

Cereal and Linola Variety Demonstrations

The aim of this trial is to access the suitability of various cereal and linola varieties in the Southern Mallee environment. The crops sown were not replicated. The main purpose is to show what they look like and how they perform.

Method

Birchip: sown May12; *Sea Lake*: sown May10; *Charlton*: sown May 5.

Results

Table 1.4 Wheat variety yields (t/ha) and proteins (%) at Birchip, Sea Lake and Charlton

Variety	Birchip		Sea Lake		Charlton	
	Yield	Protein	Yield	Protein	Yield	Protein
Silverstar	see VIDA variety trial		2.91	11.0	2.74	9.3
Yanac			2.35	11.5	1.77	10.6
Frame			2.85	11.3	2.90	9.9
Meering			2.59	11.5	3.45	9.4
Goroke			2.76	11.4	2.76	9.7
Goldmark			2.91	11.6	3.11	9.1
Krichauff			2.82	12.1	2.92	9.5
Janz			2.57	12.2	2.79	9.9
Rosella			2.32	12.3	2.29	10.6
Ouyen			2.75	10.4	2.95	9.3
Barunga	2.67	10.1	2.67	11.2	2.95	9.4
Trident	3.21	10.0	2.87	11.1	2.54	9.7
Bencubbin	2.43	9.1	2.30	10.5	1.88	9.1
Federation	2.78	10.0	2.14	11.3	2.54	9.1
Insigna	2.95	9.4	2.44	10.5	2.97	8.6
Beulah	3.12	9.2	2.59	11.1	2.45	8.5
Gemini	3.30	9.4	3.00	11.5	2.83	8.5
Mercury	3.41	9.6	2.64	11.0	2.54	8.8
Apollo	3.25	8.9	2.67	10.9	2.99	8.6
Yallaroi	2.36	9.0	1.94	11.7	2.18	9.5
Kamillaroi	2.45	10.2	2.19	11.2	2.26	9.8
Wallaroi	2.41	10.5	2.12	10.7	2.20	9.7
Sunbrook	2.69	9.4	2.18	10.9	2.06	10.0
Sunvale	2.82	9.6	2.44	11.5	2.26	9.9
Sunstate	2.36	10.4	2.25	11.7	2.54	10.0

Interpretation

The highest yielding wheat overall was Meering at Charlton at 3.45t/ha. At Birchip the highest yielding wheat was Mercury, at 3.41t/ha and at Sea Lake (Goldmark) at 2.91t/ha. Charlton also had the lowest overall yield with Yanac 1.77t/ha; Yallaroi was the lowest in both Birchip and Sea Lake at 2.36t/ha and 1.94t/ha respectively.

Interesting to note that the highest protein was at Sea Lake, with Rosella at 12.3% and the lowest was at Charlton with Beulah and Gemini, at 8.5%.

Wheat Descriptions

Barunga	Mallee wheat, potentially AH quality (SA) and APW quality (VIC). CCN resistant and tolerant but rust susceptible. Also tolerant to high soil boron.
Condor	Mid season variety; AH quality; rust resistant but susceptible to CCN.
Trident	Mid season variety; ASW quality; rust resistant; tolerant but susceptible to CCN; has some boron tolerance.
Bencubbin	Very old variety bred in Western Australia and released in 1929.
Federation	Old variety, one of the first bred under Australian conditions, tall and produces many tillers. Used before herbicides so naturally more competitive than some of the new varieties. May be used as a parent by breeders in the future for dealing with herbicide resistance.
Insigna	Old variety bred by Alan Raw at Werribee and released in 1946; for many years most widely grown variety in Australia.
Beulah	Mallee wheat, potentially APW quality. Has CCN resistance but no tolerance, stripe and stem rust resistant with long coleoptile.
Gemini	Hybrid variety, high yielding, quick maturing cultivar with quality suitable for the domestic milling industry. Approved for "Australian Hard Class" in northern NSW. Expected to replace Banks with similar dough characteristics but a slightly longer bake mixing time and excellent baking characteristics.
Mercury	Hybrid variety, quick maturing cultivar with higher yields than presently grown Prime Hard cultivars in northern NSW. Provides alternative to Hartog.
Apollo	Hybrid variety, medium maturity, potential prime hard wheat. Protein content, flour extraction, flour colour, dough-handling properties and baking performance are similar to Hartog.
Sunbrook	Suited to early sowing; prime hard quality (in NSW); rust resistant.
Sunvale	Mid season variety; prime hard quality (in NSW); rust resistant; tolerant to RLN.
Sunstate	Mid season variety; prime hard quality (in NSW); rust resistant; variety preferred by bread and noodle flour markets in South East Asia.
Yallaroi	Durum - Resistant to all three rusts and moderately resistant to CCN.
Kamillaro	Durum - Very short coleoptile, resistant to stem and leaf rust, moderately resistant to stripe rust.
Wallaroi	Durum - Very short coleoptile, resistant to stem, stripe and leaf rust, susceptible to CCN.

