

Southern Irrigated Canola Varieties Achieving Target Yields - Hillston 2015

Barry Haskins and Rachael Whitworth – Ag Grow Agronomy and Research
Tony Napier - NSW Department of Primary Industries, Yanco

Introduction

In its second year, this trial at Hillston is a satellite site of the ‘Southern Irrigated Cereal and Canola Varieties Achieving Target Yields’ project. It aims to test the regional suitability of current commercially available canola cultivars as well as to determine nitrogen application and rate recommendations for specific canola varieties.

A hail storm which occurred at this trial site in mid-November resulted in the trial not being harvested.

Site Details

Location:	Hillston, NSW
Soil type:	Grey clay loam
Sowing date:	22 nd April, 2015
Available N at sowing:	115 kg/ha (0-60 cm)
0-10cm nutrients:	38 mg/kg Colwell P
Previous crop:	Maize
Rainfall:	91mm January–March + 252mm April–October
In-crop irrigations:	20 th September (1.8 ML) and 15 th October (1.2 ML/ha)
Starter fertiliser:	100 kg/ha MAP
Harvest Date:	NOT HARVESTED

Treatments

12 canola varieties

1. Pioneer®45Y88CL
2. Hyola®577CL
3. Hyola®575CL
4. ATR-Bonito
5. Hyola®559TT
6. ATR-Gem
7. Hyola®600RR
8. Nuseed® GT-50RR
9. Victory®V3002
10. AV-Garnet
11. Hyola®50
12. Nuseed® Diamond

4 nitrogen rates/timings

1. 50 kg N/ha at sowing
2. 100 kg N/ha at sowing
3. 150 kg N/ha at sowing
4. 50 kg N/ha at sowing + 50 kg N/ha topdressed

Results

There was a hail storm just prior to harvest resulting in no harvest or grain quality data being available for analysis. Measurements that were taken on this trial, and included in this report, are establishment counts (plants/m²), Normalised Digital Vegetation Index (NDVI) and lodging scores.

Establishment scores and plant counts were taken on 3rd June. Establishment was scored from 0 to 9, with 0 being very poorly established and uneven and 9 being very evenly established. Although variable, results showed there was a significant effect with variety and nitrogen treatment. The variety Diamond had the highest establishment score of 4.0 and Gem the lowest establishment score of 1.6. Splitting nitrogen gave the highest establishment score.

There were significant effects for variety, N treatment and variety x N treatment for plant counts. Plant density between the varieties varied, with plant counts ranging from 18 plants/m² for ATR-Gem and up to 39 plants/m² for Hyola 50. Where nitrogen was split, the plant population was significantly higher, with 38 plants/m², whilst the higher rates of nitrogen upfront had the lowest plant populations of 26-28 plants/m². The interaction of variety and nitrogen generally saw varieties establish better where lower rates of nitrogen were applied at sowing (figure 1).

