

The advanced line, 94-425\*2b, produced significantly higher dry matter production by the flat pod stage (ideal time for cutting peas for hay) than all other lines evaluated under favourable growing conditions in 2009 in contrast to its poor performance in 2008. However it has low grain yield potential in these environments which may limit its value as a dual purpose type for these regions. Results from 2008 and 2009 indicate there is potential to select field pea lines that have higher

dry matter and grain yields than the current dual purpose field pea Morgan e.g. 05H207-06HOS2002. Further evaluation over seasons and in different environments is required to validate these findings. Additional work is also required to understand the key morphological and phenological traits required in field peas to provide high biomass in conjunction with high grain yield in low rainfall environments, as traditional high biomass types generally have low grain yields in these environments.

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# Canola and Juncea Canola for Low Rainfall Areas in 2010

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**Searching for answers**

**Location:** Minnipa Ag Centre

**Rainfall**  
 Av. Annual: 325 mm  
 Av. GSR: 242 mm  
 2009 Total: 421 mm  
 2009 GSR: 333 mm

**Yield**  
 Potential: 2.7 t/ha (canola)  
 Actual: 2.3 t/ha 45Y77 canola

**Paddock History**  
 2008: Wheat  
 2007: Wheat  
 2006: Wheat

**Soil Type**  
 Red calcareous sandy loam

**Plot size**  
 10 m x 1.5 m x 3 reps

What a difference a year makes. No canola or juncea yields at Minnipa in 2008 and the sky is the limit in 2009. What are you going to do to us in 2010? As yields were so high in 2009, we have also used 2008 and earlier data to give an understanding of what is likely to happen in a normal year.

## Variety selection

The choice of most suitable canola variety for any situation will often follow a consideration of maturity, herbicide tolerance, blackleg resistance and early vigour together with relative yield and oil content. In relation to some of these issues the following points can be made:

- The weed species expected may dictate the need for a herbicide tolerant production system (e.g. triazine tolerant or Clearfield). Remember that a triazine tolerant variety will incur a yield and oil penalty when grown in situations where they are not warranted.
- Varietal blackleg resistance and/or fungicide use should be considered, particularly when

rotations are close, although blackleg is less of a factor in low rainfall systems.

The following are early or early-mid flowering varieties that may be suitable for lower rainfall areas.

## New varieties released in 2008

### Triazine tolerant (TT) varieties

**Hurricane TT.** New release (coded PacT2202). Early-mid maturing variety. Pacific Seeds indicate good yield, oil and protein content. Ideally fits low to medium rainfall areas, exhibits good vigour. Blackleg rating MR provisional. First year of testing in NVT in 2007. Bred and marketed by Pacific Seeds.

**Tawriffic TT** (coded BLN3697TT) is an Early-mid, Triazine Tolerant Canola variety developed by the Canola Alliance. Tawriffic TT has a blackleg rating of MR-MS provisional and is medium in height. The Canola Alliance have indicated that Tawriffic TT has high yield and oil potential. Marketed by PlantTech Pty Ltd.

## **CLEARFIELD® (imidazolinone tolerant) varieties**

**44C79.** New release (coded NS6082BI). Early maturing, similar to 44C73. Pioneer indicate good vigour, high yield and oil content. Blackleg rating is MR-MS provisional. Targeted to replace 44C73. Limited seed quantities in 2008. Bred and marketed by Pioneer Hi-Bred Australia.

### **New varieties for 2010**

A number of new varieties will be marketed for 2010 sowings. Information about new varieties has been provided by the seed companies as in most cases, entries have only come into NVT trials in 2009.

### **Conventional varieties**

**Hyola 433.** Mid-early maturing conventional hybrid. High yielding. High oil and good protein content. Medium height. Suited from low to medium rainfall regions including irrigation zones. Anticipated Blackleg resistance rating by Pacific Seeds is R-MR. Tested in NVT trials 2005 and 2009. Bred and marketed by Pacific Seeds.

### **Triazine tolerant (TT) varieties**

#### **CB™ Telfer**

Very early season for low rainfall areas. CBWA indicate high oil and good blackleg (CBWA estimate MS) resistance. Seed will be available in 2010. Tested in SA NVT trials in 2008. Bred by CBWA. An End Point Royalty (EPR) applies.

#### **CB™ Scadden**

Medium season for medium to high rainfall areas. CBWA indicate excellent blackleg (CBWA estimate MR) resistance and early vigour. Seed will be available in 2010. Tested in SA NVT trials in 2008. Bred by CBWA. An EPR applies.

#### **CB Mallee HT™**

Early season TT hybrid canola. CBWA indicate moderate blackleg resistance (MR-MS) and excellent early vigour. Small amounts of

seed will be available in 2010. Tested in SA NVT trials in 2009 as Triumph CHYB157. Bred by CBWA.

