks were in a crop-pasture rotation, where he sowed barley into the pasture at the end of the rotation. The primary goal in doing so was providing high quality feed for stock. Depending on the season and spring forecast, he made the decision to either continue grazing the barley or shut the gate and take it to harvest. Although he made tactical decisions at the beginning of the season to allow for grazing, the contribution the crop made to the feed base or to grain harvest depended on the year.

While this sub group have a stronger commitment to grazing and have sown some crops for this purpose, their partial commitment to grazing crops means that they often fall short of
best practice. These challenges were summed up by a farmer who identified four barriers that prevented him from grazing more strategically. These were:

- The emotional side of putting sheep on a “good looking crop”
- Concerns for herbicide residue and additional fertiliser requirements
- Fear of pugging from running sheep on wet country
- Limited time, being very busy around time of year crops are grazed.

3.1.2 Farmers that graze crops as an integral component of their farming system

This was a smaller group of farmers who saw the potential of grazing crops in providing a significant contribution to the productivity of their overall operation. They made the practice of grazing crops an important part of their farming system, investing in planning, infrastructure and knowledge to optimise the potential.

Of the 15 South Australian producers interviewed, a third said grazing crops were integral to their system. Key to their decisions was an understanding of the actions required to minimise the possibility of grain yield loss caused by grazing. While the risk of yield loss from grazing holds many producers back, these South Australian producers felt that you could graze without yield loss provided a good season. Grazing crops strategically was not simply another small management decision for them, rather it was a pillar that they rely on to give them a competitive advantage.

Grazing crops at a strategic level has ramifications for many areas of the business. Farmers who operated at this level recognised that adequate recovery time post grazing was essential, and to achieve this they needed to graze early. To graze early they needed to sow early, and to sow early they needed to be prepared to take early season opportunities, select the right varieties for their environment and have an accommodating weed management strategy.

Their responses made it clear that it takes a significant level of commitment and investment to make grazing crops an integral part of the farming business. The integration leads to a significant gain in livestock return that cannot be realised by a more opportunistic approach, while grain yield losses, if any, are minimised by paying attention to variety, sowing time and grazing decisions. Income diversity was increased and as a result the risk profile of the business was also altered.
3.2 Grazing crops is commonly considered a trade-off between extra feed and grain yield loss

Discussions with farmers and advisors highlighted a difficulty in making decisions around grazing crops because of the perceived trade-off between the potential grazing benefit and the potential loss of grain yield. Virtually all those interviewed acknowledged this tension as a major consideration in deciding whether to graze or not, and if so, how much crop to graze. Individual farmers responded differently to this tension and consequently their enthusiasm and willingness to grazing crops varied.

A recognised challenge is accurately valuing the benefits and costs from grazing. Measuring the downside is relatively easy, namely a reduction in grain yield compared to ungrazed (although this was often confounded because comparisons were commonly made with different paddocks and with neighbours). Measuring the benefits was more difficult because the commitment to measure the sometimes subtle gains to the farming operation from grazing e.g. liveweight change is not undertaken. Solving a feed shortage was the most easily recognised benefit.

Most farmers interviewed said they commonly encounter a feed shortage in winter and needed to provide a supplement to maintain animal condition. For many, the availability of green feed in a crop paddock and inadequate pasture feed was sufficient motivation to graze. Not only did this grazing fill an immediate feed gap, but it allowed a reduction in supplementary feeding. However they understood the potential risk of losing grain yield because of grazing.

Grazing crops was also recognised as having a secondary benefit of enabling pasture paddocks to be spelled. Thirty eight per cent of Wimmera-Mallee respondents noted an increase in pasture growth with grazing crops.

While the earlier extension message around grazing crops initially portrayed the practice as being a ‘free lunch’, most farmers didn’t believe this (with the possible exception of grazing barley to reduce lodging and disease). In the Wimmera-Mallee, where typically farms are more crop oriented, 81% of those who did graze crops believed that grazing affected grain
yield, but were either willing to accept the loss (22%) or they sowed the crop primarily for feed (59%), inferring there was lower expectation to get a grain yield anyway.

Thirty three per cent of the Wimmera-Mallee respondents and 50% of South Australian interviewees’ not currently grazing crops cited fear of yield loss as being a reason for hesitation.

More recent results from the Grain and Graze program would support the belief that yield is often affected when grazing decisions are made as the season unfolds. Figure 3 presents yield measurements from 49 trials in Western Australia, South Australia and Victoria where grazing was completed by the start of stem elongation. Of the 225 measurements, yield was decreased in 76% of cases, although commonly the yield loss was small (less than 250 kg/ha). The small losses could be considered the trade-off for the extra grazing value.

The larger losses indicated in figure 3 (greater than 1000 kg/ha) were recognised as being caused by late season grazing, environmental stress hampering crop recovery and/or unsuitable variety choice for the season.