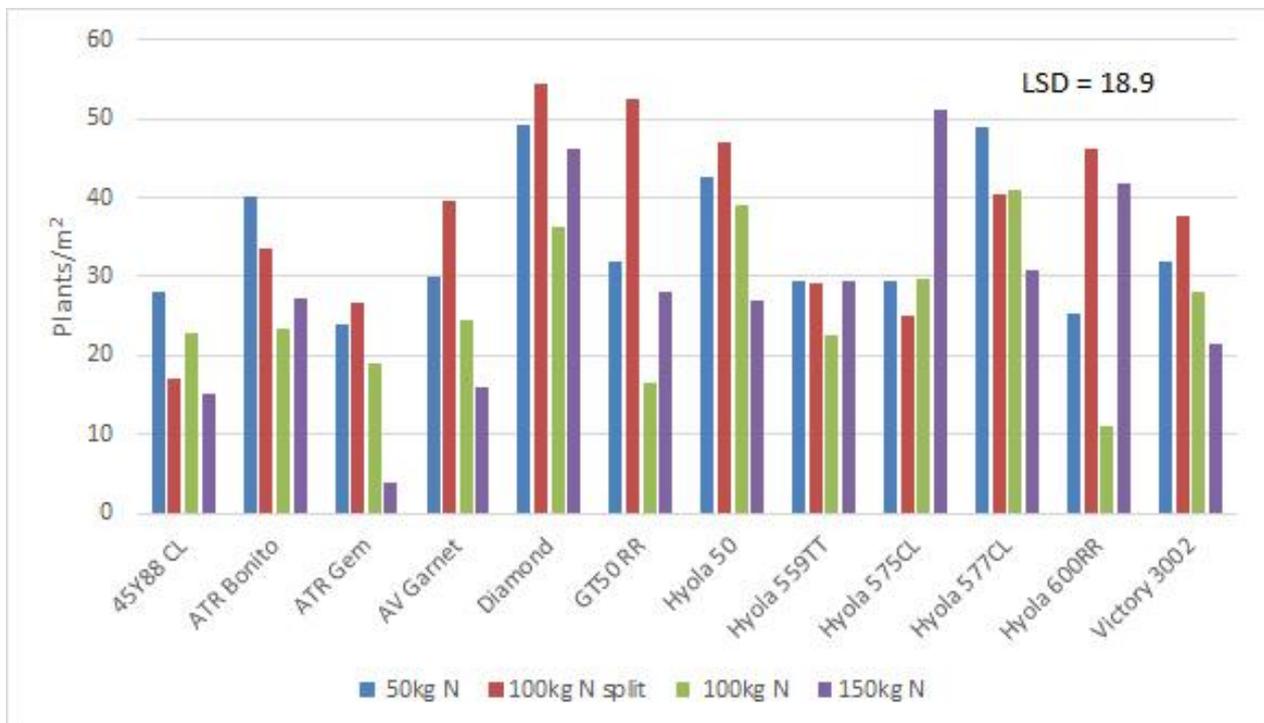


Figure 1: Average plant population (plants/m²) for each variety and nitrogen treatment.

Crop vigour was measured at full ground cover to flowering using a hand held NDVI. Results showed there were significant effects for variety, N treatment and variety x N treatment for crop vigour. Values ranged from 0.52 for ATR-Gem and up to 0.79 for Hyola 577CL. The 150 kgN upfront nitrogen treatment had the lowest NDVI value while both the nitrogen treatments which had only 50 kgN applied at sowing had the highest NDVI values. Most varieties generally had higher NDVI values where lower rates of nitrogen were applied at sowing as opposed to the higher rates (figure 2).

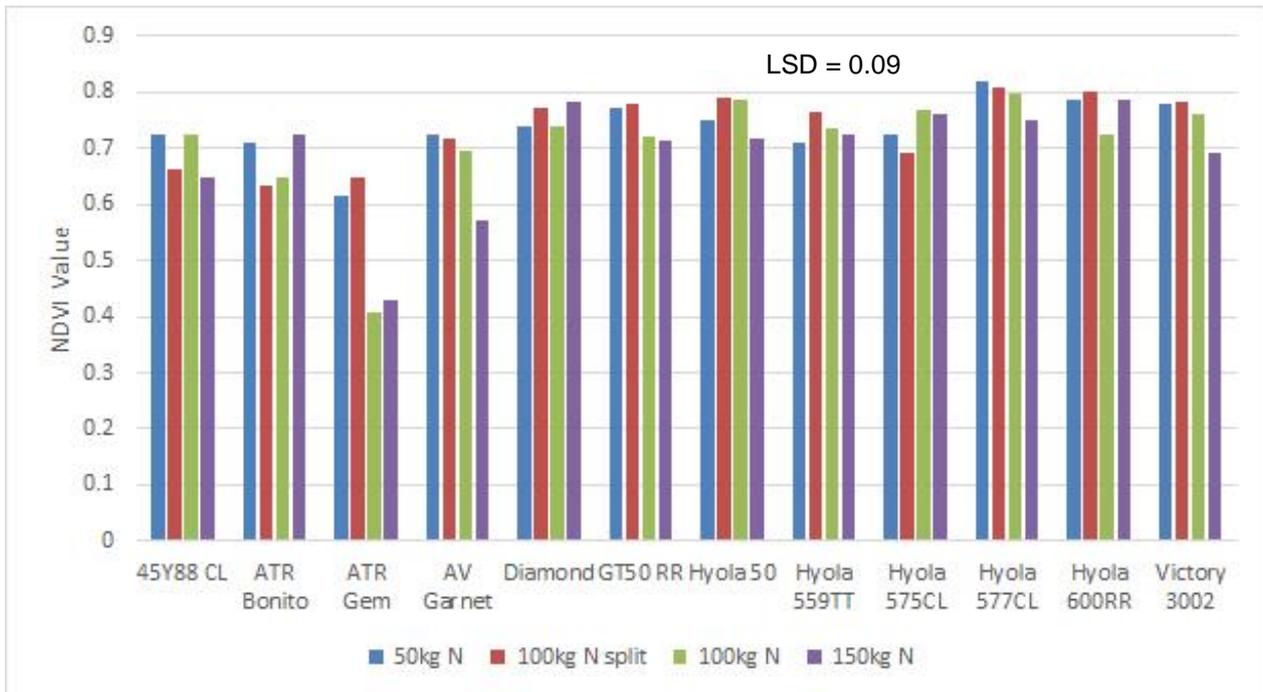


Figure 2: Average NDVI values for each variety and nitrogen treatment.

