

# NSW research results

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# Evaluation of Indian Mustard varieties against Canola from a late planting time at Tamworth in 2012

Matthew Gardner and Rod Bambach NSW DPI, Tamworth

## Key findings

There was no yield advantage observed for the Indian mustard varieties trialled in this experiment from a late planting time over canola, which may be a consequence of the full water profile at the start of the season.

The top six performing mustard varieties did perform similar to the canola varieties AV Garnet<sup>®</sup> and Pioneer<sup>®</sup> 43Y85.

Indian mustards started flowering approximately 10 days earlier than the canola varieties, resulting in mustards flowering for 41 days compared to 31 days for the canola on average.

The use of Indian mustards will be solely dependent on marketing and processing opportunities.

## Introduction

Well-adapted mustard varieties may have a role in the drier and warmer parts of the region with their superior drought resistance characteristics. Previously it has been reported that yields were lower and more stable across sowing dates and locations in Indian mustard compared to canola (Holland *et al.* 2001). The main reason for this increased yield stability was the low harvest index of the Indian mustard, which never exceeded 0.22, while in both cultivars of canola it varied between 0.14 and 0.38 (Holland *et al.* 2001). Results from the northern region (Holland *et al.* 2001) in conjunction with others (Wright *et al.* 1995) have shown that under low yielding situations Indian mustard varieties can potentially yield more than canola. However, when the conditions are more favourable the yield potential of Indian mustards is generally less than that of canola.

Despite the potential fit for Indian mustard production in the northern environment, the major limitation to adoption revolves around market. Indian mustard is a specialty commodity with a limited number of processors and markets, making it difficult to receive reliable returns.

In 2012 a small trial was sown to evaluate the performance of current canola varieties against previously trialled Indian mustard material.

## Site details

### Tamworth Agricultural Institute

Sowing date:	<b>12th June 2012</b>
Fertiliser:	<b>75 kg N/ha as Urea 200 kg/ha Superphosphate</b>
Starting N:	<b>121 kg N/ha (0–120 cm)</b>
Starting Water:	<b>285 mm (PAWC 0–150 cm)</b>

## Treatments

The three canola varieties included in the trial were Hyola<sup>®</sup> 50, AV Garnet<sup>®</sup> and Pioneer<sup>®</sup> 43Y85, which are all mid to quick maturing varieties. There were two canola quality Juncea lines included, Xceed<sup>™</sup> Oasis CL<sup>®</sup> and Sahara<sup>®</sup> that are both Clearfield<sup>®</sup> varieties and commercially available. The commercially available yellow mustard varieties were Micky, Kaye and Dune. Dune was the original variety released, which has been superseded, however was included for comparison of variety advancement. There were also a number of experimental yellow mustard lines sown including Selection 1, Selection 2 and Selection 3 (all made from Micky), 352, 99Y and 37-2. There were also two biodiesel types included, 887 and 397, which are both yellow mustards that are not suitable for human consumption. Finally there were two Brown mustards that were commercially available in the past, GG005 and BM11. All varieties were planted on the 13th June, which is beyond the optimum planting window for canola but a more traditional planting time for Indian mustards. Flowering times were monitored throughout the season. Unfortunately, at the time of writing oil contents were not available. Typically oil contents of Indian mustards are lower than canola.

## Results

There was little variation between entries in the date which they reached the end of flowering (determined as 5% of flowers remaining), with all varieties ending between the 3rd and 8th October. However, the mustards started flowering approximately 10 days earlier than the canola varieties, resulting in mustards flowering for 41 days compared to 31 days for the canola on average (data not shown). The canola TOS trial in the same paddock indicated that varieties which ended flowering in early October in 2012 had reduce yields of around 20% compared to varieties which ended flowering in mid to late September. Although yield potential may be limited by hot dry conditions during early pod fill in canola, this should be advantageous to the mustards.

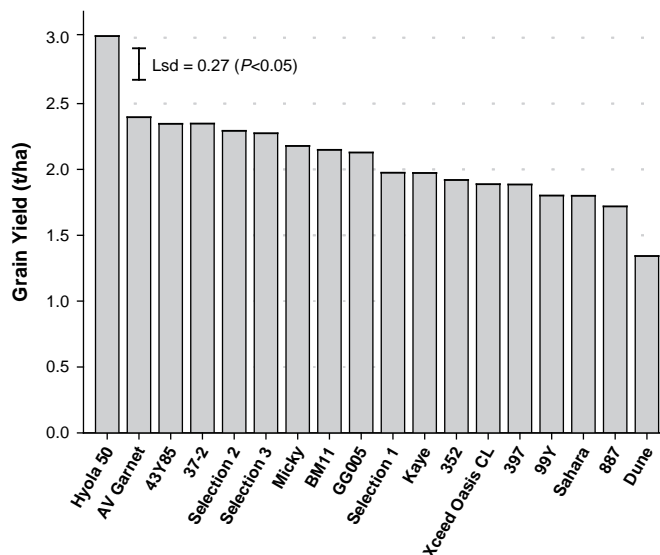
Hyola® 50 had significantly higher grain yield than all other varieties, which supports the canola TOS trials where it averaged over 3 t/ha across a 7 week spread in planting times (Figure 1). AV Garnet<sup>®</sup> and Pioneer® 43Y85 yielded 2.40 and 2.34 t/ha, respectively, which was similar to all mustard entries which produced yields greater than 2 t/ha (Figure 1). Of the mustards 37-2 and Selections 2 and Selection 3 produced yields similar to Micky, BM11 and GG005, but had improved yield over all other mustard entries. Although Selection 1 yielded lower than Selections 2 and 3 it was still similar to Micky from which it was originally selected. The bio-diesel type 887 was similar to other mustard entries which yielded less than 2 t/ha, with the exception of Dune that had the lowest grain yield (1.34 t/ha) of all varieties.

## Summary

The end of flowering for all mustard and canola varieties was compressed into a five day period at the start of October. Varieties in the canola TOS study in the same paddock that ended flowering during this same period appeared to have up to a 20% reduction in yield potential compared to an earlier finish in flowering. Despite this Hyola® 50 still yielded 3 t/ha, which was 0.6t/ha more than any other canola or mustard entry. The top six performing mustard entries did however perform similar to the canola varieties AV Garnet<sup>®</sup> and Pioneer® 43Y85. All mustard varieties had a yield advantage over Dune (22–43%), while Micky yielded 13% more than Xceed™ Oasis CL<sup>®</sup> and 17% more than Sahara<sup>®</sup>. There was no yield advantage observed for the Indian mustard varieties trialled in this experiment from a late planting time. This may reflect the full profile of moisture at the start of the season, which limited moisture stress during flowering and grain-fill. Yield advantages of mustard over canola may be observed in a more western environment where the seasonal conditions are typically hotter and drier than the Tamworth environment during these critical late stages of development.

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**Figure 1:** Grain yield of three canola and fifteen Indian mustard varieties sown on the 14th June at Tamworth in 2012.