Trial 1. HYC Spring canola YieldMax Trial (FAR WAK C23-02)

Objectives: To assess the impact of increased crop inputs, specifically nitrogen, phosphorus and manure, across various spring canola variety types.

Key points:

- *The high-input management strategy (225 kg/ha N + 30 kg/ha P + 5 t/ha chicken manure) resulted in yields 0.69 t/ha higher than the low-input approach (150 kg/ha N + 15 kg P/ha), reflecting a substantial 26% increase in yield.*
- *Yield differences within herbicide tolerance groups was greater than differences between herbicide tolerance groups.*
- *For oil concentration, the Glyphosate Tolerant (GT) varieties had higher oil than Clearfield (CLF) and Triazine Tolerant (TT) varieties.*
- *Hybrid Clearfield canola 45Y95 CL achieved the highest yield at 3.35 t/ha. This was 19% higher than the lowest yielding variety Hyola Blazer TT.*
- *Dry matter assessments were taken at 100°C.days and 500°C.days after the start of flowering and again at crop maturity. 45Y95 CL and 45Y28 RR had more biomass than HyTTec Trifecta by the second biomass assessment. This higher biomass was maintained through to maturity but resulted in lower harvest index (HI).*
- *Growth through the crop critical period (between 100 and 500°C.days after the start of flowering) was > 4 t/ha for 45Y95 CL and 45Y28 RR, but < 3 t/ha for HyTTec Trifecta. The difference in growth during the crop critical period likely drove the higher yield of these two varieties. Similarly, there was > 4 t/ha growth through the critical period with the High input nutrition strategy compared with < 3 t/ha for the low input strategy.*
- *Applying the extra nutrition and selecting the best hybrids were additive factors in achieving the highest yields in this trial.*
- *No significant interaction between variety and management strategy was observed for yield and biomass.*

Treatments: Six spring varieties (two glyphosate-tolerant, two Clearfield and two Triazine tolerant) with low and high input management levels.

Table 1. Yield, oil concentration and protein concentration in spring canola YieldMax trial at Kojonup in 2023.

Treatment	Yield (t/ha)	Oil (%)	Protein (%)
Herbicide groups			
Clearfield Tolerant	3.12 -	45.6 b	19.9 b
Glyphosate Tolerant	3.01 -	46.9 a	19.8 b
Triazine Tolerant	2.82 -	45.8 b	21.8 a
LSD P=0.05	ns	0.73	0.89
P Value	0.25	0.05	0.05
Management			
150 kg N/ha +15 kg P/ha	3.33 a	45.5 a	20.2 a
225 kg N/ha +30 kg P/ha + 5 t/ha Chicken manure	2.64 b	46.8 b	20.8 b
LSD P=0.05	0.48	0.76	0.62
P Value	<0.05	<0.05	<0.001
Variety			
45Y95 CL	3.35	44.6	20.0
Hyola Solstice CL	2.91	46.6	19.8
45Y28 RR	3.15	47.3	19.7
NS Eagle TF	2.86	46.6	20.0
HyTTec Trifecta	2.83	46.0	20.9
Blazer	2.81	45.6	22.6
LSD 0.05	ns	1.2	1.1
P Value	0.41	0.01	<0.01

Table 2. Biomass (t/ha) at 100°C.days (Biom100) and 500°C days (Biom500) after flowering and maturity and harvest index of 3 varieties with high and low input at Kojonup in 2023.

Factor	Flowering date	Biom100	Biom500	Biomass Maturity	Harvest index
		t/ha	t/ha	t/ha	
Variety					
45Y95 CL	19/8/2023	6.59 -	10.83 a	10.86 a	0.33 b
45Y28 RR	19/8/2023	6.18 -	10.02 a	10.57 a	0.33 b
HyTTec Trifecta	22/8/2023	5.49 -	8.26 b	9.03 b	0.36 a
LSD P=0.05		ns	1.05	1.22	0.008
P Value		0.20	0.01	0.01	<0.01
Management					
High input		6.54 -	10.98 a	10.92 a	0.34 -
Low input		5.63 -	8.43 b	9.38 b	0.34 -
LSD P=0.05		ns	0.86	0.99	ns
P Value		0.08	0.01	0.01	0.45

Table 3. Trial input and management details

Sowing date:		**20 April 2023**	
Varieties:		Glyphosate Tolerant (GT) - Eagle TF & 45Y28 RR Triazine Tolerant (TT) – HyTTec Trifecta and Hyola Blazer TT Clearfield Tolerant (CLF) –45Y95 CL and Hyola Solstice CL	
Target plant density		40 plants/m^2	
	Growth stage	**Low Input (75 kg N/ha+15 kg P/ha + 20 kg S/ha)**	**High Input (225 kg N/ha+30 kg P/ha +30 kg S/ha + 5t/ha manure*)**
Basal Fertiliser:	**Sowing**	70 kg/ha MAP + 72 L/ha UAN (30 kg N/ha, 15 kg P/ha)	140 kg/ha MAP + 50 L/ha UAN (30 kg N/ha, 31 kg P/ha) + 5t/ha manure
Chicken manure		**Nil**	**5 t/ha**
Nitrogen:	6-leaf	39 kg N/ha + 20 kg S/ha (UAN + SOA)	85 kg N/ha + 20 kg S/ha (UAN + SOA)
	Bud visible	37 kg N/ha (UAN)	140 kg N/ha (UAN)
Total N Applied:		**75 kg N/ha**	**225kg N/ha**
Fungicide:	Seed	Saltro Duo	Saltro Duo
	20% Bloom	Aviator Xpro 0.80 L/ha	Aviator Xpro 0.80 L/ha

*****Chicken Manure expressed dry matter basis (3.0% Nitrogen, and 0.9% Phosphorus) = additional 100 kg N/ha and 27kg P/ha to replicate high fertility soils.

Table 4. Active ingredients and chemical loading (g/L) for products used.

Name	**Active 1**		**Active 2**		**Type**
Fungicide					
Aviator Xpro	Prothioconazole	150 g/L	Bixafen	75 g/L	EC
Saltro Duo	Pydiflumetofen	200 g/L	---	---	FS