Figure 3. Change in cereal grain yield due to grazing from Grain and Graze comparative trials conducted from 2003 to 2013.
3.3 Preference for crops or livestock influences the importance placed on a feed shortage or grain loss

The willingness of a farmer to embrace grazing crops as a part of a farming system was heavily influenced by their preference towards cropping or livestock. While the study did not explore why these preferences existed, it was clear personal views of livestock or crop affected the attitude brought to grazing crops.

Those with a strong cropping focus placed a lot of importance on grain yields for the income as well as the satisfaction and status associated with growing a good crop. Understandably when a grower has great pride in their crops, it was less likely they would risk grazing. The following comments were reoccurring throughout conversations with growers.

“It’s hard to open the gate into a good looking crop”  
Farmer, Western Vic

“Yield is king”  
Farmer, Northern Vic

“You want to protect the cash cow and that’s the crop”  
Farmer, Western Vic

“… you put all the effort into spraying the weeds out, making sure you don’t have too much compaction, opening up the soil properly, feeding it the right fertiliser, you try to look after your crop the whole way through as a crop, so why would you potentially risk yourself by running sheep on it that might do some damage?”

“I believe in my region 90% of people would see the crop and the yield of the crop as being more important than any benefit the stock could get from grazing the crop, and that this influences the decision not to graze crops”.

Farmer, South Aust

Crop-focused farmers often mentioned their dislike of working with livestock, choosing to keep livestock for the sake of spreading production risk but not applying the same level of detail as they do for their crops.

“If you can drive past on a Sunday with a few stubbies in your hand, then that’s the best. But if you don’t need to go near the sheep, then don’t do it!”

Farmer, Northern Vic

This preference for cropping would most likely see these farmers responding opportunistically to a feed shortage rather than strategically. They still might graze, but it would be less
planned and on a smaller scale. It also appears these growers have lesser goals or aims to be achieved from their livestock operation than cropping.

In contrast farmers that have a strong livestock preference are less concerned about losses in grain yield. A South Australian producer who had a large livestock enterprise grew forage oats and vetch for hay. With attention on his livestock, he reported grazing crops as being driven by the livestock and their needs, with the crop being his secondary concern. He recognised how this focus changed his perspective and when asked if he had any concerns for soil degradation with grazing crops, his response was "I guess it is for the true cropping person, but being a grazing focused operation it doesn’t concern me.”

Weeds were another example of preference influencing a grazing decision. Some livestock oriented farmers saw grazing crops as a strategy in weed management, with one South Australian producer commenting that he selects the weediest paddocks to graze and others acknowledging the potential for grazing to open canopy and improve herbicide efficacy. Of the Wimmera-Mallee respondents, 27% had noticed improved weed control with grazing. A Horsham producer jokingly commented that, while he saw weeds as being another form of sheep feed, ‘anything the sheep can eat, the agro wants to spray out’.

Other farmers saw grazing as a threat to their weed management, evidenced by 14% of Wimmera-Mallee respondents feeling that grazing crops led to poorer weed control. A South Australian producer who previously grazed crops ‘religiously’, stopped grazing crops five years ago because of he felt weed numbers were increased with grazing.

“Seed soil contact of the ryegrass seed from the sheep grazing has a big negative impact. It was about later weed seed germination and the reduction of competition by removing the plant that is going to compete. So it turns into a perfect situation for ryegrass, a bit of compaction, reduced competition and a bit later in the season when it is cold and wet.”

Farmer, South Aust

Interestingly he did not feel they encountered a yield penalty from grazing crops, suggesting the decision was driven more by the values of having a clean crop and the discomfort of seeing weed numbers increasing than yield.

Logistical issues can also influence a grazing decision. One south west Victorian producer grows crop largely on raised beds. Despite seeing the potential of grazing crops, the damage
it would cause to the raised beds and subsequent need for more frequent renovation of the raised beds were adequate reason for him to not put sheep on his crops.

The decision to graze or not can be further complicated if there are multiple decision makers on the one farm who have different priorities. A woman at the Horsham discussion group managed the animal production on their property and was keen to try grazing crops; however the husband looked after the crops and was firmly against it. In the past they had compromised by growing a forage barley for grazing and either harvesting or cutting it for hay.

3.4 Knowledge around managing feed production and possible grain loss is well understood or can be easily learnt

Knowledge about grazing crops is required for successful application of the practice. The general perception was that acquiring knowledge around grazing crops was not an insurmountable issue, rather it was just one more management area to learn. One farmer not currently grazing crops commented that he did not think it would be that hard to learn the management skills required for grazing crops, but it was just another facet to be considered in what they were already doing.

The level of grower knowledge around grazing crops varied between regions, depending on how common the practice was and the producer’s own experience with it. In South Australian one producer had been grazing crops for 44 years, with most having adequate experience and understanding to optimise production and best manage the risk to yields and animals health across seasons.

In contrast Victoria farmers in Bestwool–Bestlamb discussions groups were less familiar with grazing crops and were eager to learn more. They had requested workshops and on-farm demonstrations to do so. Information contained in the Grazing Cropped Land book produced by Grain and Graze would appear to address most of their knowledge needs and combined with presentations, discussions with other farmers and seeing the practice in some paddocks, was thought to be sufficient to appreciate the fundamental principles of grazing crops. Several
commented that the regional valid research was important to them accepting the new knowledge.

