Cereal grazing on Eyre Peninsula

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Key Messages

- Edillilie crops show huge potential to recover from grazing and value add to cereals.
- Edillilie crops responded to late N application with higher DM production and grain yield.
- Barley was the highest producer of DM at Minnipa.
- Two other G&G regions conducted cereal grazing trials - see the "Sharing Info" section of this book.

Why do the trial?

Oats have typically been the cereal of choice for undersowing legume based pastures or to graze as a standing crop, as its a relatively cheap option. The question is, can we utilise wheat or barley to increase production during this phase?

The EP G&G trial was designed to compare different varieties for dry matter production (DM/ha), recovery from grazing and the impact of grazing on grain yields. Basic gross incomes (GI) on all varieties indicate whether the cost of loss of production (grain) is compensated by the value of grazing.

The practice has benefits to the whole system including:

- Potential to fill the Autumn feed gap.
- Allow medic and slow growing pastures time to get away before putting stock in.
- Provide an opportunity to value add to crops if commonly grown cereals have the ability to recover from grazing.
- Risk management - back up option if pasture feed runs out.
- To maintain weed control of continuously cropped paddocks and also maintain or increase the proportion of cropping land.

How was it done?

Trial sites: Minnipa Agricultural Centre and Edillilie.
Seeding: Direct drilled, 22 cm (MAC) and 26 cm spacings (Edillilie), 24th June.
Seeding rates: MAC - traditional wheat varieties sown at 48 kg/ha, winter wheat at 64 kg/ha, barley at 77 kg/ha and oats at 67 kg/ha. Edillilie - traditional wheats sown at 52 kg/ha, winter wheats at 69 and 58 kg/ha, barley at 82 kg/ha and oats at 72 kg/ha.
Fertiliser (applied at seeding): 60 kg/ha of 18:20:00 at MAC, 75 kg/ha of 18:20:00 plus 40 kg/ha urea at Edillilie.
One Wyalkatchem treatment (+N) received a late urea application of 40 kg/ha at MAC and 76 kg/ha at Edillilie to assess production responses to extra nitrogen.
The varieties trialled are commonly used and adapted to both districts except Wedgetail and Whistler winter wheats, which are high rainfall dual purpose varieties.
One half of the trial plots were "grazed" by mower at late tillering - early jointing on 10lh September, to approximately 5-6 cm height. DM cuts were also done at this time.
Harvest: 10th December.

What happened?

In the interest of providing crops with the best chance of establishment, the trials weren't sown until after the very late opening rains, which meant they were not capable of filling the early feed gap. Its recommended that cereal grazing crops go in as early as possible to let medic or other slow growing pastures get away, and to give the cereals the best chance of recovery. At both MAC and Edillilie, Barque, Keel and Wallaroo produced the most feed (Tables 1 &

2) Grazing should occur when the crop reaches approximately 800-1000 kg DM/ha. The trials were cut to 5-6 cm height not below the "white" or growing point, which would disadvantage recovery. It's difficult to draw conclusions on the practice of grazing cereals at Minnipa (Table 1), except the certainty of risk! Barely performed the best at MAC for DM and grain yield. The cut Barque stands out or producing the most DM and recovering to produce the third highest overall grain yield. Wallaroo was the only variety that could comfortably be risked to grazing and return better income than if grown only for seed. The $_{+}$N treatment did improve DM and yield but the additional cost of fertiliser put the total gross income (GI) behind Wyalkatchem with one N application. It must be noted that plot yields at MAC were well below what the paddock achieved, partially attributed to pre-emergent herbicide damage.

Like MAC, grain yields at Ediliilie were all sacrificed at the expense of "grazing", yet the majority of varieties recovered enough to still produce a higher total income than the "ungrazed" (Table 2). The cut Wyalkatchem $_{+}$N stands out with the highest GI total and recovered from grazing to yield very closely to uncut Yitpi and Wallaroo. The late finish advantaged all yields particularly Wedgetail, which wouldn't be expected to perform so well in a shorter growing season.

