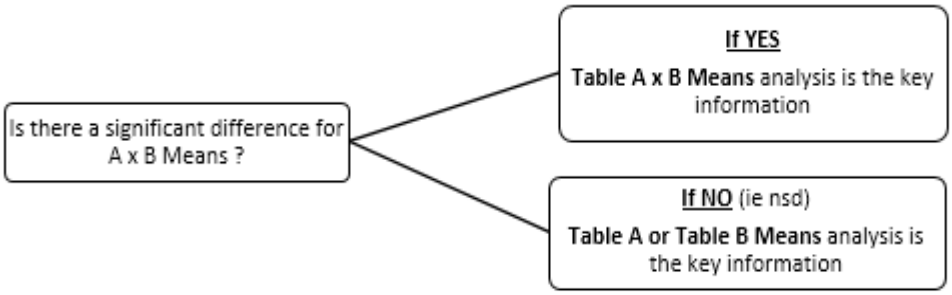
Tolerance & Resistance of Sunflowers to *Pratylenchus thornei*

Trial ID: **LB1537** **Location:** **Macalister** **Trial Year:** **2015**
Investigator: **Linda Bailey**

Planting Date:	**14/09/2015**	**Granulock Z Extra (at planting):**	**40kg/ha**
Row Spacing:	**81cm**	**Total soil N:**	**150kg N/ha (18/02/2015)**
Planting Equipment:	**Small Plot Tyne Planter**	**Colwell P:**	**21mg/kg (0-10cm) 8mg/kg (10-30cm)**
Harvest Date:	**11/02/2016**	**BSES P:**	**24mg/kg (0-10cm) 10mg/kg (10-30cm)**
Low *P thornei* (ex-Caparoi 2013):	**2.4 *Pt*/g soil (12/08/2015)**	**Target Plant Stand:**	**90/m²**
High *P thornei* (ex-Strzelecki 2013):	**29 *Pt*/g soil (12/08/2015)**	**Plot Size (Planted):**	**9 x 2 m (5 rows x 36cm)**
PAW Wheat:	**130mm (18/02/2015)**	**Plot Size (Harvested):**	**6 x 2m**

Trial designed and analysed as a Split Plot

	In Simple Terms
Table of A Means:	Mean of 'Nematode Population' performance with **ALL** 'Variety' treatments
Table of B Means:	Mean of 'Variety' performance with **ALL** 'Nematode Population' treatments
Table of A x B Means:	'Nematode Population' performance with **EACH** 'Variety' treatment



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Crop Name		Sunflower				
Rating Date		30/09/2015	23/11/2015	11/02/2016	23/02/2016	23/02/2016
Rating Type		EMERGENCE	NDVI	YIELD	DUAL EM	PAW
Rating Unit		/m²	RATIO	t/ha		mm
Plant-Evaluation Interval		16 DP1	70 DP1	150 DP1	162 DP1	162 DP1
ARM Action Codes		T1		TY2		
Yield CV %				14.6		
Trt No.	Treatment					
TABLE OF A MEANS (Nematode Population)						
1	Low RLN population	6.8-	0.791-	1.9b	166.9a	67.8a
2	High RLN population	6.7-	0.799-	2.2a	153.9b	43.3b
TABLE OF B MEANS (Variety)						
1	Ausigold 62	7.3a	0.801b	2.3a	159.4-	53.7-
2	Ausigold 4	6.3b	0.787bc	2.3a	158.5-	51.9-
3	NST11007	6.3b	0.776c	1.7b	158.0-	51.0-
4	Hyoleic 41	6.3b	0.823a	2.3a	167.8-	69.5-
5	Hyoleic 42	7.0ab	0.791bc	1.9b	160.9-	56.4-
6	Sunbird 7	7.4a	0.791bc	1.9b	157.9-	50.8-
TABLE OF A x B MEANS (Nematode Population x Variety)						
1 1	Low RLN population Ausigold 62	7.2abc	0.798-	2.1-	167.9-	69.7-
2 1	High RLN population Ausigold 62	7.3ab	0.803-	2.5-	150.9-	37.7-
1 2	Low RLN population Ausigold 4	5.6d	0.787-	2.1-	161.7-	58.1-
2 2	High RLN population Ausigold 4	7.0abc	0.787-	2.4-	155.2-	45.8-
1 3	Low RLN population NST11007	6.4bcd	0.779-	1.6-	159.9-	54.6-
2 3	High RLN population NST11007	6.1cd	0.773-	1.9-	156.1-	47.4-
1 4	Low RLN population Hyoleic 41	6.3bcd	0.815-	1.9-	184.6-	101.1-
2 4	High RLN population Hyoleic 41	6.4bcd	0.831-	2.6-	151.1-	38.0-
1 5	Low RLN population Hyoleic 42	7.7a	0.789-	1.9-	163.5-	61.3-
2 5	High RLN population Hyoleic 42	6.3bcd	0.792-	1.8-	158.3-	51.5-
1 6	Low RLN population Sunbird 7	7.7a	0.775-	1.7-	163.9-	62.2-
2 6	High RLN population Sunbird 7	7.1abc	0.807-	2.1-	151.9-	39.5-