“One of the main challenges is the research is done in a different rainfall zone and soil type, so relevance is limited for this region. Local trials are really important.”

Farmer, Northern Vic

Even with the knowledgeable farmers, how to graze crops without encountering a yield loss was a recurring question they had. This supports an earlier finding that at the centre of decisions about grazing crops is this ongoing tension between managing a feed shortage and possible grain yield loss.

Knowledge as to the mechanisms of why yield losses occur even when current ‘best practice’ is adopted is incomplete. While there are some broad understanding around what affects potential yield loss e.g. growth stage at grazing, recovery period, variety selection etc., there are still gaps that need addressing.

Successful translation of current knowledge into ‘best practice’ appears to greatly reduce (but not eliminate) the risk of a grain yield loss from grazing. Even the farmers operating to current ‘best practice’ and having grazing crops as an integral component of their business, commented that yield could remain unchanged with grazing, but it was subject to a good spring and timely removal of stock. Therefore even the ‘best practice’ operators accepted the possibility of a yield loss when grazing but accepted this risk.

The net benefit of grazing crops was raised my many interviewees;

“It comes down to money. If you can headline it with a dollar figure per ha, or an increase in DSE, it always gets people attention”.  
Farmer, South Aust

“To reach the same yield in a grazed crop compared to an ungrazed crop you would need an extra 30 units of N. If you did the figures on the extra N required you would almost be better off feeding the sheep, for example if you grazed for 1 month, 30 units N, $30/ha (~$1/kg) at 100 ha is $3000, for a month’s feeding would probably be about the same”

Farmer, South Aust

The second comment supports recent modelling work which suggested the financial gain to a whole farm operation from opportunistic grazing of crops when pasture was is short supply
was quite small (Creelman, unpublished data). While there were gains in livestock production (eg lamb survival, condition score, turn off weight), the gains were often negated by losses in crop yield.

3.4.1 Experience and grazing rules
Refining knowledge to inform management decisions develops with experience. Producers who had been grazing crops for some time were best able to adapt their management to the season or context. Initial understandings of grazing crops were gained from tools such as the ‘Free food for thought’ grazing crops manual, however it was their experiences that transformed the two-dimensional image created by information-based knowledge into a three-dimensional, applied understanding of how to graze crops. As experience honed their understanding of grazing crops, their reliance on tools to guide best practice was reduced, helping them to develop and refine their own rules to grazing crops.

One example of this was a Horsham producer who in 2014 lost two thirds of his grain yield after grazing late and having a poor spring. As a result he changed his rule of thumb for when sheep have to come off crop, shifting it a month earlier to mid-August from mid-September. Where initially he followed the widely publicised rule of ‘finish grazing by growth stage 30’, his experience was that the period for crop recovery before anthesis was more important so he adjusted his management rule accordingly.

A similar example of learning from experience was a South Australian producer who made the mistake of lambing his ewes on crop one year. He ended up losing a lot of lambs because of poor mothering from the disruption caused by shifting them to pasture soon after lambing. As a consequence, he developed the rule of thumb that he will not lamb on crop.

Experiential learning can happen vicariously, as seen in the BestWool-BestLamb workshops and farm demonstrations. Extending the message by seeing it in action allows farmers to learn from other farmers who were applying the technique to their own system to see what worked and what didn’t without having to take on the risk themselves. Common examples of issues raised in these discussions that may impact on grain yield losses included:

- Using lower stocking rates to graze for longer but leaving an unevenly grazed crop
- Waiting for biomass accumulation and grazing too late (insufficient time for recovery)
- Sowing too late because of a dry summer/early spring, which then pushes grazing later and limits recovery time.
- Grazing past growth stage 30 and removing the grain ear. There are some thoughts that this rule of thumb needs adapting, as long season varieties are not reaching growth stage 30 until late in the season with inadequate time for recovery before the season cuts out. In which case, grazing even to growth stage 30 is too late.

Part of the issue with learning from experience is the complexity of agricultural systems. This can make it unclear how much of the outcome is a result of one decision along the way. Several times farmers mentioned grazing having decreased their yields, but when explored further, they were often comparing the yields of grazed, multi-purpose varieties, with ungrazed, higher yielding varieties. ‘Fair’ comparisons and clarity around what is influencing a certain result is needed to avoid decision bias.

### 3.4.2 Expert advice

Most farmers interviewed mentioned the importance of expert advice in making management decisions around grazing crops, with their agronomist thoughts generally held in high regard. Crop agronomists are common place in most cropping operations (private or retail), whereas livestock advisors are less common and tend to focus on animal selection and don’t often give advice on grazing management. Some specialised nutritionists do have some influence but it is usually associated with combating the problems associated with grazing crops not maximising livestock production and profitability! As such, the crop agronomist’s perspective on grazing crops would appear very influential in whether or not a farmer decides to graze crops or not.

