3.2.6 An evaluation of English winter milling wheats in Tasmania - Hagley, Tas

Location:
Mill Farm Cottage, Hagley, Tasmania

Funding: GRDC

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Summary of findings:

- With a favourable season the later maturity of the English wheat germplasm did not give a yield increase above that of Revenue from the early (April) sowing.
- In the later (May) sowing there was a substantial yield decline from the English wheats compared to Revenue.
- Revenue appears to have a distinct advantage in being slightly earlier maturing yet still high yielding, similar attributes were not seen in the English wheats which were all later maturing and more prone to a dry finish.
- Both Revenue and Tennant showed tendencies to lodge despite a double application of growth regulators, no lodging was observed in the English wheats.

Background/Aim:
Currently the highest yielding wheats grown in Tasmania have been red wheats, while the market preference has been for white wheats. White wheats from the Australian breeding programs have tended to be earlier maturing and have not yielded better than the red wheats such as Revenue. European, particularly English, wheats have a longer growing season and may have better lodging resistance than Australian wheats. In addition white wheats of high enough quality have the potential for replacing some currently imported bread and flour wheat. This trial was intended to compare a group of English winter wheats, many of which are milling grade, with two of the leading red wheats, Revenue and Alberic.

Trial information:
Two sowing times were used April 6th and May 19th. The complete April sowing was harvested but only one of the May sown replicates was harvested due to brome grass pressure. Growth regulators (Cycocel and Moddus) were applied at GS 24 and 32 to each sowing.

Rainfall:

Avg. Annual:	642mm
Avg. G.S.R.:	April sowing 568mm, May sowing 528mm
2011 Total:	750mm
2011 G.S.R.:	April sowing 589mm, May sowing 504mm

Paddock History:

2010:	Grass seed
2009:	Grass seed

Soil Characteristics:

Soil Type:	Clay loam
Soil test:	162 kg/ha ammonia and nitrate nitrogen (0-100cm)
Grazing Pressure:	ungrazed

Water Use: Yield Limiting Factors, no Irrigation

Sowing rate: 100 kg/ha

Sowing date: 16/6/2011

Fertiliser: 50 kg/ha of N top dressed on 31/8/2011 and 12/10/2011

Herbicides, etc.: Hussar 100ml/ha applied on 28/6/2011

Harvest date: 23/1/2012

Plot size: 10m x 1.7m x 4 reps.

Treatments: Variety trial

Measurements: Observations were made on disease, plant maturity and lodging. Grain was harvested with a plot harvester.

Results and discussion:

2011 was an exceptional year for wheat yields across the north midlands for early sown wheat. Good rainfall continued through winter, spring and early summer. Both Alberic and Revenue were in the top yielding group but, given the later maturity of Alberic, it is surprising there was not a greater yield difference in such favourable circumstances. Alberic was up to two weeks later in maturity than Revenue and was in late grain fill during December when the soil was beginning to dry out. Out of the milling wheats, both Glasgow and Einstein were comparable in yield to Alberic and Revenue. Several other lines of wheats yielded similar to Revenue. Tennant performed poorly and was well below expected yield.

Table 1. Variety and grain yield

Variety/Line	Origin		Grain type	Yield (t/ha)	%site av	%yellow or dry crop at 12/12/11
Alberic	France	PGGWrightsons	red	11.1	114	68
Glasgow	England		red	10.9	112	77
Einstein	England		red	10.7	111	72
Revenue	Australia	CSIRO/HRZ Wheat	red	10.7	110	94
328.55	England via NZ	Midland seeds	red	10.3	106	65
Xi19	England		red	10.3	106	77
A50.1	England		red	10.2	105	87
Brompton	England		red	9.9	102	76
Istabraq	England		red	9.5	98	65
26.35	England via NZ	Midland seeds	red	9.5	97	81
Mascot	England		red	9.4	96	82
Hyperoin	England		red	9.4	96	72
Robigus	England		red	9.3	96	85
Gladiator	England		red	9.3	96	80
Equinox	England		red	9.2	95	76
Solstice	England		red	9.2	95	80
Tennant	Australia	CSIRO/HRZ Wheat	red	8.4	87	84
34.3	England via NZ	Midland seeds	red	7.5	77	92
l.s.d. (5%)				*1.09*		*10.5*

Most of the May sowing was abandoned, however there were three plots of Revenue, one plot and two buffers, that on average yielded 12.2t/ha compared to the best English wheats (Einstein, Glasgow and Gladiator) which yielded 9.8 t/ha on average. Revenue again was earlier being at the early milk stage on the 12th of December compared to the English wheats which ranged from early to mid flower on the same date. The later finish of the English wheats in the May sowing exposed them to dry conditions during grain fill that could account for the lower yield.

Some lodging was observed in both Revenue, severe lodging >50% and Tennant, mild lodging < 5%. Two applications of growth regulators were used (GS 24 and 32) across all varieties. Mild lodging was only seen at the PGR wheat site on untreated plots of Brennan wheat. This observation suggests that the European material has better lodging resistance than Australian bred lines (Revenue and Tennant).