Table 1. Crop production and gross income for cereal grazing trial, Minnipa, 2005*

Variety	Mgt	Grain Yield (t/ha)	DM prodn (kg/ha)	Gross income Grain ($/ha)	Gross income DM ($/ha)	Gross Income Total ($/ha)
Barque	cut	1.22 e	1424 c	150	117	267
	uncut	1.81 *f*		225	0	225
Keel	cut	0.94 c	1260 *b*	114	103	217
	uncut	1.94 g		243	0	243
Wallaroo	cut	0.79 b	1110 b	74	91	165
	uncut	1.12 e		106	0	106
Wedgetail	cut	0.76 b	574 a	126	47	173
	uncut	0.94 c		157	0	157
Wyalkatchem	cut	0.57 a	551 a	95	45	141
	uncut	0.99 d		169	0	169
Wyalk + N	cut	0.51 a	697 a	64	57	121
	uncut	1.10 *d*		165	0	165
Yitpi	cut	0.75 *b*	554 a	141	45	187
	uncut	0.99 d		186	0	186
LSD (P< 0.05)		0.15	244			

Table 2. Crop production and gross income for cereal grazing trial, Ediilile, 2005*

Variety	Mgt	Grain Yield (t/ha)	DM prodn (kg/ha)	Gross income Grain ($/ha)	Gross income DM ($/ha)	Gross Income Total ($/ha)
Barque	cut	2.97 *a*	2697 *b*	371	221	592
	uncut	4.66 e		582	**0**	582
Keel	cut	2.98 a	2808 *b*	372	230	602
	uncut	4.60 e		575	**0**	575
Wallaroo	cut	2.59 **a**	2500 *b*	244	205	449
	uncut	3.33 ***b***		313	**0**	313
Wedgetail	cut	3.87 d	1670 a	577	137	**714**
	uncut	4.44 *e*		656	**0**	656
Whistler	cut	3.80 **c**	1671 a	514	137	651
	uncut	4.58 e		593	**0**	593
Wyalkatchem	cut	3.03 ***b***	1860 a	478	153	631
	uncut	4.51 e		690	**0**	690
Wyal + N	cut	4.11 *d*	2390 *b*	631	196	827
	uncut	5.18 ***f***		778	**0**	778
Yitpi	cut	4.05 d	1664 a	600	136	737
	uncut	4.28 *d*		637	**0**	637
LSD (P< 0.05)		**0.43**	300			

- Treatments followed by same letters are not statistically different from each other.
- 'cut' means plot was both "grazed" and harvested, 'uncut' plot was harvested only.
- Grain GI is yield x base price (with quality adjustments), $5 premium for Yitpi, freight and levies deducted, sourced AWB Jan 06. The GI for +N treatment less the cost of additional urea. Production costs were not included in any GIs.
- GI's for DM based on widely accepted $30 sheep GM per DSE per year and assumption that 1 DSE consumes approximately 1 kg green feed per day. The alternative is to evaluate cost of either leaving a paddock out for pasture or buying in fodder.
- DM reflects amount of Food On Offer (FOO) - never completely utilised by stock as wastage always occurs.

What does this mean?
Cereal grazing at Edillilie appears to have the potential for not only providing a feed source, but also throwing a few extra dollars in the pocket. Paddock scale trials using livestock to remove the pasture instead of a mower would give us more insight into management of these crops. In lower rainfall zones, more trials are needed to assess how to best to use cereal crops as a tool to maximise feed availability and match demand with supply.

Considerations: value placed on feed is open to interpretation. The assumption has to be made that the feed is really required and will serve a purpose such as carrying more stock, finishing stock or filling a feed gap. The 2005 harvest saw lower than average grain prices, which could distort the GI's, but also makes it an appealing option considering the good returns of sheep.

Further trials are needed to address fertiliser timings and rates at Edillilie given the obvious crop response. Other variables that need assessment include seeding time and rate, grazing time(s) and intensity.

Acknowledgements
Eyre Peninsula Grain & Graze is funded by Australian Wool Innovation, Meat and Livestock Australia, Grains Research and Development Corporation and Land and Water Australia.
The trial work at Edillilie would not have been possible without the co-operation of Shane Nelligan. Technical support from Terry Blacker, Port Lincoln and Ben Ward, Minnipa Agricultural Centre is also gratefully acknowledged.

Logo EP G&G

Category
"Searching for answers"

MAC N3 paddock:
Rainfall
2005 Total: 327 mm 2005 GSR: 267 mm Ave Total: 325 mm Ave GSR: 242 mm **Potential:** (W) 3.1 t/ha (B) 3.5 t/ha **Actual:** (W) 1.64 t/ha Paddock History 2002: Barque barley 2003: Pasture 2004: Yitpi wheat **Soil Type:** Sandy loam

Edillilie: S. Nelligan
Rainfall
2005 Total: 547 mm 2005 GSR: 459 mm Ave Total: 460 mm Ave GSR: 370 mm **Potential:** (W) 7.0 t/ha (B) 7.4 t/ha
Paddock History 2002: Wheat 2003: Barley 2002: Canola Soil Type: **Loam**