“A lot of my information comes from my crop agronomist. They’d be my first port of call”. Farmer, South Aust

Farmers commented that many agronomists see their primary role as maximising grain yields and understandably the risk from grazing is something they hesitate to recommend. The underlying sentiment was that growing a crop is complicated enough and does not need to be further challenged by adding livestock and grazing to the mix of possible threats to yield. It was felt agronomists generally focused on the potential for grain loss in discussions and not the potential livestock benefits.
The knowledge and experience of agronomists to grazing crops varied. Farmers around Horsham, where grazing crops is not widely practiced, felt that when it came to grazing crops that their knowledge was approximately equivalent with their agronomist. This perception challenges the ‘expert’ status of the agronomist, which can have implications for the acceptance of their advice around the issue (Lane, 1992). In areas where grazing crops has been practiced longer and more experience has been accumulated, agronomists tended to be more willing to make recommendations around grazing crops.

This is not to say that all agronomists hold negative view towards grazing crops. Conversations with some agronomists revealed that they viewed part of their role was to bring new ideas to the system and challenge the current way of operating. Some agronomists in south west Victoria felt they had to encourage clients to put animals on crop otherwise it would not have happened.

Extension avenues that farmers noted as having been most effective apart from their agronomist were grower group discussions and trial sites at field days. When South Australian producers were asked what format they would best like to receive information in the future, they favoured short and direct communication via email and booklets.

3.5 Attention to detail affects timely grazing decisions

In addition to the influence of livestock–cropping preference, farmers with a personality type that paid attention to detail and who prided themselves on making timely decisions were likely to gain a net benefit from grazing crops.

While most farmers recognised that attention to timing was important, this did not necessarily translate into practice due to the challenge of operating in a complex system where grazing crops was just one of many activities happening at that time.

This challenge was raised multiple times when farmers mentioned having forgotten that sheep were on a crop paddock and when they checked, the crop had been grazed harder than they wanted. Of the South Australian farmers who had not grazed crops themselves, 60% recognised that timing was critical. It appeared that it was not so much not being aware of
the importance of attention to detail, but the feasibility of carrying it out with many competing demands on their time.
4. Discussion

The primary motivation to undertake this market research was to understand why more farmers were not grazing a greater areas of crop. Our simple conclusion is the current approach to grazing crops will limit the amount grazed.

This report has identified two distinct approaches farmers currently apply to grazing crops. The first approach adopted by the majority of farmers is based on making grazing decisions opportunistically as the season unfolds, choosing to graze crops only when required to fill a short term feed gap. Some within this group intend to graze some or all of their crops at the start of the season, illustrated by variety choice and maybe slightly earlier time of sowing, but essentially they make their decisions as the year evolves. However this often leads to hard to identify benefits (grazing value) but clearly identifiable /experienced disadvantages (crop yield loss, animal deaths).

The second approach treats grazing crops as an essential component of their mixed farming operation, accommodating the decision to graze by adjusting stocking rates, investing in infrastructure and developing operational plans to maximise the annual opportunity. They are more strategic and integrated in their considerations.

The producers that make grazing crops work focus on the advantages of the system. They break their whole production system into components and work out how they can achieve their goals case by case and then as a whole.

“Until I started looking at livestock production through cropping eyes I could only see the problems associated with grazing crops. I now set livestock ‘crop yield’ targets (e.g. 300 bulls at 1kg/hd/day) for the year I then work out how I’m going to achieve them and what pays and what doesn’t. It has focused my attention exploiting opportunities for both livestock and cropping operations throughout the year.”

Farmer, Western Vic

The division between the two groupings is never as neat as it is described here, with application of grazing crops being a continuum of system integration. While one objective of the Grain and Graze program has been to increase the amount of crop grazed and deliver significant improvements in productivity and profitability (ideally like the strategic group), it
would appear the vast majority of farmers still prefer to take the opportunistic approach than whole farm integration.

Personal preference and attitude also needs to be recognised as having a significant influence on which grouping a farmer may gravitate towards. If grazing is considered to compete with cropping, then a farmer will be reluctant to entertain grazing at all or only do so when their back is against the wall. At the other end, if grazing is seen as complementing crop production, then grazing opportunities are more likely to be sought. These positions are illustrated in figure 4.

![Figure 4. Adoption continuum for grazing crops and the perceived fit of grazing crops in the system](image)

It is a legitimate decision for a farmer to choose to operate in a short term rather than long term strategic approach when it comes to grazing crops. It is their choice, but it does have implications from an industry investment perspective.

