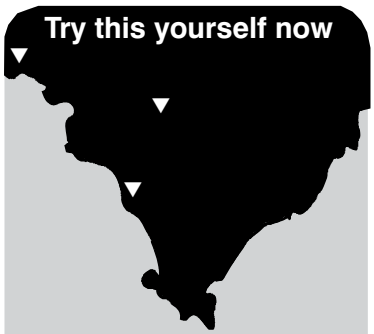
# Break Crop Performance at Mount Cooper, Minnipa and Penong

DEMO

**Leigh Davis and Brenton Spriggs**
SARDI, Minnipa Agricultural Centre




**Location:** Port Kenny/Mt Cooper
Geoff & Jake Hull
Mt Cooper Ag Bureau
**Rainfall**
Av. Annual: 400 mm
Av. GSR: 300 mm
2010 Total: 450 mm
2010 GSR: 386 mm

**Yield**
Potential: 4.1 t/ha (C)
Actual: 2.5 t/ha

**Paddock History**
2009: Medic Pasture
2008: Medic Pasture
2007: Medic Pasture

**Soil Type**
Grey loam

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

**Yield Limiting Factors**
Low amount of mice damage

---

**Location:**
Minnipa Ag Centre
**Rainfall**
Av. Annual: 325 mm
Av. GSR: 250 mm
2010 Total: 410 mm
2010 GSR: 346 mm

**Yield**
Potential: 2.7 t/ha (C)
Actual: 1.5 t/ha

**Paddock History**
2009: Wheat
2008: Wheat
2007: Wheat

**Soil Type**
Sandy Clay loam

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

**Yield Limiting Factors**
Low amount of mice damage

## Key messages

- **Two Clearfield varieties, Pioneer 44Y84 and Pioneer 45Y82, exceeded 2.5 t/ha at Mt Cooper.**
- **There were no stand-out varieties in the Triazine Tolerant (TT) and Conventional canola varieties at both Minnipa and Mt Cooper.**
- **Juncea canola and Biodiesel canola produced lower yields than in the past compared to traditional napus canola due to above average rainfall year.**
- **No significant difference between the newly released pea lines at Mount Cooper.**
- **Break crops were successfully grown at Penong in 2010.**

## Why do the demonstrations?

There is limited ongoing released canola variety yield data available for low rainfall areas such as Minnipa and none for the Mt Cooper area. These trials compare current released varieties at two locations on Eyre Peninsula. A demonstration was also sown at Penong to compare best bet break crops.

## How was it done?

Current best bet canola varieties of 7 TT, 5 Clearfield, 2 Clearfield Juncea and 6 conventional lines were tested at Minnipa and Mt Cooper. There were 7 pea varieties tested at Mt Cooper and the seed was not inoculated. The replicated trials at Mt Cooper were sown on 1 June with 68 kg/ha 19:13:0 and 60 kg/ha of urea pre-drilled. The trial had a follow up of 60 kg/ha of urea broadcast at stem elongation. Trials received 1 L/ha Round up Power Max®, 0.07 L/ha Striker® and 1 L/ha Triflur Xtra® at seeding and 0.35 L/ha Select® + 1 L/100 L Hasten® for grass control. Triazine and Clearfield chemicals were not applied to the specific technologies, they were treated as conventionals. Grain yield was measured.

The same lines were tested at Minnipa Agricultural Centre (MAC) but sown on 26 May with 68 kg/ha 19:13:0 and 58 kg/ha urea at seeding. The trials had 97 kg/ha application of sulphate of ammonia to help out with sulphur deficiency and boost nitrogen levels. Minnipa canola site received 1 L/ha Roundup PowerMax®, 1 L/ha Triflur Xtra®, 0.07 L/ha Striker® & 1 L/ha Lorsban® (for Cut-worm control) at seeding. Then 800 g/ha simazine was applied to the TT lines post sowing, pre-emergence and 0.35 L/ha Intervix® + 0.1% BS1000® (wetter) was applied to the Clearfield lines 6 weeks after sowing and 0.3L/ha Select® + 1 L/100 L Hasten® was used for grass control.

