

# Effect of nitrogen fertiliser rate on establishment and grain yield of six canola varieties - Merriwagga 2014

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## Introduction

Growers now have a range of canola plant types available, with varieties that differ in their pollination method (hybrid or open-pollinated) and their herbicide tolerance (conventional, triazine tolerant, imidazoline tolerant and Roundup Ready). This experiment is designed to examine how crop establishment and grain yield are affected by the interaction between variety choice and nitrogen (N) rate.

## Site details

Soil type: Red sandy loam  
 Sowing date: 24<sup>th</sup> April  
 Available N at sowing: 36 kg/ha (0-60 cm)  
 Previous crop: Bolac wheat  
 Rainfall: 160 mm April–October + 125 mm December–March

## Treatments

6 canola varieties	ATR-Gem, Hyola 50, Hyola 559TT, 43C80 CL, 45Y88 CL, Victory 3002
5 nitrogen rates	0, 20, 40, 80 and 160 kg/ha N pre-drilled.

## Results

**This trial was affected by a confirmed case of Beets Western Yellows Virus (BWYV), therefore results should be interpreted with caution. Decisions should be made based on trials across several sites and seasons.**

There was a significant interaction between variety choice and N rate on crop establishment scores (Figure 1). There was no significant effect of N rate on the establishment of any variety at rates up to 40 kg/ha N. However, at the 80 and 160 kg/ha rates some varieties had a significant reduction in establishment. This was especially evident in both TT varieties, ATR-Gem and Hyola 559TT.

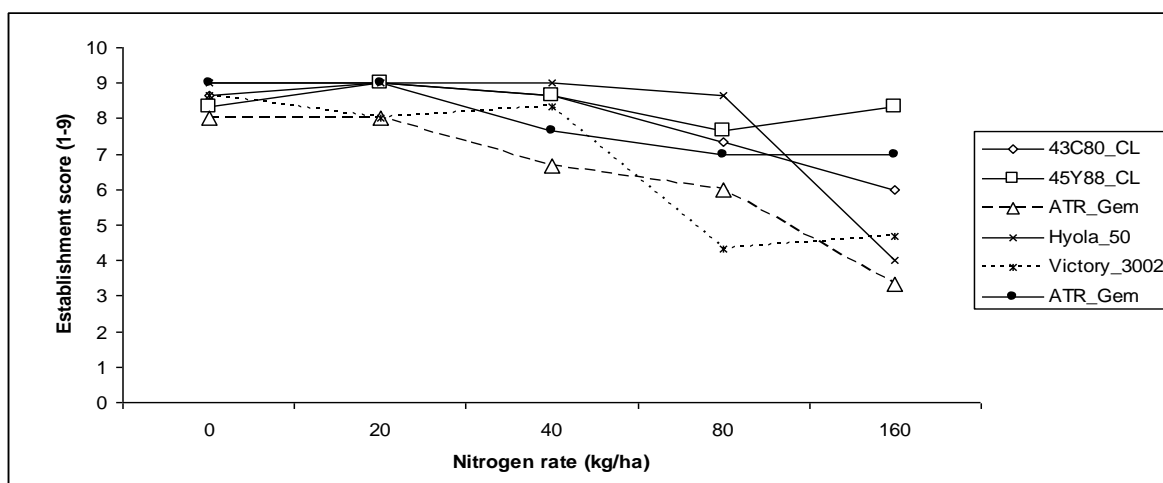


Figure 1: Effect of nitrogen rate (applied pre-drilled) on establishment scores of six canola varieties at Merriwagga in 2014 (l.s.d. = 2).

There was also a significant interaction between nitrogen rate and variety choice on grain yield. The highest yielding treatments were where 40 and 80 kg/ha N was applied to 45Y88 CL. Although the TT varieties had significantly reduced establishment as a result of the higher N rates, their grain yield was not affected to the same degree.

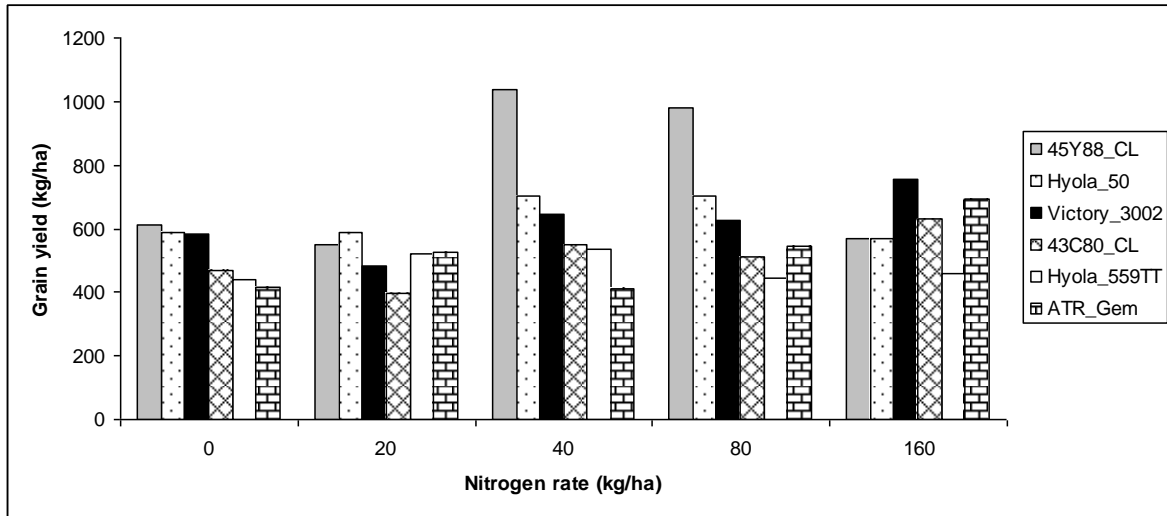


Figure 2: Effect of nitrogen rate (applied pre-drilled) on grain yield of six canola varieties at Merriwagga in 2014 (l.s.d. = 220 kg/ha).

## Summary

High nitrogen rates drilled pre-sowing affected individual varieties differently, with some varieties (especially TT varieties) having a significant reduction in establishment. This effect has been observed in other trials, with the more vigorous varieties having a greater capacity to recover from the negative effects of N on germination. This effect is likely to be related to seed size as well, as larger seeded varieties generally have more energy to recover from establishment setbacks. The reduced establishment as a result of the high N rates was not expected given that the N was pre-drilled. This highlights the need to ensure that canola seed is separated from N in the seedbed, both vertically and laterally.

In terms of grain yield, applying nitrogen to this trial would have resulted in reduced gross margins because the end of the season was very dry and consequently yields were low. The crop was also affected by Beets Western Yellow Virus which may have compromised the early uptake of N.

## Acknowledgements

This trial was managed by Ag Grow Agronomy and Research as part of the 'Optimised Canola Productivity Project', led by NSW DPI and supported by GRDC. The contributions of Jeffrey Muirhead, "Palomar" in conducting this trial is gratefully acknowledged.

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Published by the Department of Primary Industries.