The Grain and Graze program has generated valuable information that has helped more than half of the 23,000 mixed farmers in Australia who choose to graze their crop annually (Paluka, 2010; Healy, 2013). Some are enhancing this grazing opportunity through variety selection and time of sowing. However it needs to be recognised that the likely increase in net farm profit by adopting a tactical approach where grazing is simply an add on to the cropping program will remain relatively small, because the potential is bounded by the period grazing can occur, the number of livestock a grower has available for grazing and the possible loss of grain yield. In effect the profit benefit become self-limiting because the window of opportunity is relatively small when grazing crops in a traditional cropping program. Based on the previous two practice surveys, this adoption ceiling may well be reached.
While there is still some activity that could be done around extending the current messages further, as seen in the BestWool-BestLamb groups in this survey, continuing to support the opportunistic grower in this way is of limited value.

However the authors believe there is opportunity to recast the extension message and products used by those farmers who think about opportunistic grazing of their crops. The potential is to recast the grazing crop message from a simple addition to a traditional cropping program (with ‘rules’ such as finishing grazing before GS30) to something that is significantly different based on opportunities for earlier sowing and grazing.

There is a need to make the practice sufficiently different from the existing approach to warrant a new mindset rather than trying to ‘stretch’ an existing paradigm. This may involve spring or summer sowing of strongly winter habit varieties based on opportunistic moisture (Kirkegaard 2013, Paridaen 2015) and using these crops for grazing at the autumn break rather than mid to late winter. It may also involve the cessation of grazing well before GS30 (based on soil moisture and probability of following rain). Grazing practices that do not preserve grain yield should be the focus. Such an approach would require the understanding of the risks involved (probabilities) and the development of ‘triggers’ or ‘flags’ (using new technology such as soil moisture sensors and weather predictions) that indicate these opportunities as they are likely to be seasonal.

**Recommendation 1: Undertake trialling and development of new messages (flags or triggers) around opportunistic early sowing and grazing of crops**

There is substantial opportunity to support growers interested in whole farm integration of grazing, however this is far more challenging. The types of changes the few growers who have successfully integrated grazing crops into their farming business have identified include:

- Significantly earlier sowing of suitable, long season plants including spring or summer sowing of strong winter habit varieties (as mentioned previously)
- Very early and sometimes ‘clip’ grazing of crops to provide the maximum amount of time for crop recovery before flowering
• Have livestock targets they wish to meet and use crops as a means of achieving these targets through adjustment to stocking rates to match the extra feed available (not just as a replacement for supplementary feeding)
• Well defined exit strategies for their livestock if seasons become unfavourable.

The current phase of the Grain and Graze program is well positioned to pilot supporting farmers to consider this integrated whole farm approach because of the emphasis on systems and decision making. Also most of the basic information around grazing crops already exists, it is the whole farm integration that is lacking.

**Recommendation 2:** Pilot the development and implementation of a support package to enable farmers to consider the full implications whole farm integration of grazing crops.

Encouraging systems change is infinitely more difficult than component or incremental tactical adjustments. Mixed farming systems are complex and decision making is more challenging because of preferences, values, fears and beliefs. The major influences around complex decisions is outlined in the Farm Decision Making booklet (Nicholson et al 2015a). It describes three broad influences on our decisions, the Head, Heart and Gut. An example of how farmers how this thinking may influence a decision to graze crops is included in appendix 4.

Tactical and opportunistic decisions are common for most farm businesses. They are adopted by farmers to maintain responsiveness to the season, commodity prices and often to assist with cash flow e.g. a producers not deciding the end purpose of their crop, be it hay or grain, until the end of the season. However too much emphasis on a tactical approach can sometimes be at the expense of longer more strategic, profitable and sustainable decisions. Always managing the ‘here and now’ can diminish longer term thinking and create a mindset that is difficult to break away from. In this sense, constantly making tactical decisions provides a continual feedback process that strengthens a short term approach to decision making.

It needs to be acknowledged that a move from a tactical to a strategic approach with grazing crops is a big decision. There is potentially more at stake (greater risk), the cost to make the changes can be high (in this case more livestock, labour and possibly infrastructure) and the
new practices may not be as easy to reverse as with tactical decisions. The knowledge areas that would need to be considered in encouraging a shift by farmers to the more strategic and integrated use of grazing crops include:

- Evidence that if the changes were adopted (on my farm), it would lead to a substantial increase in profit (whole farm profit modelling)
- Discussing and documenting the downside risks along with the potential reward, especially with likely increases in climate variability
- Developing livestock targets of which grazing crops can help achieve
- Developing exit strategies if seasons are unfavourable with trigger points established before implementation, not during a crisis
- Creating realistic whole farm feed budgets
- Providing examples of farmers who are grazing crops in an integrated way, but with the focus on how they have addressed the issues above.

**Recommendation 3:** Approach the GRDC and MLA to continue investment in grazing crops but with a systems approach to achieve positive livestock and crop outcomes.

### 4.1 The role of advisors in supporting systems thinking

Agronomists were named as a valued source of information by farmers. Their influence extends to both technical recommendations and suggestions around integration of farming practices. Consequently the attitudes, biases and ability of advisors towards grazing crops potentially influences a farmer’s decision.