Means followed by same letter do not significantly differ (P=.05, LSD)

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COMPLETE SPLIT-PLOT AOV
Sunflowers
30/09/2015
EMERGENCE /m² 16 DP1 T1

Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	47	42.912586				
R	3	5.610409	1.870136	3.319	0.0330	
A	1	0.160751	0.160751	1.152	0.3618	0.3
ERROR A	3	0.418747	0.139582			
B	5	10.774288	2.154858	3.824	**0.0085**	0.8
AB	5	9.043734	1.808747	3.210	0.0194	1.1
ERROR B	30	16.904658	0.563489			

COMPLETE SPLIT-PLOT AOV
Sunflowers
23/11/2015
NDVI RATIO 70 DP1

Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	47	0.033660				
R	3	0.007839	0.002613	8.281	0.0004	
A	1	0.000833	0.000833	0.688	0.4677	0.032
ERROR A	3	0.003634	0.001211			
B	5	0.010135	0.002027	6.424	**0.0004**	0.018
AB	5	0.001751	0.000350	1.110	0.3760	0.026
ERROR B	30	0.009467	0.000316			

COMPLETE SPLIT-PLOT AOV
Sunflowers
11/02/2016
YIELD t/ha 150 DP1 TY2

Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	47	7.264055				
R	3	0.397971	0.132657	1.487	0.2379	
A	1	1.223777	1.223777	66.073	**0.0039**	0.1
ERROR A	3	0.055564	0.018521			
B	5	2.314776	0.462955	5.191	**0.0015**	0.3
AB	5	0.596332	0.119266	1.337	0.2757	0.4
ERROR B	30	2.675636	0.089188			

COMPLETE SPLIT-PLOT AOV
Sunflowers
23/02/2016
DUAL EM 162 DP1

Source	DF	Sum of Squares	Mean Square	F	Prob.(F)	LSD (.05)
Total	45	7745.523681				
R	3	576.703588	192.234529	1.822	0.1660	
A	1	2025.833912	2025.833912	16.707	**0.0265**	10.1
ERROR A	3	363.774884	121.258295			
B	5	579.197986	115.839597	1.098	0.3835	10.5
AB	5	1246.460949	249.292190	2.363	0.0656	14.9
ERROR B	28	2953.552361	105.484013			

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COMPLETE SPLIT-PLOT AOV Sunflowers 23/02/2016 PAW mm 162 DP1						
Source	**DF**	**Sum of Squares**	**Mean Square**	**F**	**Prob.(F)**	**LSD (.05)**
Total	45	27529.962222				
R	3	2050.845185	683.615062	1.820	0.1665	
A	1	7191.571204	7191.571204	16.665	**0.0266**	19.1
ERROR A	3	1294.575093	431.525031			
B	5	2050.018611	410.003722	1.091	0.3870	19.8
AB	5	4422.909074	884.581815	2.354	0.0665	28.1
ERROR B	28	10520.043056	375.715823			

Rating Type
NDVI = normalized difference vegetation index
ARM Action Codes
T1 = [1]/3.24
TY2 = 0.7142857*[4]

DAA = Days after Application

Scientific Pest Name		***Pratylenchus thornei***
Pest Name		**Root-lesion Nematode**
Rating Date		**7/03/2016**
Rating Type		**COUNT**
Rating Unit		***Pt*/g soil**
Plant-Evaluation Interval		**175 DP1**
ARM Action Codes		**AL**
Trt No.	**Treatment**	
1	Low RLN population Ausigold 62	3.0b
2	Low RLN population Ausigold 4	2.7b
3	Low RLN population NST11007	3.0b
4	Low RLN population Hyoleic 41	2.5b
5	Low RLN population Hyoleic 42	3.6ab
6	Low RLN population Sunbird 7	5.0a
	LSD P=	0.14t
	Treatment Prob.(F) =	0.0336

Means followed by same letter do not significantly differ (P=.05, LSD)
Mean separations are based on the complete error term.
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
Mean comparisons performed only when AOV Treatment P (F) is significant at mean comparison OSL.