Some canola varieties and 1 pea variety (Kaspa) were sown at Penong on 3 June with 66 kg/ha DAP and 57 kg/ha urea. The canola site received 1 L/ha Roundup Power Max®, 1 L/ha Triflur Xtra®, 0.07 L/ha Striker® & 1 L/ha Lorsban® at seeding. Then 0.8 L/ha atrazine was applied to the TT lines and 0.35 L/ha Intervix® + 0.1% BS1000® (wetter) was applied to the Clearfield lines both on 6 August. 0.3 L/ha Select® + 1 L/100 L Hasten® was used for grass control also on 6 August.

## What happened?

Mt Cooper had a slow and late start to the year with rainfall, but well and truly made up for it throughout the rest of the year receiving 386 mm for the growing season.

**Location:** Penong
Bill & Trevor Oats

Charra Ag Bureau

**Rainfall**
Av. Annual: 310 mm
Av. GSR: 220 mm
2010 Total: 333 mm
2010 GSR: 264 mm

**Yield**
Potential: 2.3 t/ha (Canola)
Actual: 0.65 t/ha (AV - Garnet)

**Paddock History**
2009: Pasture
2008: Pasture
2007: Wheat

**Soil Type**
Sandy clay loam

**Plot size**

30 m x 1.5 m x 3 reps

**Yield Limiting Factors**
Some mice damage,
15% to 20% shattering

Minnipa also had a late start but received well above growing season rainfall of 346 mm. Nitrogen was a key for good yields in 2010.

### Mt Cooper Peas

Peas struggled for early vigour and growth throughout the year. Not inoculating at seeding along with a poor pulse history causing low rhizobia for nodulation may have been the reason for the poor growth. The trial still averaged 1.2 t/ha with PBA Gunyah and PBA Twilight producing the best gross incomes with $371/ha and $333/ha respectively (Table 1).

### Mt Cooper Canola

Canola yields at Mt Cooper were exceptional considering how late the start of the season was with the trials averaging 2.1 t/ha for TT, 2.1 t/ha for Clearfield and 2.4 t/ha for conventional canola lines. The best gross income for TT varieties was Tornado TT and ATR Cobbler both with $1368/ha. For Clearfield varieties the best was Pioneer 44Y84 with $1530/ha and the best of the conventional varieties was Hyola 433 filler with $1490/ha (Table 2).

The two lines Pioneer 44Y84 and Pioneer 45Y82 broke the 2.5 t/ha mark in the Clearfield trial and along with Hyola 571 CL out-yielded Pioneer 43C80, Pioneer 44C79, Oasis CL and Sahara CL. The two Juncea lines Oasis CL and Sahara CL were out-yielded by napus canola but this can happen in high yielding years like 2010. Generally Junceas yield similar to standard canola in years producing less than 1.2 t/ha, but do not suffer as much in drought years. Junceas have other benefits over standard canolas like extra height, good straw strength and lodging resistance, good black leg resistance and direct heading at harvest time with good shattering resistance. Markets for Juncea are being developed through Viterra.

### Minnipa Agricultural Centre Canola

Canola yields at MAC did not meet their full potential. The trials were placed in a sandy paddock coming off a 3 t/ha wheat crop the year before which used a large amount of nitrogen. Despite the 58 kg/ha of urea and 97 kg/ha of sulphate of ammonia, the trials could have used around another 50 to 100 kg/ha urea.

TT varieties averaged 1.3 t/ha, Clearfield varieties averaged 1.2 t/ha and the conventional varieties averaged 1.2 t/ha (Table 2).

