

PROVISIONAL HYC HARVEST RESULTS:

Nitrogen Nutrition for Hyper-Yielding Canola Trial

2020 NSW Hyper Yielding Crops Research Centre

Hyper Yielding Crops (FAR2004-002SAX)

A Grains Research & Development Corporation (GRDC) national investment

Sown: 17 April, 2020

Harvested: 28 November, 2020

Rotation position: Canola 2018, Wheat 2019.

Soil type: Clay loam

Key Messages:

- The highest nitrogen (N) application rate of 223 kg/ha resulted in the highest grain yield of 5.43 t/ha. This was 1.28 t/ha higher yielding than where 43 kg/ha N was applied (MAP and sulfate of ammonia only).
- There were small grain yield differences from N timing (at an applied rate of 133 kg/ha N only) with the optimum timing being where 90 kg/ha of N was applied at the bud visible stage (18 July + 43 kg/ha N at sowing) and start of flowering (13 August + 43 kg/ha N at sowing) which were 0.29 and 0.20 t/ha higher yielding (respectively) than where all N (133 kg/ha) was applied at sowing.
- There was no advantage of splitting nitrogen into four timings (43 kg/ha at sowing + 3 applications of 30 kg/ha in-crop) or applying the last portion of the split treatment as foliar liquid urea (two applications of 15 kg/ha N during flowering) compared to applying all the nitrogen treatment amount at either bud visible or start of flowering stage (133 kg/ha N rate only).

Trial details

Table 1. Details of the treatments.

Plant pop.:	Target 45 plants/m ²									
Available N:	140 kg/ha (0-60 cm)									
Organic Carbon:	1.7%									
	Timing	Nil	Low	Sowing	Bud visible	Start Flower	Split	Split (late foliar)	Split + manure	Very high
Basal Fertiliser:	17 April	130 kg/ha MAP (13 kg/ha N)								
	17 April	150 kg/ha SOA (30 kg/ha N)								
Nitrogen (kg/ha):										
	Sowing			90					3 t/ha manure	90
	6-leaf		30				30	30	30	30
	Bud visible				90		30	30	30	30

Issued: 21st January 2021

The GRDC Hyper Yielding Crops Project is led by FAR Australia in collaboration with:

Start flower					90	30	15*	30	30	
Mid-flower							15*			
Total N Applied:		43	133	133	133	133	133	133	133	223
		kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha	kg/ha ⁺	kg/ha

All other inputs including fungicide were standard across the trial.

*Applied as liquid urea with flat fan nozzles *Not including N in manure. 3 t/ha chicken manure provided 99 kg/ha total nitrogen including 5.4 kg/ha mineral nitrogen.

Results

Table 1. Influence of nitrogen management strategy on grain yield (t/ha).

N treatment timing	N treatment rate	Total N applied	Yield t/ha
Nil	0	43	4.15 g
Low	30	73	4.46 f
Sowing	90	133	4.84 e
Bud visible	90	133	5.13 b
Start flowering	90	133	5.07 bc
Split	90	133	5.04 cd
Split (late foliar)	90	133	4.97 d
Split + Manure	90	133	5.00 cd
Very High	180	223	5.43 a
Mean			4.90
LSD p=0.05			0.08
P Value			<0.001

Please read the notes accompanying these express results for interpretation

Yield figures followed by the same letter are not considered to be statistically different (p=0.05).

*Plot yields: The trial was sown on 6 * 25 cm row spacing, 200 cm centre to centre. Yields are based on a plot width of 192.5 cm which assumes 10% lower yield in the inter-plot space (75 cm row space). Provisional results have been analysed through Genstat software with further analysis once final results are released.*

Meteorological Data – New South Wales Crop Technology Centre

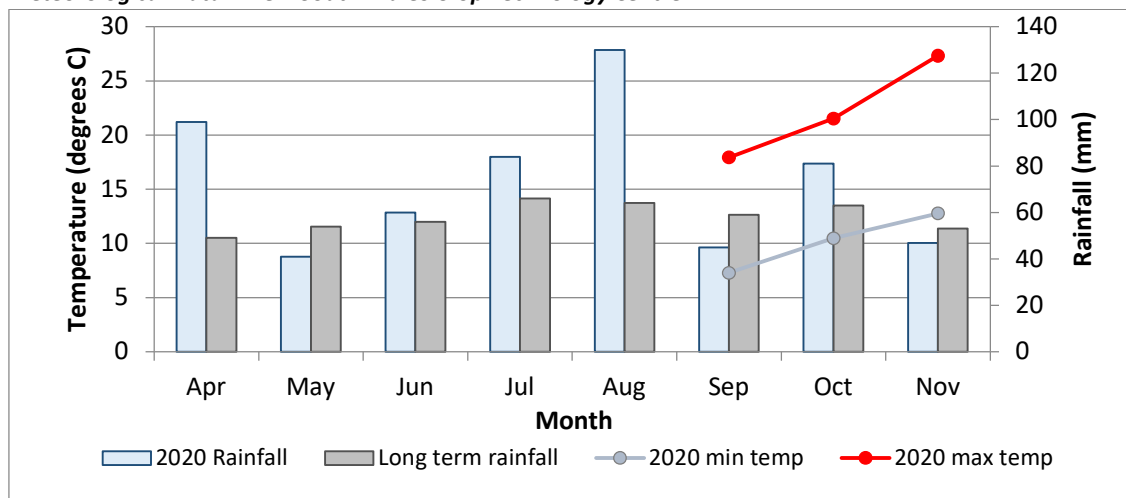


Figure 1. 2020 rainfall and long-term rainfall (1955-2020), min and max temperatures recorded at research site. Partial temperature data set due to timing of weather station installation.

FAR Australia and Brill Ag gratefully acknowledges the investment support of the GRDC in order to generate this research, project partners and the input of the Baldry Family.

These provisional results are offered by FAR Australia and Brill Ag solely to provide information. While all due care has been taken in compiling the information, FAR Australia and Brill Ag take no responsibility for any person relying on the information and disclaims all liability for any errors or omissions in the publication.

Issued: 21st January 2021

The GRDC Hyper Yielding Crops Project is led by FAR Australia in collaboration with: