Trial 2. Spring Canola YieldMax Trial (FAR NSW C22-02)

Objectives: To determine the response of increased crop nutrition across a range of elite commercial canola varieties.

Key points:

- Grain yield in 2022 was lower than what was achieved in 2021. The highest yield was from High input management of 45Y93 CL and 45Y95 CL at 4.05 t/ha (Table 2), but this compares to 6.4 t/ha with high input 45Y95 CL in 2021.
- A combination of very low light (15% lower than average in the crop critical period) and slightly elevated temperatures (5% higher than average, mostly due to elevated minimum temperatures) meant that environmental yield potential was lower than 2021 by 20%, but periods of waterlogging likely impacted yield as well.
- Maturity biomass and harvest index were both lower than 2021. The high yielding plots of 45Y95 CL in 2021 had maturity biomass of ~18 t/ha and harvest index ~0.36, compared with 2022 where 45Y95 CL maturity biomass was 12.8 t/ha and harvest index 0.31 (Figure 1).
- As expected, yield components were also much lower in 2022 than 2021. On average pods/m² and seeds/pod were down 25 and 20% respectively. Seed was larger in 2022 than 2021 by 11% (Table 4).
- There was a 0.23 t/ha benefit of the high input management strategy which included high rates of P, N and 3 t/ha (dry basis) chicken manure (Table 2).
- Triazine tolerant varieties were lower yielding than non-TT varieties.
- 45Y28 RR, Condor TF and Hyola Blazer TT all had relatively high oil concentration (Table 3).

Treatments: 6 canola varieties with two nutrition input strategies, high and low input. Sown as a split-plot design, blocked by herbicide tolerance.

Table 1. Start of flowering date of six varieties in YieldMax trial at Wallendbeen 2022.

Variety	Start of flowering date
45Y28 RR	1 September
Condor TF	23 August
45Y93 CL	30 August
45Y95 CL	29 August
Hyola Blazer TT	24 August
HyTTec Trifecta	30 August

Table 2. Influence of nutrient input strategy and variety on grain yield (t/ha).

Cultivar	Low input	High input	Mean
	Grain yield (t/ha)		
45Y28 RR	3.77	4.01	*3.89*
Condor TF	3.46	3.57	*3.52*
45Y93 CL	3.95	4.05	*3.99*
45Y95 CL	3.43	4.05	*3.74*
Hyola Blazer TT	2.90	3.20	*3.05*
HyTTec Trifecta	3.26	3.28	*3.27*
Mean	*3.46*	*3.69*	
LSD Input	0.18	*p* value	0.016
LSD Variety	0.32	*p* value	<0.001
LSD Variety * Input	n.s.	*p* value	n.s.

Table 3. Influence of nutrient input strategy and variety on oil concentration (%).

Cultivar	Low input	High input	Mean
		Oil concentration (%)	
45Y28 RR	48.3	47.4	*47.8*
Condor TF	47.8	47.3	*47.6*
45Y93 CL	45.9	45.2	*45.6*
45Y95 CL	46.2	45.2	*45.7*
Hyola Blazer TT	46.0	45.6	*47.8*
HyTTec Trifecta	45.9	45.3	*45.6*
Mean	3.46	3.69	
LSD Input	n.s.	*p* value	n.s.
LSD Variety	0.48	*p* value	<0.001
LSD Variety x Input	n.s.	*p* value	n.s.

