GRAIN & GRAZE 2 CASE STUDY

Is barley or wheat better for grazing?

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Profile

Lindsay, Kerry and Brad McLean
Location: 'Linkerry', Gibson (20 km northeast of Esperance), Western Australia
Farm Size: 3130ha
Annual Rainfall: 500 mm
Soil Type: Sand over gravel duplex
Enterprises: 70% cropping, 30% pasture

Father and son team, Lindsay and Brad McLean had heard about grazing crops through conversations with other farmers who had given it a go in the Esperance district over the last six years.

With their interest piqued, they jumped at the chance to get started when offered the option of hosting a Grain and Graze 2 trial site in 2012. They were particularly attracted to the agronomic support and field trial structure the project offered. Lindsay and Brad were keen to evaluate whether grazing crops was a viable strategy for them to use in their mixed cropping and livestock enterprise.

While they didn't view grazing crops as the "silver bullet", they wanted to test if it offered them a way to support total farm profitability while sequentially removing paddocks from their cropping program to deal with increasing ryegrass herbicide resistance.

ABOVE: 'Linkerry' wheat grazing trial site on day of stock removal. The difference between the ungrazed area (left of fence) and the grazed area (on right) is clearly visible.

The McLean's were also keen to further explore how to increase their stock numbers and carrying capacity, whilst still maintaining their cropping area. Another key point high on their list of field trial aims was to evaluate whether barley or wheat were better suited to grazing, from both a palatability and animal growth perspective.

Six weeks after sowing the wheat trial, and two weeks after the paddock suffered extensive hail damage, 43 heifers and one bull were introduced at early tillering (GS22).

The McLean's also provided the cattle with cereal hay for roughage to assist with gut function and balance out the grazing of rich green crops.

Initially the cattle, which had never been exposed to cereals before, grazed the paddock unevenly and took a few days to develop an appetite for it. The prevalence of loose stools in the paddock made it apparent that grazing the wheat was having an effect on their gut function.

Lindsay was not concerned about the loose stools and early reluctance to graze, as he said he could see that the cattle had maintained good condition and their behavior did not change.

Twelve days after introduction, the cattle were removed and placed back on pasture as the wheat crop was approaching growth stage 30, the recommended growth stage at which livestock should be removed to avoid yield penalty.

One week later the same herd of 43 heifer cattle and one bull were introduced to the barley trial area, which was at mid-tillering growth stage (GS26). Now experienced with grazing cereals, the cattle immediately commenced widespread even grazing of the barley which was also supplemented with cereal hay.

Stock was removed after ten days of grazing and as the barley approached growth stage 30.

As the grazing of crops unfolded Lindsay wondered if there would be a yield penalty in the areas that were more heavily grazed in the wheat paddock, given the uneven grazing, and if more ryegrass problems would emerge.

ABOVE: Now clear on grazing cereals the McLean's cattle tuck in to the barley crop.

Both Lindsay and Brad contemplated if more mid-season Nitrogen should be applied to the grazed area in both paddocks to enhance recovery and achieve comparable grain protein levels. They decided to apply the same rate of fertilizer across both treatment areas to see if saving on extra inputs mid-season would cost them at harvest time.

A review of mid-season tissue test results in the wheat crop indicated slight copper deficiency across the whole paddock, which was slightly worse in the grazed area, hence Stratasol Copper was also applied to maximize the Nitrogen uptake efficiency of the wheat.

As the crop reached stem elongation, Lindsay indicated he was pleased to see the grazed area of the crop looking as good as the ungrazed area and that there was no obvious increase in ryegrass prevalence.

ABOVE: Gibson barley (photo on right) and wheat (on left) sites at head emergence (early September). Note some difference in crop maturation rate and height in both crops between the grazed and ungrazed areas.

As harvest approached, and following well below average spring rainfall for the Esperance area, Lindsay had prepared himself for a yield penalty in the grazed treatment areas of both his wheat and barley crops.

Given the crop maturation in the grazed areas was behind that of the ungrazed crop, he expected that gain fill would be impeded by the lack of spring moisture.

However on the 18th November and 27th November, the header was put in the paddock and all was revealed. The grazed and ungrazed wheat yields were close with only a 3% reduction in grazed wheat yield, which equated to $32/ha which Lindsay felt was good in a season with a very tight finish.

Protein in the grazed wheat was 1% lower than in the ungrazed area which indicated a higher rate of mid-season nitrogen application may have been required to help the crop recover from grazing.

However Lindsay believed it was questionable if it would have been more profitable, as it was unlikely it would have altered the grain quality classification achieved.

The difference in yield in the barley crop was more pronounced with a 9% reduction in yield from the grazed crop when compared to the ungrazed, which equated to $83/ha. This figure was not recouped by the $20/ha grazing value provided from grazing.

TABLE 1: Linkerry' grazing crops wheat and barley field trial harvest data for 2012.

Attributes	WHEAT		BARLEY	
	Grazed	Ungrazed	Grazed	Ungrazed
Date	18th Nov 2012	18th Nov 2012	27th Nov 2012	27th Nov 2012
Average Paddock Yield (tonne/ha)	3.31	3.68	2.62	1.83
Average Adjacent Run Line Yield (tonne/ha)	3.46	3.55	2.45	2.74
Hectolitre Weight (kg/hl)	78.5	77.0	56.2	59.7
Protein (%)	10.3	11.3	12.8	11.6
Colour			55	54
Screenings (%)	2.44	4.25	9.82	8.42
Grain Classification	APW2	APW2	Feed	Feed
Farm Gate Price ($/tonne)	$340	$340	$290	$290
Return ($/ha) – before costs (based on adjacent run line yield)	$1176.40	$1208.02	$710.50	$793.15

Despite the yield penalty incurred from grazing, Lindsay has not ruled out grazing barley again. He can see that barley provided a palatable feed that stock perform well on, and believes that the yield gap seen in 2012 may be lessened through earlier sowing and a change in variety.

According to Lindsay a change in sowing date could be beneficial to 'Linkerry' in that it may provide a longer grazing duration thus increase grazing value. Secondly, given the limited water holding capacity of their gravelly soils, it may reduce exposure to Esperance's variable spring rainfall and maximum temperatures by bringing forward the all important grain fill.

Overall the McLean's were positive about the harvest results achieved from grazing their crops and they don't feel that one was significantly better than the other to graze. This year, the McLean's will continue to trial grazing both crops in order to gain further experience prior to committing to a broader scale of adoption that will allow them to increase stock numbers and retain their area of crop.

Acknowledgments

Grain & Graze 2 Profit through knowledge

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