Three lodging assessments were taken from mid-September. Lodging was scored on a scale of 0 to 9, with 0 indicating no lodging and 9 flat on the ground. The first lodging assessment was taken before the first irrigation, with no lodging recorded. The second assessment was taken before the second irrigation. At this timing there was a significant variety effect, with some varieties starting to lodge. Although all lodging scores were less than 2, Victory 3002 had the highest lodging score and Hyola 577CL the lowest score with no lodging evident. The third lodging assessment also had a significant variety effect, with AV Garnet having the greatest degree of lodging and Hyola 577CL the lowest degree of lodging. Lodging assessments 2 and 3 are shown in figure 3. Most of the varieties had minimal lodging with scores less than 2.

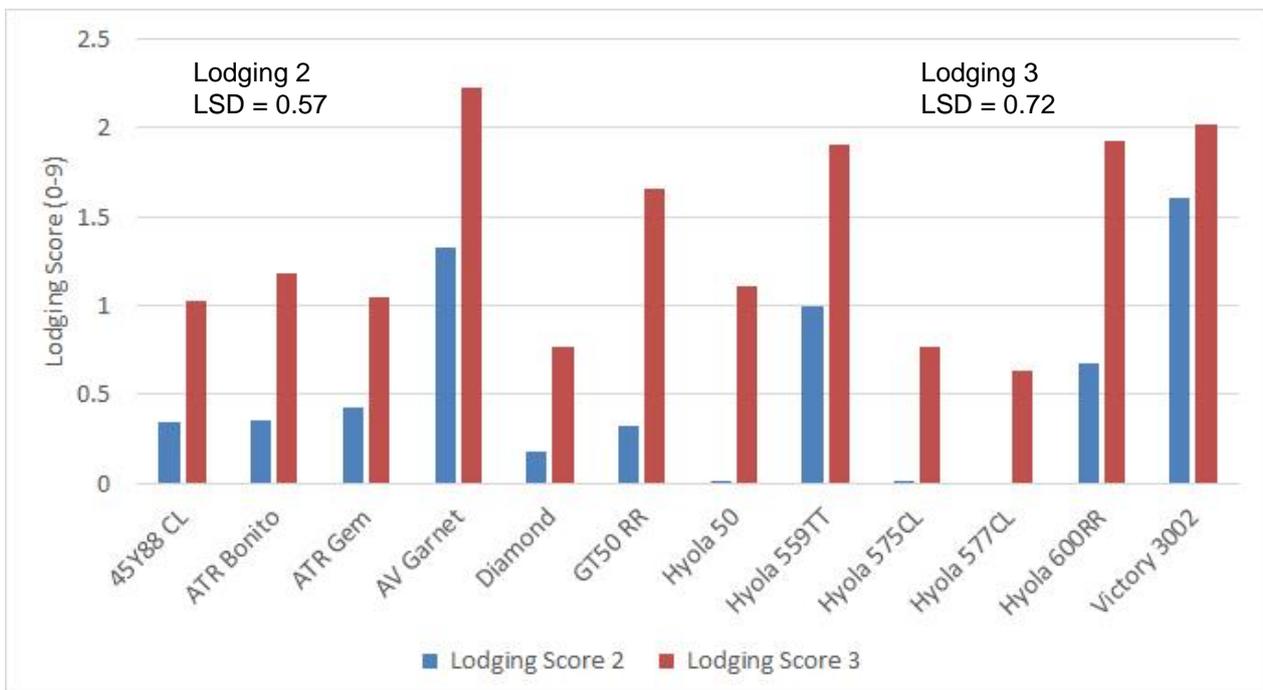


Figure 3: Average lodging scores taken 7th October and 29th October for each variety

Summary

Whilst this trial was not harvested and hence there was no yield and quality data, it still provided useful data on nitrogen management in canola.

Applying too high a rate of nitrogen at sowing had an impact on establishment. This was seen with the establishment scores and plant counts taken. As the rate of nitrogen increased at sowing, plant establishment reduced. NDVI values were affected by the plant counts as well as the rate of nitrogen applied at sowing. As the rate of nitrogen increased at sowing, NDVI values decreased. These interactions are similar to observations made last season.

Lodging scores were minimal in this trial, although some varieties tended to lodge early. This allows varieties to be assessed for their suitability under our high input irrigated systems.

Acknowledgements

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