It is our belief that most advisors engaged by farmers are there to provide advice and make recommendations on the cropping aspect in a mixed farming business, mainly tactical but also sometimes strategic. Their technical competency, attention to detail and source of the latest information makes them a valuable contributor to the business. But they are there (or see their role) primarily to maximise the productivity or profitability of the crops. Their understanding on how to maximise the profitability of the livestock component of the farming business is likely to be less than for the cropping component (and the farmer may not have engaged them to perform this function either).
It is also our belief that many crop advisors will not recommend the grazing of crops because of the risk they believe it poses to grain yield (and the current data supports that there is a risk). This creates a simple reality that many of the advisors farmers trust do not support or are cautious about the practice of grazing crops. This is a reality that needs to be acknowledged rather than ignored. However there are a pool of trusted advisors with a livestock focus (wool, genetics, replacement stock) that are not being utilised at present. It should be possible to focus on this group to counter the often negative views some crop agronomists have towards grazing crops.

The premise that most advisors have greater specialisation in the cropping or livestock enterprise than the whole farm was identified in the Grain and Graze 2 Benchmark report where more than 140 advisors were surveyed (Pakula et al. 2010). In the report it was stated;

...there was a surprisingly low number of advisors providing advice in the area of using the whole farm feedbase to adjust stocking rates; and those who provide advice reported a low level of confidence in comparison to other areas. This is likely due to many advisors specialising in livestock or cropping issues, and lacking the skills and capabilities to advise on mixed issues such as the whole farm feed base. However, advisors did note an interest and likelihood in developing skills in this area – more so than in most other practices.

Developing the skills of advisors to tackle systems decisions is challenging but not impossible. A shift to providing more strategic advice within the system signifies more of a coaching relationship than agronomic. In commenting on the potential fit and advantages of coaching in agriculture, Pickering (2013) said that ‘coaching develops thinking beyond the current awareness. More effective thinking brings in wider perspectives and insights that can create better and more sustainable solutions’. It also does not require the advisor-figure to have all the answers, as it is as much about working through the process and listening to what the farmer has to say about their values, views and the likes.

A current Department of Agriculture funded project in the area of climate change and emissions reduction supports 35 trusted advisors in South Australia, Victoria and Tasmania to learn from leading scientists and discuss with their peers the opportunities to integrate carbon avoidance or sequestering practices into the businesses of their clients.
www.carbonfarmingknowledge.com.au). This type of model is proving very effective in equipping experienced advisors, who farmers trust, in an area that most would avoid or adopt a negative posture towards.

**Recommendation 4:** The Grain and Graze program seek funding based on the successful Carbon Farming Knowledge model to develop advisor skills in a systems approach to grazing crops.

Grazing crops is an example where the greatest gains to productivity and profitability can only be fully realised when integrated into the farming system. Systems’ modelling has indicated the potential for significant improvements in farm performance with grazing crops (Bell et al. 2015, Kirkegaard 2013), yet surprisingly the extension community has been reluctant to embrace the reported potential. Possible reasons for this lack of uptake has already been discussed, however it raises an important issue about how agricultural technology, whose greatest benefits are through systems application, are failing to realise their full potential.

McCown (2005) commented that often practices can be ‘technologically impressive but socially naïve’, a phrase that we believe applies to the systems application of grazing crops. However it could also apply to other systems approaches such as integrated weed, pest or disease management, rotations and enterprise mix. Including the heart and gut aspects when working through the decision are frequently lacking.

The extension community faces a challenge in communicating a systems based message from research based data. Often it requires seeing a technology at work in a paddock to understand the systems implications of it. This validates the importance of farmer networks and demonstration paddocks for both farmers and the extension community, as they build an intuitive understanding of how the practice fits within a system. Some foundational coaching skills would also be beneficial for those extending information around grazing crops, as listening to producers and what they want to get out of farming would help with tailoring the grazing crop message.
References


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Nuthall, P. L. 1999. The psychology of decision making in farm management: a review of the background to managerial ability, and suggestions for a research programme to investigate its improvement, Canterbury, NZ, Lincoln University. Farm and Horticultural Management Group.


Paridaen, A. 2015. Turning sowing times on their heads with winter habit canola and wheat. GRDC Grains Research Update, Ballarat. ORM Bendigo.

Appendix 1. Interview questions

1) Have you ever grazed crops?
   If ‘yes’, then continue to questions 2-10
   If ‘no’, then continue to questions 11-15

2) When did you first try grazing crops?

3) Which crops have you grazed?

4) Have you seen any changes in ground cover with grazing?

5) Have you seen any changes in run off after rain events?

6) What are your thoughts around soil compaction or pugging with grazing crops? Is it a concern?

7) What are your thoughts around animal health and performance when grazing crops?

8) Would you expect there to be implications for grain yield after grazing a crop?

9) Do you use particular rules of thumb in deciding when to/not to graze?

10) Do you have any questions about grazing crops that you would like to see research into?

11) What have you heard about grazing crops?

12) What are the questions you have around grazing crops?

13) How interested would you be in hearing about research around these questions?