### Penong Break Crops

This trial was established to see if canola can successfully be grown in low rainfall areas such as Penong. Evading mice and the distance from Minnipa were some of the hurdles faced when establishing the trial. With a few mouse bait spreading trips for the NVT site as well and good early rains, canola and pea lines germinated well. The site was visited once more before harvest for weed control. At harvest the canola had some shattering around 15% to 20%, which is not unusual considering the amount of rain and wind this season.

Canola can be successfully grown in the lower rainfall zones (Table 3). If the trial was harvested before shattering occurred expected yields would have been around 0.7 to 0.85 t/ha.

The pea plots did not perform as well as they could have due to management issues. The peas were not inoculated causing poor nodulation and growth. Mice also caused some damage and the trial was harvested without crop lifters, resulting in some shattering.

## What does this mean?

Choose canola that suits your farming system. Utilise the technologies in Clearfield and TT canola varieties. Canola is a great break crop and in some years can be very profitable in low rainfall areas. Browse the NVT web site, www.nvtonline.com.au for varietal characteristics, yield and quality data.

## Acknowledgements

Thanks to Geoff, Jake and Leroy Hull and Bill and Trevor Oats for help with the trials and use of their land. Thanks to Amanda Cook for doing the stats.

***Table 1 Pea yields and gross income at Mount Cooper, 2010***

| Variety | Mt Cooper 2010 | | |
|---|---|---|---|
| **Field Peas** | **Yield (t/ha)** | **$/t** | **Gross Income ($/ha)** |
| PBA Gunyah | 1.53 | 242 | 371 |
| PBA Twilight | 1.38 | 242 | 333 |
| Kaspa | 1.32 | 242 | 318 |
| Yarrum | 1.28 | 242 | 310 |
| Morgan | 1.21 | 242 | 292 |
| Parafield | 0.90 | 242 | 219 |
| OZP0703 | 0.86 | 242 | 207 |
| Mean | 1.21 | | |
| *LSD (P=0.05)* | *0.40* | | |