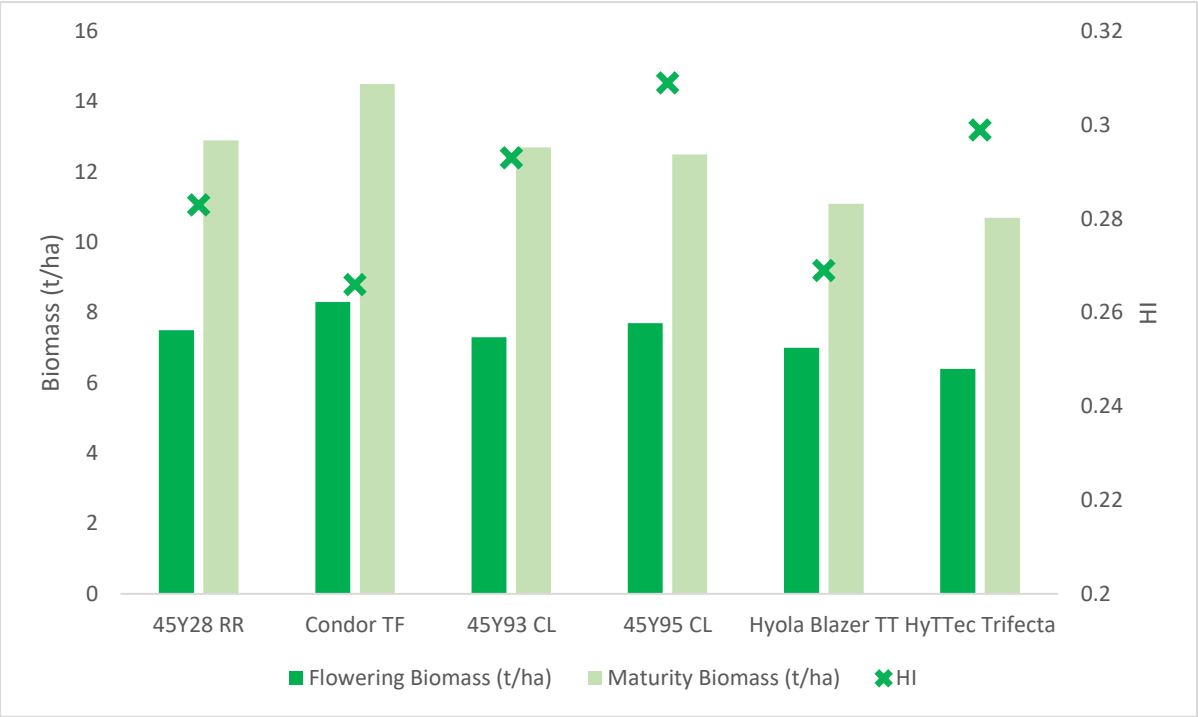

Figure 1. Influence of variety choice on flowering biomass (t/ha), maturity biomass (t/ha) and harvest index (HI).

Table 4: Canola yield components in 2021 and 2022 at Wallendbeen HYC site.

	2021				2022			
Variety	**TGW (g)**	**Seeds/pod**	**Pods/m2**	**Seeds/m2**	**TGW (g)**	**Seeds/pod**	**Pods/m2**	**Seeds/m2**
45Y28 RR	3.7	18	7628	140284	4.4	17	5635	93115
45Y93 CL	3.8	18	8692	154713	4.5	16	5832	91708
45Y95 CL	3.9	21	8422	174226	4.2	16	5940	96342
ATR Wahoo	3.6	21	5240	108277				
HyTTec Trifecta	4.1	17	8003	138627	4.5	14	5518	75565
Condor TF	4	15	8263	123960	4.5	12	6654	80631
Hyola Blazer TT					4.6	14	5181	73066

Table 5. Trial management details.

Sowing date:		**19 April**			
Target plant density:		45 plants/m^2			
Nutrition input treatments					
High input: 45 kg P, 225 kg N, 3 t/ha chicken manure		*Single Super*	**Chicken Manure*	*MAP*	*Urea*
	Pre-sowing	170 kg/ha	3 t/ha	-	-
	Sowing	-	-	130 kg/ha	-
	6-leaf	-	-	-	245 kg/ha
	Bud visible	-	-	-	245 kg/ha
Low input: 15 kg P, 150 kg N		*Single Super*	**Chicken Manure*	*MAP*	*Urea*
	Pre-sowing	170 kg/ha	-	-	-
	Sowing	-	-	-	-
	6-leaf	-	-	-	163 kg/ha
	Bud visible	-	-	-	163 kg/ha
Fungicide:	Seed	Saltro Duo			
	6-leaf	Prosaro 0.45 L/ha			
	20% Bloom	Aviator Xpro 0.80L/ha			
	50% Bloom	Prosaro 0.45 L/ha			

*See table X for chicken manure analysis

Table 6. Analysis of chicken manure used at Wallendbeen 2022 (rates and nutrients reported on a dry basis).

Nutrient	**Concentration in chicken manure**
Nitrogen	3.5%
Phosphorus	1.8%
Potassium	1.8%
Sulfur	0.5%
Calcium	3.2%
Magnesium	0.09%
Silicon	0.021%
Carbon	34%
Iron	0.2%
Manganese	0.05%
Copper	0.009%
Zinc	0.04%
Boron	0.003%
Molybdenum	0.0008%
Cobalt	0.0004%