14) How would you best like to receive that information?
Appendix 2. Wimmera-Mallee survey results

In total, 118 farmers participated in the survey. Results are presented as a proportion of the number of respondents, rather than proportion of responses. This was done because some questions permitted multiple responses, and others were only applicable to those who had/had not grazed crops.

1. Have you ever grazed crops (cereals, vetch, canola)?

2. For those who don’t graze crops, why not?

3. For those who have grazed crops, when did you first try grazing crops?

4. Which paddocks have you grazed on the farm? (can choose more than one)

5. Grazing crops reduces dry matter. Have you noticed any of the following? (can choose more than one)
6. What are your thoughts about soil compaction/pugging?

- Not an issue
- It is a concern
- I have seen impacts
- I haven't had an issue myself
- It is a concern (and I won't have one)
- I have seen impacts (and I don't have one)
- Not an issue (and I don't have one)
- It is a concern (and I don't have one)
- I have seen impacts (and I don't have one)

7. How do you select crop varieties to graze?

- Varieties to handle well, don't have to buy seed, fewer
- Use what's in the silo – know it grows
- Based on type - spring or winter type
- Grading season length

8. What production outcomes are you getting from grazing crops? (can choose three)

- Increases in pasture growth
- Better lambing percentages
- Earlier lamb turnoff times
- No extra benefit
- Occasional stock losses

9. Does grazing crops affect grain yield?

- Yes – but happy to sacrifice some yield for livestock
- Yes – but have sown the crop primarily for feed so not an issue
- No – negligible, or no impact

27
### Appendix 3. South Australia interviewee summary

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<td>Like more info</td>
<td>580 mm</td>
<td>580 mm</td>
<td>450 mm</td>
<td>580 mm</td>
</tr>
</tbody>
</table>

Farmers who have not grazed crops.
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>750 - 780</td>
<td>Yes, it comes down to understanding growth stages and how the crop grows on (irrigated)</td>
<td>Canola, oats, barley, wheat</td>
<td>5 years ago</td>
<td>Integral</td>
<td>Yes, but no evidence towards that</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2</td>
<td>550 mm</td>
<td>Yes. Good. Ewes with lambs hold conditions. Older lambs, makes a good lean lamb</td>
<td>*</td>
<td>3-4 years ago</td>
<td>Opportunistic</td>
<td>No, but no evidence towards that</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3</td>
<td>600 mm</td>
<td>Yes. But you need adequate spring performance on and off the crop. Not sure, haven't measured animal performance yet.</td>
<td>*</td>
<td>20 years ago</td>
<td>Integral</td>
<td>Yes. But you need adequate spring performance on and off the crop. Not sure, haven't measured animal performance yet.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>550 mm</td>
<td>Yes, personal experience</td>
<td>*</td>
<td>7 years ago</td>
<td>Integral</td>
<td>Yes. But you need adequate spring performance on and off the crop. Not sure, haven't measured animal performance yet.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>5</td>
<td>550 mm</td>
<td>Yes. Personal experience</td>
<td>*</td>
<td>10 years ago</td>
<td>Opportunistic</td>
<td>Yes. But you need adequate spring performance on and off the crop. Not sure, haven't measured animal performance yet.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>6</td>
<td>550 mm</td>
<td>Yes. It comes down to understanding growth stages and how the crop grows</td>
<td>*</td>
<td>19 years ago</td>
<td>Opportunistic</td>
<td>Yes. But you need adequate spring performance on and off the crop. Not sure, haven't measured animal performance yet.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>7</td>
<td>450 - 475 mm</td>
<td>Yes. But you need adequate spring performance on and off the crop. Not sure, haven't measured animal performance yet.</td>
<td>*</td>
<td>10 years ago</td>
<td>Opportunistic</td>
<td>Yes. But you need adequate spring performance on and off the crop. Not sure, haven't measured animal performance yet.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>8</td>
<td>450 - 475 mm</td>
<td>Yes. But you need adequate spring performance on and off the crop. Not sure, haven't measured animal performance yet.</td>
<td>*</td>
<td>8 years ago</td>
<td>Integral</td>
<td>Yes. But you need adequate spring performance on and off the crop. Not sure, haven't measured animal performance yet.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>9</td>
<td>450 - 475 mm</td>
<td>Yes. It comes down to understanding growth stages and how the crop grows</td>
<td>*</td>
<td>9 years ago</td>
<td>Integral</td>
<td>Yes. But you need adequate spring performance on and off the crop. Not sure, haven't measured animal performance yet.</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Performance</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
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<tr>
<td>Growing seasons were increasing, could be a problem with the shorter seasons</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
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<td>*</td>
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<tr>
<td>Not sure, lack of knowledge cited.</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Vetch, clover</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Yes. Requires the right rainfall and good management</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Performance is variable by happy in both situations. Grazing with ewes is the right final and good management</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Ok, not fantastic. Not really monitoring growth, more of a maintenance ration</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Yield in below average seasons, will loose cover</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
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<td>*</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Good</td>
<td>*</td>
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</tbody>
</table>
Appendix 4. Decision making characteristics (head, heart and gut) along the adoption continuum

The Head is the analytical component that seeks to rationalise a situation and derive a logical solution. The Heart incorporates the human factors such as values, beliefs, emotions and preferences. They are often unstated but their importance should not be underestimated. The Gut applies intuitive understandings and rules of thumb that guide the decision to ‘feel right’.