**Gross Income is grain yield x price delivered to Viterra Pt Lincoln using daily cash price on 5/1/2011*

*Table 2 Canola yields and gross income at Mount Cooper and Minnipa, 2010*

| Variety/Line | Minnipa 2010 | | | Mt Cooper 2010 | | | |
|---|---|---|---|---|---|---|---|
| **Triazine Tolerant** | **Yield (t/ha)** | **$/t** | **Gross Income ($/ha)** | **Yield (t/ha)** | **$/t** | **Gross Income ($/ha)** | **Average (t/ha)** |
| CB Mallee | 1.36 | 598 | 810 | 2.14 | 598 | 1,281 | 1.75 |
| Tornado TT | 1.36 | 598 | 810 | 2.29 | 598 | 1,368 | 1.82 |
| CB Tanami | 1.31 | 598 | 786 | 2.09 | 598 | 1,247 | 1.70 |
| Tawriffic TT | 1.30 | 598 | 779 | 2.19 | 598 | 1,311 | 1.75 |
| ATR Cobbler | 1.29 | 598 | 774 | 2.29 | 598 | 1,368 | 1.79 |
| Hurricane TT | 1.29 | 598 | 773 | 2.09 | 598 | 1,247 | 1.69 |
| CB Tanami filler | 1.27 | 598 | 757 | 2.11 | 598 | 1,262 | 1.69 |
| CB Telfer | 1.22 | 598 | 729 | 1.89 | 598 | 1,130 | 1.55 |
| CB Telfer filler | 1.21 | 598 | 721 | 1.92 | 598 | 1,151 | 1.56 |
| Mean | 1.29 | | | 2.11 | | | 1.70 |
| *LSD (P=0.05)* | *0.12* | | | *0.22* | | | |
| **Clearfield** | **Yield (t/ha)** | **$/t** | **Gross Income ($/ha)** | **Yield (t/ha)** | **$/t** | **Gross Income ($/ha)** | **Average (t/ha)** |
| Hyola 571 CL | 1.53 | 598 | 917 | 2.45 | 598 | 1,463 | 1.99 |
| Pioneer 44Y84 | 1.49 | 598 | 891 | 2.56 | 598 | 1,530 | 2.02 |
| Pioneer 45Y82 | 1.49 | 598 | 888 | 2.55 | 598 | 1,525 | 2.02 |
| Pioneer 44C79 | 1.28 | 598 | 765 | 1.90 | 598 | 1,136 | 1.59 |
| Pioneer 43C80 | 1.20 | 598 | 718 | 2.07 | 598 | 1,239 | 1.64 |
| Pioneer 43C80 Filler | 1.13 | 598 | 675 | 2.00 | 598 | 1,197 | 1.57 |
| Oasis CL (Juncea) | 0.88 | 598 | 526 | 1.75 | 598 | 1,048 | 1.32 |
| Sahara CL (Juncea) | 0.85 | 598 | 511 | 1.52 | 598 | 911 | 1.19 |
| Oasis CL Filler | 0.79 | 598 | 473 | 1.78 | 598 | 1,066 | 1.29 |
| Mean | 1.18 | | | 2.07 | | | 1.62 |
| *LSD (P=0.05)* | *0.24* | | | *0.12* | | | |
| **Conventional** | **Yield (t/ha)** | **$/t** | **Gross Income ($/ha)** | **Yield (t/ha)** | **$/t** | **Gross Income ($/ha)** | **Average (t/ha)** |
| Hyola 50 | 1.27 | 598 | 759 | 2.42 | 598 | 1,447 | 1.84 |
| AV Garnet | 1.22 | 598 | 731 | 2.44 | 598 | 1,461 | 1.83 |
| Hyola 433 | 1.21 | 598 | 721 | 2.47 | 598 | 1,474 | 1.84 |
| Hyola 433 Filler | 1.14 | 598 | 682 | 2.49 | 598 | 1,490 | 1.82 |
| Hyola 433 Filler | 1.12 | 598 | 672 | | | | 1.12 |
| Tarcoma | 1.08 | 598 | 643 | 2.27 | 598 | 1,359 | 1.67 |
| SARDI 515M | | | | 2.00 | 598 | 1,197 | 2.00 |
| Mean | 1.17 | | | 2.35 | | | 1.73 |
| *LSD (P=0.05)* | *0.16* | | | *0.23* | | | |

**Gross Income is grain yield x price (assuming 42% oil based) delivered to Viterra Pt Lincoln using daily cash price on 5/1/2011*

*Table 3 Break crop yields and gross income at Penong, 2010*

| Variety | Type | Yield (t/ha) | Price ($) | Gross Income ($/ha) |
|---|---|---|---|---|
| Kaspa | Pea | 0.31 | 242 | $76 |
| Kaspa | Pea | 0.48 | 242 | $116 |
| AV - Garnet | Conventional | 0.65 | 598 | $392 |
| Hyola 50 | Conventional | 0.53 | 598 | $318 |
| Tarcoola | Conventional | 0.45 | 598 | $268 |
| 44Y84 | Clearfield | 0.61 | 598 | $362 |
| 43C80 | Clearfield | 0.50 | 598 | $297 |
| Oasis | Clearfield | 0.27 | 598 | $159 |
| Hurricane | TT | 0.55 | 598 | $327 |
| Tawriffic | TT | 0.53 | 598 | $315 |
| Cobbler | TT | 0.50 | 598 | $301 |
| Tanami | TT | 0.46 | 598 | $273 |
| Telfer | TT | 0.42 | 598 | $250 |
| Sahara | Juncea | 0.38 | 598 | $227 |
| Oasis | Juncea | 0.34 | 598 | $206 |

**Gross Income is grain yield x price (assuming 42% base oil for Canola) delivered to Viterra Pt Lincoln using daily cash price on 5/1/2011*