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Section

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Livestock

Time of Sowing Cereals for Grazing at MAC 2009

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RESEARCH

Best Practice



Location: Minnipa Ag Centre

Rainfall

Av Annual: 325 mm
Av GSR: 242 mm
2009 Total: 421 mm
2009 GSR: 333 mm

Paddock History

2008: Wheat

Soil Type

Red sandy loam

Plot size

12 x 1.5 m x 4 reps

Yield Limiting Factors

Nil

Environmental Impacts

Soil Health

Soil structure: More even grazing
Compaction risk: Low

Social/Practice

Time (hrs): Sowing pre normal seeding
Clash with other farming operations: Standard management
Labour requirements: Labour to shift sheep

Economic

Infrastructure/operating inputs:
Strip grazing benefits requiring electric fence, portable trough
Cost of adoption risk: Low

Key messages

- **Early sowing of cereals, wheat, barley or oats, gave excellent grazing, hay or grain outcomes in 2009.**
- **The barley gave similar or better all round performance than the wheat or oats.**

Why do the trial?

Good early rain in March presented an opportunity to measure the comparative performance of a range of cereals for their potential as multi-purpose grazing, hay or grain options, sown in March, April and May, and their ability to provide early feed options for stock in autumn. Traditionally this is a time of year when pastures haven't established properly, and farmers are looking to get ewes and lambs onto good quality feed as soon as possible.

The aim of this trial is provide data to assist in decision making of using a cereal for grazing, hay and/or grain based on seasonal conditions, while knowing the relative multipurpose performance of the cereal options.

The trial builds on previous Eyre Peninsula Grain & Graze research and extension, highlighting the use of sown cereals for early feed (EPFS Summary 2007, p 75 and p 84).

How was it done?

In paddock North 6 on Minnipa Agricultural Centre eight cereal varieties (Table 1) were sown at 3 times, 16 March (8 days after 38 mm of rain) germination was highly variable, 24 April (following 16 mm over 4 days) and 26 May (following a 30 mm event) at seeding rates calculated to achieve 180 seeds/m² (Table 1). Plots were 12 x 1.5 m and replicated 4 times. DAP @ 60 kg/ha was applied at seeding, no further fertiliser and no weed control was applied.

Time of sowing (TOS) 1 and 2 were sampled for biomass on 27 May (Zadoks growth stages from 13 – 65 due to variable emergence and 12 – 13 respectively). They were then mown to simulate grazing. TOS 1, 2 and 3 were sampled for biomass on 29 June (again with wide ranging Zadok growth stages scores, 12 – 41 in all TOS). They were again mown to simulate grazing. Replicate 1 in all 1, 2 and 3 TOS were sampled for biomass following anthesis to simulate potential hay production. All plots were harvested with the experimental Kingaroy harvester and the grain yield calculated as t/ha.

Table 1 Cereal sown and sowing rate (kg/ha) calculated to achieve 180 plants/m²

Cereal Variety	Sowing Rate (kg/ha)
Wyalkatchem	54
Barque HSR	100
Naperoo	46
Axe	46
Gladius	49
Winteroo	51
Barque	60
Maritime	65

Table 2 Dry matter production (t/ha) on 27 May, 29 June and 18 November, and grain yield (t/ha) in 2009

