Impact of Crown Rot on Winter Cereals

Trial ID: **NGA0805** **Location:** **Bellata** **Year** **2008**
Investigator: **Clare Felton-Taylor**

Objective:	**To evaluate the impact of crown rot inoculum on cereal variety yield and grain quality**		
Planting Date:	**21/06/2008**		
Crops:	**Barley**	**Bread wheat**	**Durum wheat**
Varieties:	**Skiff, Grout, Fitzroy and Gairdner**	**EGA Wylie, Sunco, Lang, Sunvale, EGA Gregory, Strzelecki and Ellison**	**Bellaroi and Jandaroi**
Harvest Date:	**11/11/2008**		
***Fusarium pseudograminearum* level at Planting:**	**0 pg DNA/g (PreDicta B)**		
Keywords:	**Crown rot, yield loss, wheat, barley, durum**		

NB: Crown rot inoculum supplied by Dr Steven Simpfendorfer NSW DPI. Pathogen cultured on sterilised millet seed and then added with cereal variety seed at planting.

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Trt No.	Crop	Variety	Crown Rot Level & Inoculum Added	Emergence 20 DAP Plants/m²	Emergence 28 DAP Plants/m²	Final Tillers /m Row	Yield t/ha	% Yield Impact due to Crown Rot
1	Barley	Skiff	-	48	58	192	2.40	
2	Barley	Skiff	2g	70	71	169	2.46	2.7
3	Barley	Grout	-	57	59	189	2.70	
4	Barley	Grout	2g	60	66	208	2.55	-5.3
5	Barley	Fitzroy	-	44	45	177	2.88	
6	Barley	Fitzroy	2g	43	54	180	2.73	-5.0
7	Barley	Gairdner	-	48	56	164	3.01	
8	Barley	Gairdner	2g	63	65	155	2.88	-4.3
9	Wheat	EGA Wylie	-	57	65	154	3.26	
10	Wheat	EGA Wylie	2g	56	52	133	3.32	2.0
11	Wheat	Sunco	-	40	56	154	3.01	
12	Wheat	Sunco	2g	44	61	154	3.11	3.5
13	Wheat	Lang	-	42	46	125	3.41	
14	Wheat	Lang	0.5g	45	56	144	3.31	-3.1
15	Wheat	Lang	1g	30	50	98	3.01	-11.8
16	Wheat	Lang	2g	35	46	137	3.02	-11.5
17	Wheat	Sunvale	-	47	58	191	3.32	
18	Wheat	Sunvale	2g	51	61	151	3.46	4.3
19	Wheat	EGA Gregory	-	36	48	121	3.49	
20	Wheat	EGA Gregory	2g	45	65	138	3.67	5.2
21	Wheat	Strzelecki	-	33	44	95	2.42	
22	Wheat	Strzelecki	2g	44	58	96	2.58	6.4
23	Wheat	Ellison	-	52	60	122	3.32	
24	Wheat	Ellison	2g	53	55	112	3.06	-7.8
25	Durum	Bellaroi	-	69	80	101	3.44	
26	Durum	Bellaroi	2g	58	70	91	2.98	-13.3
27	Durum	Jandaroi	-	48	53	119	2.96	
28	Durum	Jandaroi	2g	45	66	119	2.57	-13.2
			P =	0.00	0.00		0.00	
			LSD =	19	17		0.33-0.36	

