2.3.4 Canola Technology System Trial - Dunkeld, Vic

Location:
Dunkeld Research Site.

Funding:
This was a Pioneer Hi-Bred Australia funded trial.

Researchers:
Mark Steele, Toby Campbell and Rohan Wardle, SFS for conduct of trial and AOV analysis of results at the Dunkeld site.

Authors:
Kevin Morthorpe & Scott Palmer, Pioneer Hi-Bred Australia.

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Background/Aim:
New herbicide-tolerant canola varieties need to be thoroughly tested across a number of seasons. This trial differs from other comparative crop variety testing in that it evaluates commercially available canola varieties managed under their different technology system recommended practices. The management of the systems trial is based on the objective to control weeds without compromising crop yield.

Take home messages:
- Average site canola yield in the Dunkeld trial was 1.98 t/ha.
- The record high temperatures during late spring significantly reduced yield potential.
- The top yielding canola at Dunkeld was the new 45Y82 (CL) hybrid.
- Average of the Clearfield and Roundup Ready hybrids at the Dunkeld site was 32% or 620kg/ha higher yielding than the average of the TT check varieties compared to the difference of 34% or 460 kg/ha reported in 2008 at the Ross Bridge site.
- The advantage in gross income at the site was $266 per hectare more than TT Canola.

Trial Design:
A replicated, randomised block design consisting of four replicates and three herbicide tolerant systems - Triazine Tolerant(TT), Clearfield(CL) and the new Roundup Ready(RR). System trials were also conducted by independent contractors at Elmore and Yarrawonga sites in Victoria during the 2009 season.

Seasonal conditions (Dunkeld 2009):

Annual rainfall:	624 mm
GSR (April-November):	529 mm
Temperature:	Nov max av 26.7C (mean 20.8C)
	Highest, Nov 35.4C Dec 39.6C*

*95th highest percentile, long term (1903-2009)

Previous Crop: Lupins

Sowing Date: 20th May 2009

Harvest Date: 14th December 2009

Fertiliser: 100 kg MAP at sowing and 90 kg urea on 1 September 2009.

Pesticides: Slug control on 24 June 2009

Table 1: Herbicide application in each technology system

Pre-sowing (all systems)	**Roundup 2 L/ha + Triflur 1.2 L/ha + Striker 250 ml/ha**	
	Recommended Herbicide Post-sowing Applications	
Canola Technology System	First application (2 leaf)	Second application (by 6 leaf)
Triazine tolerant	1.5 kg/ha Atrazine	+ 300 ml Select + 1% Adigor
Clearfield	600 ml Intervix + 1% Bonza + 300 ml/ha Lontrel	+ 300 ml Select + 1% Adigor
Roundup Ready	0.9 kg/ha Roundup	0.9 kg/ha Roundup

Results and Discussion:
The results of the trial in 2009 confirm the performance advantage of the new Clearfield and Roundup Ready canola hybrids compared to TT canola as reported in 2008.

Research has shown the yield potential of canola is determined within the first few weeks. The early vigour of the Clearfield and Roundup Ready hybrids allowed stronger plants and quicker canopy closure than the TT canola that in turn aided field emergence and in-crop weed suppression.

The advantage in gross income* was increased at sites with higher yield potential ranging from an increase of $266 per hectare at the Dunkeld site and averaged $145 per hectare across three sites in Victoria during the 2009 season.

* Income calculated using price of $418/t delivered Melbourne @22 February 2010.

The trials compared canola varieties and systems in a low weed pressure environment. The 'fit' of the alternative herbicide tolerant technologies into an on-farm agricultural system needs to be consider time of sowing, soil type, weed type and populations, tillage and sowing methods, fertility and moisture availability.

Table 2: Canola harvest oil yields in 2009 season

Canola Type		Dunkeld site		Average across Dunkeld, Elmore and Yarrawonga sites	
Technology System	**Variety**	**Yield (t/ha)**	**Oil Content (%)**	**Av Yield (t/ha)**	**Relative Yield (%)**
Triazine Tolerant	Tornado TT	1.63 c	39.7 c	1.48	86
Triazine Tolerant	ATR-Marlin	1.58 c	41.0 abc	1.53	89
Triazine Tolerant	Average TT	1.61	40.4	1.51	87
Clearfield	46Y78 hybrid	2.13 b	40.4 abc	1.83	106
Clearfield	46Y83 hybrid	2.13 b	40.6 abc	1.82	106
Clearfield	45Y82 hybrid	2.32 ab	40.3 bc	1.93	112
Clearfield	Average CL	2.19	40.4	1.86	108
Roundup Ready	46Y20 hybrid	2.27 ab	42.6 ab	1.85	107
Site mean		**1.98**		**1.73**	
LSD (P=.05)		**0.19**	**2.79**		
CV		**7.27**	**4.82**		

Means followed by the same letter do not significantly differ (P=.05, LSD)

Summary:
Canola growers now have a wider choice of weed management technology with the release of Clearfield and Roundup Ready hybrids. Both new systems have demonstrated over two seasons and across medium to high rainfall sites in Victoria to add flexibility to control weeds without compromising yields compared to TT canola.

Figure 1. Pioneer Technology System trial at Dunkeld, Victoria in 2009.