Results - Barley Varieties

Table 1.5 Barley yields (t/ha) and percent protein at Sea Lake and Charlton

Variety	Sea Lake		Charlton	
	Yield	Protein	Yield	Protein
Dash	-	9.8	3.11	9.8
Galaxy	2.67	10.3	2.63	10.3
Arapiles	2.60	10.7	2.22	10.7
Chebec	2.62	10.1	2.27	10.1
Franklin	2.41	9.1	2.40	9.1
Galleon	3.41	9.8	2.22	9.8
O'Connor	3.37	10.0	2.56	10.0
Schooner	3.14	9.5	2.13	9.5
Skiff	2.87	9.7	2.24	9.7
Tantangarra	3.17	9.5	2.83	9.5
Gairdner	2.59	9.7	2.43	9.7
Fitzgerald	2.91	9.4	2.74	9.4
Barque	3.30	9.7	2.72	9.7
Sloop	3.35	9.7	2.36	9.7

Interpretation

Galleon (3.41t/ha) at Sea Lake was the highest yielding barley overall and Schooner (2.13t/ha) at Charlton was the lowest. At both Sea Lake and Charlton, Arapiles and Franklin were the highest and lowest protein at 10.7 and 9.1, respectively (Table 1.5).

Barley descriptions

Malt

Arapiles

Matures about 4 days later than Schooner. Lower grain protein content (about 1%) than Schooner, which may assist increased yields without losing the malting premium. Similar tendency to Schooner for head loss (best suited to the Wimmera and northern Wimmera)

Galaxy

High yield potential, moderately resistant to scald, but susceptible to the spot form of net blotch, and has a tendency to produce small grain in lower rainfall districts. Galaxy has superior straw strength to both Arapiles and Schooner, potential malting quality. Production by contract arrangement only, seed available through Barrett Burston Malting Co.

Schooner

Widely adapted malting variety. Susceptible to CCN.

Franklin

Very late maturing malt variety; high yield potential where annual rainfall exceeds 450mm.

Sloop

Well adapted malt variety with excellent quality characteristics; susceptible to CCN; direct replacement for Schooner.

Feed

Barque

High yielding feed variety best suited to medium to high rainfall areas; resistant to CCN; direct replacement for Galleon.

Chebec

Widely adapted feed barley, higher yielding than Galleon on light soils in low rainfall regions. Resistant to CCN.

Galleon

High yielding feed variety with resistance to CCN. Generally out yields Chebec on well-structured fertile soils. Has relatively weak straw and heavy crops may lodge.

O'Connor

Mid season feed variety, susceptible to CCN.

Dash

High yield potential for the feed market. Late-mid season variety, maturing slightly later than Schooner. Resistant to CCN, improved resistance to barley leaf scald over Schooner and Arapiles is resistant to leaf rust and powdery mildew.

Skiff

Feed (with marginal malting quality) variety with very high yield potential; suited to medium to high (400 - 500mm) rainfall areas; susceptible to CCN.

Tantangarra

Feed variety best suited to early sowing in those areas with annual rainfall greater than 400mm. Relatively susceptible to trifluralin, resistant to barley scald.

Gairdner

Mid to late season feed variety adapted to high rainfall areas; susceptible to spot form of net blotch and CCN.

Fitzgerald

Sister line to Gairdner released by Agriculture WA.

Results - Oats, Rye, and Triticale varieties

Table 1.6 Oat, triticale, rye and linola yields at Birchip, Sea Lake and Charlton

Variety	Yield (t/ha)			Variety	Yield (t/ha)		
	Birchip	Sea Lake	Charlton		Birchip	Sea Lake	Charlton
Oats				Triticale			
Echidna	2.64	3.12	2.15	Muir	2.97	2.53	2.40
Potoroo	2.71	3.21	1.72	Abacus	3.49	2.50	2.34
Wallaroo	1.78	2.48	1.55	Credit	3.10	2.44	2.64
Dalyup	3.77	3.16	1.55	Treat	3.08	2.25	2.26
Bandicoot	1.73	2.05	-	Tahara	3.08	2.78	2.22
Carrolup	3.25	2.80	1.77				
Euro	3.04	2.82	1.31	Rye			
Bettong	1.86	2.53	0.85	Bevy Rye	2.93	2.03	1.93
Marloo	2.65	2.67	1.77		-	-	-