DAP = Days after Planting

Yield cv. = 7.8%

	Significantly reduced yield
	Significantly increased emergence

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Trt No.	Crop	Variety	Crown Rot Level & Inoculum Added	Screenings %	Test Weight kg/hL	Protein %	Grain Weight g/ 1000 Grains	Retention %	Moisture %
1	Barley	Skiff	-	13.6	67	12.5	42	62	
2	Barley	Skiff	2g	5.9	66	13.1	43	59	
3	Barley	Grout	-	8.6	75	12.4	42	63	
4	Barley	Grout	2g	3.7	64	13.4	44	65	
5	Barley	Fitzroy	-	7.6	72	12.5	44	76	
6	Barley	Fitzroy	2g	9.7	68	13.2	41	53	
7	Barley	Gairdner	-	5.1	68	12.3	45	76	
8	Barley	Gairdner	2g	3.0	66	12.4	46	74	
			P =	0.15	0.30	0.52	0.62	0.24	
			LSD =	Log detransf	nsd	nsd	nsd	nsd	
9	Wheat	EGA Wylie	-	2.2	83	13.1	38		9.6
10	Wheat	EGA Wylie	2g	2.9	83	13.4	37		9.7
11	Wheat	Sunco	-	0.7	83	12.9	34		9.9
12	Wheat	Sunco	2g	1.4	83	13.4	33		9.5
13	Wheat	Lang	-	1.9	82	12.9	33		9.7
14	Wheat	Lang	0.5g	3.3	83	12.9	33		9.8
15	Wheat	Lang	1g	3.2	82	13.1	34		9.6
16	Wheat	Lang	2g	2.5	83	13.0	33		9.7
17	Wheat	Sunvale	-	2.3	83	13.4	33		9.8
18	Wheat	Sunvale	2g	1.9	84	13.2	33		9.6
19	Wheat	EGA Gregory	-	1.6	84	12.2	41		9.9
20	Wheat	EGA Gregory	2g	1.7	84	12.1	37		9.8
21	Wheat	Strzelecki	-	1.9	82	12.5	39		9.6
22	Wheat	Strzelecki	2g	1.3	80	12.4	38		9.5
23	Wheat	Ellison	-	2.7	83	12.9	37		9.8
24	Wheat	Ellison	2g	2.2	83	13.2	37		9.8
25	Durum	Bellaroi	-	2.3	81	13.9	42		8.7
26	Durum	Bellaroi	2g	3.1	80	14.1	39		8.9
27	Durum	Everest	-	0.1	84	13.9	44		8.9
28	Durum	Everest	2g	0.7	82	14.4	42		8.9
			P =	0.00	0.00	0.00	0.00		0.00
			LSD =	Arcsin detransf	1.5	0.7	2.3		0.5

nsd = No significant difference

Significantly reduced quality

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Trt No.	Crop	Variety	Crown Rot Level & Inoculum Added	Crown Rot Severity	Disease Incidence % Fp Recovery
1	Barley	Skiff	-	13.9	2
2	Barley	Skiff	2g	23.9	37
3	Barley	Grout	-	29.4	3
4	Barley	Grout	2g	50.1	35
5	Barley	Fitzroy	-	13.3	6
6	Barley	Fitzroy	2g	29.2	46
7	Barley	Gairdner	-	31.7	8
8	Barley	Gairdner	2g	43.6	40
9	Wheat	EGA Wylie	-	0.8	2
10	Wheat	EGA Wylie	2g	3.8	33
11	Wheat	Sunco	-	1.0	1
12	Wheat	Sunco	2g	5.6	29
13	Wheat	Lang	-	1.2	1
14	Wheat	Lang	0.5g	3.2	13
15	Wheat	Lang	1g	5.5	25.5
16	Wheat	Lang	2g	8.2	35
17	Wheat	Sunvale	-	0.8	1
18	Wheat	Sunvale	2g	5.4	33
19	Wheat	EGA Gregory	-	0.8	2
20	Wheat	EGA Gregory	2g	10.6	33
21	Wheat	Strzelecki	-	0.9	2
22	Wheat	Strzelecki	2g	9.6	37
23	Wheat	Ellison	-	3.8	0
24	Wheat	Ellison	2g	9.7	52
25	Durum	Bellaroi	-	4.0	2
26	Durum	Bellaroi	2g	33.3	63
27	Durum	Everest	-	10.1	1
28	Durum	Everest	2g	39.2	65
			P =	0.00	0.00
			LSD =	Log detransf	6.5

Crown rot severity = visual rating of extent and severity of stem browning

% Fp recovery = % of crowns where the crown rot fungus (*Fusarium pseudograminearum*) was recovered

Significantly increased disease