Of these, the heart is the most resistant to change, as it comprises the core values, beliefs, personal preferences and so forth that pertain to the identity of the individual. There are often emotional consequences of decisions that feed back into the likelihood of making the same decision again, with negative emotions having more lasting effect than positive. As Kahneman and Tversky (1979) put it, ‘losses loom larger than gains’. This helps explain why for many, the fear of yield loss holds them back from grazing crops more than the satisfaction of having green feed over winter. The fear of yield loss from grazing grated against the entrenched values of both farmers and agronomists of wanting to optimise yields.

Values and goals are important in guiding decisions and determining whether they ‘feel right’. It is important for people to understand these so that they understand what is driving their decisions and how they can make choices that they are comfortable with. For information to be accepted, it needs to be presented in a way that resonates with their values, goals and preferences. Farmers who have heard the story around grazing crops but have values, goals and preferences that do not fit with the practice are unlikely to adopt it. Farmers could not always vocalise why they would not graze crops, but that it just did not sit right with them. It may be that presenting the message in a different way will assist farmers to reconsider their position or at least see grazing crops from a different angle.
<table>
<thead>
<tr>
<th>Head</th>
<th>Opportunist</th>
<th>Strategist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reluctant</td>
<td>Grazing crops is an opportunity to fill winter feed gaps and save on feeding costs</td>
<td>Grazing crops is an opportunity to fill winter feed gaps and save on feeding costs</td>
</tr>
<tr>
<td></td>
<td>Research says it is possible to graze crops without yield loss, but the stories you hear from farmers often beg to differ</td>
<td>The benefit of reducing supplementary feeding and increasing animal production outweighs the potential cost of reduced yields</td>
</tr>
<tr>
<td></td>
<td>Recognise there is a risk to crop yields, but also that there is benefit to livestock production.</td>
<td>Choose paddocks, varieties and planting dates that accommodate grazing during the season.</td>
</tr>
<tr>
<td></td>
<td>Additional costs and risk of yield loss from grazing crops outweigh the benefits to livestock production and feed savings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Research says it is possible to graze crops without yield loss, but the stories you hear from farmers often beg to differ</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seasons appear to be getting shorter, so getting the crop in early enough to graze is difficult</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value crop production over livestock.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The extra risk to yields from grazing crops is too high.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fear of hurting the crop ‘cash cow’, especially when so much has been invested even just in sowing it</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cropping is complex and stressful enough already without the stress and effort of another complicating factor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sense of pride and social status in optimising yields which grazing would pose a risk to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feel unequipped to know how to begin grazing, fear of getting it wrong</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value keeping options open rather than locking in a decision at the start of the season. This may mean sowing a variety or on a date that is suboptimal for grazing</td>
<td>Value having a more integrated system where everything is working harder and producing more</td>
</tr>
<tr>
<td></td>
<td>Fear of hurting the crop ‘cash cow’, so will only graze if backed into a corner for feed</td>
<td>There’s a comfort in reducing feeding costs but seeing animals put on weight from grazing crops</td>
</tr>
<tr>
<td></td>
<td>The less time required for management the better, so grazing would interfere with other farm operations or social plans, then less likely to graze</td>
<td>Believe that to stay economically viable you need to be trying something new and pushing the boundaries</td>
</tr>
<tr>
<td></td>
<td>There’s a comfort in reducing feeding costs but seeing animals put on weight from grazing crops</td>
<td>Enjoy the challenge of trying something out of the usual</td>
</tr>
</tbody>
</table>

Heart

<table>
<thead>
<tr>
<th>Reluctant</th>
<th>Opportunist</th>
<th>Strategist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value crop production over livestock.</td>
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<td>Value having a more integrated system where everything is working harder and producing more</td>
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</tr>
<tr>
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<td>Enjoy the challenge of trying something out of the usual</td>
</tr>
<tr>
<td>Sense of pride and social status in optimising yields which grazing would pose a risk to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feel unequipped to know how to begin grazing, fear of getting it wrong</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gut</td>
<td>It feels wrong to be able to harvest crop biomass and not affect yield.</td>
<td>Seasons are variable, so make plans as it unfolds.</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Soil is like a bank account in that what you put in you get out later. Damage from animal traffic and reduced biomass threatens the account balance.</td>
<td>If the crop’s looking good, protect the yield by not grazing, but if it’s not looking promising then more willing to graze and sacrifice yield or cut for hay.</td>
</tr>
<tr>
<td></td>
<td>Opening up the canopy and reducing crop competition could mean a weed blow out.</td>
<td>Having green feed rather than feeding out must be good for animal performance.</td>
</tr>
</tbody>
</table>