Oat descriptions

- Echidna** Usually the highest yielding variety. A dwarf variety, very resistant to lodging and shattering. Grain is smaller than that of Euro and Swan but is plump and bright in colour. Suitable for milling, however susceptible to CCN, septoria and crown rust.
- Potoroo** Dwarf-type with CCN resistance and tolerance. Very high yielding relative to other varieties. Grain has high digestibility making it suitable for animal feeding, but its high screenings and low hectolitre weight precludes the grain from being classed as milling quality. Slightly taller than Echidna and slightly more prone to lodging.
- Wallaroo** Early flowering and maturing, with grain adequate for milling (although inferior to Mortlock and Swan). Moderately tolerant and resistant to CCN.
- Dalyup** Medium maturity, dwarf variety suited to medium to high rainfall areas; good feed variety; very susceptible to CCN.
- Bandicoot** Medium maturity high energy feed variety; first naked oat variety bred in Australia; suited to medium and high rainfall areas; very susceptible to CCN.
- Carrolup** Medium maturity milling variety; susceptible to CCN.
- Euro** Short season variety, yields on average 89% of Echidna and has better straw strength than other non-dwarf varieties, but will lodge more readily than semi-dwarf types. Produces a large, plump grain with high kernel percentage, medium protein content and is very low in fat, good quality for milling and export. Moderately resistant but not tolerant to CCN, good shattering resistance, susceptible to phenoxy-type herbicides (2,4-D amine and MCPA and dicamba) and is very susceptible to stem rust.
- Bettong** A tall, multipurpose variety, particularly suitable for hay, well suited to a wide range of environments. Prone to shattering but compares favourably with other tall varieties for yield, grain quality and disease resistance. Resistant and tolerant to stem nematode. Resistant but not tolerant to CCN. Wide spectrum of resistance to foliar disease which enables it to maintain green leaf area for a longer period than other varieties. This is especially beneficial for export hay where green appearance is a vital quality attribute.
- Marloo** Mid season variety often used for hay production; resistant to CCN.

Triticale descriptions

- Tahara** Mid-season, widely adapted variety. Resistant to CCN, a poor host for *Pratylenchus neglectus*. Resistant to stem, leaf and stripe rusts. May lodge in high rainfall or high yield situations.
- Muir** Mid-season, widely adapted variety. Resistant to stem, leaf and stripe rusts. A poor host for *Pratylenchus neglectus*. Tolerant of acid and waterlogged soils. Resistant to lodging.
- Abacus** Late-mid season variety which can also be grazed. Most appropriate choice for early sowing in cool, long season areas. Resistant to stem, leaf and stripe rusts and a poor host for *Pratylenchus neglectus*.
- Credit** Widely adapted mid-season variety; susceptible to CCN; moderately resistant to *Pratylenchus neglectus*.
- Treat** New release; earlier maturing than Tahara; higher grain weight than other triticale varieties; good rust resistance but not fully resistant to CCN.
- Bevy Rye** Semi-dwarf cereal rye variety. Higher yielding than SA Commercial Rye. Resistant to CCN, poor host for *Pratylenchus neglectus*. Resistant to stripe and leaf rust but susceptible to stem rust.

Linola descriptions

- Wallaga** Blue flower variety. Susceptible to lodging, especially in high rainfall areas with high fertility (unlikely to be suited to the southern Mallee and northern Wimmera).
- Eyre** White flower variety. Slightly shorter season and better suited than Wallaga in low rainfall areas (unlikely to be suited to southern Mallee and northern Wimmera).
- Argyle** Long season (>450mm annual rainfall) variety with extended flowering period; resistant to lodging.
- Linseed** Produced for oil, other flax cultivars are produced for fibre. Research is being done to improve oils for edible use. Linseed cultivars are much shorter, more branched and larger seeded than flax.