#### **CB Tumby HT™**

Early-mid season TT hybrid canola. CBWA indicate blackleg resistance of MR-MS and excellent early vigour. Small amounts of seed will be available in 2010. Tested in SA NVT trials in 2009 as Triumph CHYB125. Bred by CBWA.

## **CLEARFIELD® (imidazolinone tolerant) varieties**

**43C80** (coded NS6108BI). Early maturing variety. Pioneer indicate good early vigour, good yield and moderate oil content. Blackleg rating MS (provisional). Suited to low rainfall areas and potentially as a late sowing option in medium-high rainfall areas. Tested in SA NVT trials in 2008. Limited seed quantities in 2009. Bred and marketed by Pioneer Hi-Bred.

**45Y82** (tested as 06N785I). Pioneer HiBred indicate provisional blackleg rating likely to be R-MR. 45Y82 is an early-mid hybrid Clearfield variety with shorter stem and good standability. Included in NVT trials in 2009.

**Hyola 571CL** (tested as K9209). Early-mid maturing hybrid with similar maturity to 45Y77. Pacific Seeds indicate excellent early vigour, with good oil and yield potential. Blackleg resistance R (provisional). Tested in SA NVT trials in 2008. Bred and marketed by Pacific Seeds.

## **CLEARFIELD® (imidazolinone tolerant) Juncea canola**

**Oasis CL** New release (coded J05Z-08920). First herbicide tolerant Clearfield Juncea canola. Blackleg rating R (provisional). Seed quality as good as, or slightly better than Dune. Limited seed quantities for 2009. Bred by DPI-Victoria and Viterra (Canada). Marketed by Pacific Seeds. An

EPR applies.

**SaharaCL** (tested as J05Z-08960). Early maturing juncea canola, earlier than Oasis CL. Pacific Seeds indicate exceptional vigour. Blackleg resistance R (provisional). An EPR applies. Tested in SA NVT trials in 2008. Bred by DPI Victoria and Viterra (Canada). Marketed by Pacific Seeds.

### **Grain quality**

Grain quality data from trials conducted in 2008 are presented in Table 1. Many of the newer varieties have improved oil content over older varieties, but consider oil content amongst the other factors when choosing a new canola variety.

## **JUNCEA CANOLA FOR LOW RAINFALL ENVIRONMENTS**

Two juncea canola varieties will be available in south eastern Australia for 2010. Both are Clearfield varieties called OasisCL and SaharaCL, (both cultivars are being marketed by Pacific Seeds under an EPR system). Due to limitations of seed, there will only be further yield evaluation and demonstration paddocks of these new varieties on Eyre Peninsula in 2010. Commercial production was limited to NSW, Victoria and the area around Lameroo in SA for 2009.

These are Australia's first canola quality Brassica juncea varieties, with major changes to both the oil and meal quality from traditional table mustard. The varieties were bred by Victorian DPI and Viterra, in Canada, and partly funded by the GRDC.

Juncea canola has a number of advantages over traditional canola in low rainfall areas, including faster ground covering ability, better heat and drought tolerance and shatter tolerance - thus it does not need windrowing (saving around \$25/ha).

**Table 1 Oil content of canola sown at Keith, Tooligie and Minlaton, 2008**

Site	Keith	Tooligie	Minlaton
<b>Triazine tolerant</b>			
ATR Cobbler	37.6	36.1	37.6
ATR Stubby	36.8	35.3	37.8
ATR409	38.8	35.3	38.0
BravoTT	38.0	37.7	37.9
CB Boomer	37.1	33.1	35.4
CB Scaddan	37.6	34.9	36.9
CB Tanami	36.4	35.3	36.6
CB Telfer	37.3	38.3	39.1
Hurricane TT	38.3	39.0	38.5
Rottnest TTC	37.0	35.5	36.9
Tawriffic TT	39.8	39.4	39.1
TornadoTT	37.9	36.6	38.5
<b>Conventional</b>			
AG Muster		37.5	37.2
AV Garnet		42.0	40.1
Hyola 50		40.7	38.8
Hyola 571CL		39.7	39.5
43C80		40.8	38.1
44C73		39.5	37.3
44C79		39.1	39.1
Tarcoola		43.6	40.7

**Table 2 Grain yield at Tooligie NVT trials, 2008**

Variety	Conventional & CL varieties (t/ha)	% site mean	TT Varieties t/ha	% site mean
AG Muster	0.94	105	-	-
ATR Cobbler	-	-	0.71	101
ATR Stubby	-	-	0.71	101
ATR409	-	-	0.44	62
AV Garnet	1.03	116	-	-
BravoTT	-	-	0.77	109
CB Boomer	-	-	0.65	93
CB Scadden	-	-	0.79	113
CB Tanami	-	-	0.80	114
CB Telfer	-	-	0.84	120
Hurricane TT	-	-	0.64	91
Hyola 50	0.95	107	-	-
Hyola 571CL	0.87	97	-	-
43C80	0.84	94	-	-
44C73	0.80	90	-	-
44C79	0.70	78	-	-
Rottnest TTC	-	-	0.58	83
Tarcoola	0.88	99	-	-
Tawriffic TT	-	-	0.73	104
TornadoTT	-	-	0.68	97
Site Mean (t/ha)	0.89		0.7	
CV (%)	9.46		11.86	
LSD (t/ha)	0.14	15	0.13	18