Time of sowing	Variety	Dry matter production (t/ha)			Grain yield (t/ha)
		27 May	29 June	18 November*	
TOS 1	Wyalkatchem	0.22	0.36	11.1	2.4
	Barque HSR	0.22	0.87	6.9	3.0
	Naperoo	0.15	0.68	11.8	2.9
	Axe	0.33	0.21	4.6	1.6
	Gladius	0.36	0.32	6.5	3.0
	Winteroo	0.28	1.26	9.7	2.1
	Barque	0.27	0.80	8.1	3.2
	Maritime	0.45	0.73	8.4	2.8
	TOS 2	Wyalkatchem	<0.1	0.19	7.7
Barque HSR		<0.1	0.73	7.1	3.0
Naperoo		<0.1	0.21	6.6	3.5
Axe		<0.1	0.28	7.9	3.0
Gladius		<0.1	0.23	11.2	4.0
Winteroo		<0.1	0.27	8.1	1.9
Barque		<0.1	0.65	8.4	3.4
Maritime		<0.1	0.49	7.9	2.8
TOS 3		Wyalkatchem		0.04	9.5
	Barque HSR		0.16	7.4	2.8
	Naperoo		0.08	8.6	2.8
	Axe		0.06	10.5	3.8
	Gladius		0.05	10.2	4.2
	Winteroo		0.06	8.3	1.6
	Barque		0.12	7.9	2.8
	Maritime		0.10	8.3	2.9
	LSD ($P \leq 0.05$)		0.165	0.172	n/a

* The November dry matter figures represent only 1 replicate and should be treated with caution

What happened?

Rainfall in March initiated germination and establishment of TOS 1, resulting in available forage for grazing in May. Both TOS 1 and 2 (Table 2) provided a further grazing in June prior to

an average Zadoks growth stage of 31 whereby potential grain yield would be compromised. TOS 3 presented less grazing opportunities but the same average grain yield as TOS 2.

Table 3 presents the estimated gross margins from sowing cereals for grazing, cutting hay or grain recovery in good seasonal conditions.

Table 3 Gross margin (\$/ha) estimates from each component of the multipurpose enterprise

Time of sowing	Variety	27 May (\$/ha)	29 June (\$/ha)	Hay production (\$/ha)	Grain yield (\$/ha)
TOS 1	Wyalkatchem	8	18	360	362
	Barque HSR	8	53	227	470
	Naperoo	3	40	385	452
	Axe	16	7	148	218
	Gladius	18	15	213	470
	Winteroo	12	79	314	308
	Barque	12	48	264	506
	Maritime	24	43	274	434
	TOS 2	Wyalkatchem	0	6	251
Barque HSR		0	43	232	470
Naperoo		0	7	215	560
Axe		0	12	255	470
Gladius		0	9	365	650
Winteroo		0	12	263	272
Barque		0	38	273	542
Maritime		0	27	258	434
TOS 3		Wyalkatchem	n/a	0	310
	Barque HSR	n/a	0	241	434
	Naperoo	n/a	0	280	434
	Axe	n/a	0	340	614
	Gladius	n/a	0	332	686
	Winteroo	n/a	0	270	218
	Barque	n/a	0	258	434
	Maritime	n/a	0	270	362

*The November dry matter figures represent only 1 replicate and should be treated with caution.

Hay production gross margins based on collecting 65% of total available biomass with a gross margin of \$50/tonne.

Grazing value was calculated by multiplying the DSE (based on 1 kg DM/DSE/day) by \$25 (estimated annual value/DSE) and dividing by proportion of year, however value may be considered much greater in May and June than in September for example. Grazed cereals calculated as 0.1 t DM/ha retained after grazing.

Grain value calculated as \$180/t wheat, \$150/t barley and \$100/t oats with a cost of \$70/ha establishment and harvest, with no further cost.

What does this mean?

Sowing a paddock early to a feed crop provided a valuable feed source. The use of cereals wheat, barley or oats gave excellent multi-purpose outcomes in 2009. The barley gave similar or better all round performance than the wheat or oats.

The exceptional seasonal conditions provided the catalyst for the high production but the principle of early sowing of cereals for forage with the option to use for grazing, hay or grain based on seasonal outcomes on available rain in March or April is a worthwhile option for consideration

irrespective of the final seasonal outcomes. Cereals provide a valuable feed source at a time when other medic pastures on the farm were struggling to produce enough dry matter for ewes and lambs. This gives farmers an opportunity to give their pastures their best opportunity to establish and have grass management before being utilised for grazing.

References

Grain & Graze, Free Food for Thought, Grazing Winter Crops Road Show Workshop Notes Eyre Peninsula Farming Systems Summary, 2007

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