Table 1.7 Wheat, triticale and rye variety characteristics

Variety	Rust			CCN		Boron Tol	Pratylenchus		Yellow leaf spot	Maturity	Max quality	Other features
	Stem	Stripe	Leaf	Res	Tol		neg	tho				
Barunga	S	S	MS	R	MT	MT	MS	MS	S	E	APW	Early small grain
Beulah	R	MR	MS	R	MI		S	S			APW	Long coleoptile
Condor	R	R	R	S	MI					M	AH	Outclassed by better varieties
Frame	MR	MR/MS	MR/MS	R	T/MT	MT	MS	MR	MS/S	E-M	APW	Good early vigour, prone to lodging
Goldmark	MR	MR	R	R	I	I	MS	MS	S	M	APW	Alternative to Yanac, physiological yellowing
Goroke	R	MR	R	R	MI	I		S	S	M	APW	Suited to the Wimmera
Janz	R	MR	R	S	I	I	MS	S	S	E-M	APW	APW in Victoria
Krichauff	R	MR/MS	R	S	MT	MT	MR	MR	S	E	APW	Early vigour
Meering	S	MR	MS	S	I	MI	S	MS	S	M	AH	Outclassed by better varieties
Ouyen	MS	MR	S	R	MI	I	MS	S	S	E-M	AH	Physiological yellowing
Rosella	S	MR	S	S	I	I		MS	MS	L	ASW	Wide range of sowing time due to growth
Silverstar	MR	MR	MS	R	I	MI	S	MS	S*	VE	AH	Resistant to YLS in seedling stage, prone to screenings, high yield in low rainfall year
Trident	R	R	MR	S	MT	MT	MS	S	S	E	GP	High yielding
Yanac	R	MR	MR	S	MT	MT	MS	MS	S	M-L	APW	Moderate tolerance of acid soils
Kamillaroi	R	MR	R								Durum	Very short coleoptile
Wallaroi	R	R	R	S							Durum	Very short coleoptile
Yallaroi	R	R	R	MR		I	S	MR	MR	E-M	Durum	Susceptible to nutrient deficiencies
Triticale												
Abacus	R	R	R				MR			M-L		Early sowing in cool, long season
Credit				S			MR			M		
Muir	R	R	R				MR			M		Tolerant to acid & waterlogged soils
Tahara	R	R	R	R			R			M		May lodge, most popular in Vic
Treat	R	R	R	MR								New higher grain weight
Bevy Rye	S	R	R	R	T		MR			L		Semi-dwarf

Key:

R= resistant, MR= moderately resistant, MS= moderately susceptible, S= susceptible, VS= very susceptible
 T= tolerant, MT= moderately tolerant, MI= moderately intolerant, I= intolerant, VI= very intolerant

Table 1.8 Barley variety characteristics

Variety	Leaf rust	CCN	Leaf scald	Net blotch	Pratylenus		Powdery mildew	Maturity	Max quality	Other features
					neg	tho				
Arapiles	S	S	MS/S	MS	MR	R	MS/S	M	Malt	High extract
Barque	S	R	MR/S	MR	MR		R	M	Feed	High yield potential but low extracts
Chebec	S	R	MS/S	MS/S	MR		MS/S	M	Feed	Part to low fertility sands
Dash	R	R	R				R	M-L	Feed	High yield potential
Fitzgerald	MR/S	S	MR	S				M-L	F/m	
Franklin	MR/S	S	MR/S	S	MS	MR	R	L	Malt	Tends to have small grain
Gairdner	S	S	MR	S	MS	MR		M-L	F/m	Feed quality pending malt test
Galaxy			MR	S					Malt	Small grains in low rainfall
Galleon	MS/S	R	S	MR	MR/MS	MR	MR/MS	M	Feed	Widely adapted, ex deep sands, Mn def intolerance
O'Connor		S						M	Feed	
Schooner	S	S	MS/S	MS	MS	R	MS/S	M	Malt	Widely adapted, head loss and sprouting sus.
Skiff	S	S	R/V/S	MS/S	MS		S	M-L	F/m	Very high yield, tends to have small grain
Sloop	S	S	S	S	S	MR	S	M	Malt	New malting variety
Tantangarra	MR/MS	S	MR	S			VS	M-L	Feed	High yield, later than Skiff

Table 1.9 Oat variety characteristics

	Rust		CCN		BYD virus	Blight	Stem nematode		Septoria	Maturity	End use	Other features
	Stem	Leaf	Res	Tol			Res	Tol				
Bandicoot	MS	MR	S	VI	MR/MS	S	VS	VI	MS/MR	E-M	Naked feed	Med-high rainfall, high energy feed
Bettong	MS	R	R	VI	MR	MR	R	T	MS	M	Hay/grain	
Carrolup			S							M	Milling	
Dalyup			VS							M	Feed	Dwarf, suited to med-high rainfall
Echidna	MR/MS	S	S	VI	MR	S	R	T	VS	E-M	Milling	
Euro	VS	MS	R	VI	MR/MS	MS	VS	I	MS	E-M	Milling	
Marloo	S	S	R	MT	S	S	MS	MI	MS	M	Hay/grain	
Potoroo	VS	S	R	MT	MR/MS	S	MR	MT	S	E	Feed	
Wallaroo	S	S	R	MT	MR/MS	MS	MS	MT	S	E	Hay/grain	

Key:

R= resistant, MR= moderately resistant, MS= moderately susceptible, S= susceptible, VS= very susceptible
 T= tolerant, MT= moderately tolerant, MI= moderately intolerant, I= intolerant, VI= very intolerant