Table 3 Grain yield of TT canola at Minnipa, 2008

Variety	kg/ha	% site mean
CB Telfer	214	146
CB Tanami	206	141
ATR Cobbler	181	123
CB Boomer	159	108
CB Scadden	139	95
BravoTT	133	91
Hurricane TT	131	90
Tawriffic TT	130	89
Rottnest TTC	125	85
ATR Stubby	119	81
TornadoTT	117	80
ATR409	93	64
Site Mean	146.4	
CV (%)	12.28	
LSD (kg/ha)	29.57	

Table 4 Grain yield of Clearfield canola and mustard 2009

	Lameroo (SA)	Minnipa (SA)	Beulah (Vic)	Horsham (Vic)	Average
Name	t/ha	t/ha	t/ha	t/ha	t/ha
<b><u>Clearfield napus</u></b>					
43C80	0.64	2.29	0.96	1.41	1.41
44C79	0.74	2.14	1.22	1.28	1.28
45Y77	0.68	2.32	1.36	1.62	1.62
<b><u>Clearfield Jancea canola</u></b>					
OasisCL	0.66	2.02	1.65	1.43	1.43
<b><u>Selected high yielding clearfield Jancea canola advanced breeding lines</u></b>					
J06Z-07739	0.87	1.87	1.48	1.72	1.72
J07Z-00348	0.75	1.96	1.55	1.60	1.60
J07Z-00756	0.75	1.95	1.54	1.61	1.61
J07Z-00777	0.63	2.08	1.43	1.62	1.62
J07Z-01904	1.00	2.02	1.57	1.96	1.96
JB0Z-800066	0.77	1.65	1.25	1.43	1.43
JB0Z-800090	0.62	1.94	1.13	1.51	1.51
JB0Z-800781	0.75	1.99	1.54	1.69	1.69
JB0Z-800789	0.71	1.93	1.46	1.28	1.28
JB0Z-801068	0.62	1.58	1.06	1.32	1.32
JB0Z-801346	0.73	1.94	1.59	1.22	1.22
Site mean	0.67	1.81	1.26	1.19	
CV (%)	10.83	4.28	14.26	10.02	
LSD (t/ha)	0.14	0.15	0.35	0.23	

**Table 5 Yield of canola and juncea varieties in 2009**

Entry	Minnipa		Minnipa	
	t/ha	% site mean	t/ha	% site mean
AV-Garnet	2.47	124	0.81	105
Tarcoola	2.22	111	0.67	86
Hyola50	2.17	109	0.71	91
SARDI515M	1.99	100	0.82	106
Ag-Outback	1.95	98	0.63	81
Site mean	1.99		0.78	
CV (%)	1.89		9.65	
LSD (t/ha)	0.16		0.13	

Future breeding priorities include further development of herbicide tolerant varieties with high yield, improved quality, good blackleg resistance and good adaptation. The first triazine tolerant advanced breeding lines were in multi-locations trials in 2009 and were tested on Eyre Peninsula, with first cultivars hopefully available in 2011. Hybrids and other herbicide tolerances are also currently being developed and will continue to be selected in low rainfall systems across Australia.

Juncea canola lines tend to yield the same or more than traditional canola in situations where canola yields are equal or less than 1.5 t/ha.

No breeding or advanced trial data was available for 2008 from Minnipa or Miltaburra sites due

to the high level of variability within the trials or trials not being harvested due to the drought. New advanced breeding lines and released varieties were further evaluated in 2009 at Minnipa, Miltaburra and Lock sites. Demonstration blocks of the new Clearfield juncea canola varieties were also sown on larger scale in 2009. Results from some sites comparing Clearfield canola and juncea canola in 2009 are included in Table 4. At the lower rainfall sites at Lameroo and Beulah, juncea canola yielded similar to the better canola varieties. In higher yielding site at Minnipa the canola produced higher grain yields than juncea canola.

Grain yields of canola and mustard varieties sown in 2009 are shown in Table 5. At Minnipa, canola varieties produced the highest grain yields

of well over 2 t/ha. Mustard yields were generally lower as would be expected at this yield level. At Lameroo, dry conditions in early spring restricted yield potential but late rain helped the canola varieties produce grain. However, the hectolitre weights of the higher yielding canola varieties were lower than the Australian Oilseeds Federation standard while the mustards were acceptable. One mustard of interest in these trials was SARDI515M which is being grown for biodiesel feedstock production.

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