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Impact of Crown Rot on Winter Cereals

Trial ID: NGA0804

Location:

Cryon

Year

2008

Investigator:

Clare Felton-Taylor

Objective:	To evaluate the impact of crown rot inoculum on cereal variety yield and grain quality		
Planting:	14/05/2008		
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:	6/11/2008		
<i>Fusarium pseudograminearum</i> level at planting:	43 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 19 DAP Plants/m ²	Emergence 28 DAP Plants/m ²	Final Tillers /m Row	Yield t/ha	% Yield Impact due to Crown Rot
1	Barley	Skiff	-	34	48	178	3.76	
2	Barley	Skiff	2g	33	37	185	3.89	3.3
3	Barley	Grout	-	34	33	207	4.13	
4	Barley	Grout	2g	36	36	192	3.96	-4.2
5	Barley	Fitzroy	-	35	43	183	3.61	
6	Barley	Fitzroy	2g	34	30	216	3.70	2.5
7	Barley	Gairdner	-	38	41	134	3.81	
8	Barley	Gairdner	2g	34	39	165	3.89	2.0
9	Wheat	EGA Wylie	-	36	35	98	3.87	
10	Wheat	EGA Wylie	2g	35	34	128	3.90	0.7
11	Wheat	Sunco	-	35	48	119	3.44	
12	Wheat	Sunco	2g	31	33	145	3.48	1.1
13	Wheat	Lang	-	27	42	129	3.31	
14	Wheat	Lang	0.5g	32	36	107	3.39	2.4
15	Wheat	Lang	1g	30	26	130	3.55	7.4
16	Wheat	Lang	2g	40	28	110	3.50	5.9
17	Wheat	Sunvale	-	47	48	161	3.40	
18	Wheat	Sunvale	2g	42	42	132	3.69	8.5
19	Wheat	EGA Gregory	-	41	55	112	3.63	
20	Wheat	EGA Gregory	2g	44	34	108	3.82	5.3
21	Wheat	Strzelecki	-	35	43	91	3.01	
22	Wheat	Strzelecki	2g	37	35	94	3.61	19.9
23	Wheat	Ellison	-	37	47	91	3.06	
24	Wheat	Ellison	2g	43	41	114	2.89	-5.6
25	Durum	Bellaroi	-	34	37	65	1.96	
26	Durum	Bellaroi	2g	48	50	84	1.64	-16.1
27	Durum	Jandaroi	-	45	47	87	1.50	
28	Durum	Jandaroi	2g	42	40	119	1.55	3.8
P =				0.15	0.00	0.00	0.00	
LSD =				nsd	11	39	0.34-0.40	

DAP = Days after Planting

nsd = No significant difference

	Significantly reduced emergence
	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	-	6.0	66.9	14.9	40	62.9	
2	Barley	Skiff	2g	4.1	66.2	14.7	41	68.6	
3	Barley	Grout	-	2.8	66.9	11.7	43	83.9	
4	Barley	Grout	2g	2.6	67.0	12.3	44	84.6	
5	Barley	Fitzroy	-	3.8	64.8	12.2	41	83.4	
6	Barley	Fitzroy	2g	4.6	64.6	12.9	40	78.3	
7	Barley	Gairdner	-	6.1	66.0	13.5	41	69.0	
8	Barley	Gairdner	2g	4.3	66.0	13.7	41	64.0	
P =				0.00	0.00	0.00	0.00	0.00	
LSD =				Log detransf	0.9-1.1	0.9-1.0	1.7-2.0	8.1-9.4	

9	Wheat	EGA Wylie	-	3.8	81.1	12.9	40		10.5
10	Wheat	EGA Wylie	2g	3.1	81.2	12.4	40		10.4
11	Wheat	Sunco	-	2.3	81.8	12.5	39		10.3
12	Wheat	Sunco	2g	1.7	82.2	12.8	38		10.5
13	Wheat	Lang	-	3.8	81.3	12.7	37		10.4
14	Wheat	Lang	0.5g	3.9	81.5	12.3	36		10.3
15	Wheat	Lang	1g	3.5	81.7	12.3	37		10.4
16	Wheat	Lang	2g	3.3	82.0	12.4	36		10.4
17	Wheat	Sunvale	-	2.8	81.4	13.1	37		10.7
18	Wheat	Sunvale	2g	2.4	83.0	12.7	36		10.5
19	Wheat	EGA Gregory	-	4.5	81.6	11.6	40		10.4
20	Wheat	EGA Gregory	2g	3.5	81.7	11.7	40		10.4
21	Wheat	Strzelecki	-	6.1	80.8	11.9	39		10.1
22	Wheat	Strzelecki	2g	4.7	79.6	12.5	38		10.2
23	Wheat	Ellison	-	3.4	81.8	14.0	44		10.6
24	Wheat	Ellison	2g	3.5	81.4	14.2	43		10.5
25	Durum	Bellaroi	-	7.3	78.4	14.9	43		10.3
26	Durum	Bellaroi	2g	11.3	76.5	16.1	37		10.3
27	Durum	Jandaroi	-	4.1	78.3	16.2	46		10.6
28	Durum	Jandaroi	2g	4.1	78.2	17.1	42		10.7
P =				0.00	0.00	0.00	0.00		0.35
LSD =				1.3-1.7	1.7-2.2	1.1-1.4	Log detransf		nsd

nsd = No significant difference

	Significantly reduced quality
	Significantly increased quality

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Trt No.	Crop	Variety	Crown Rot Level & Inoculum added	Crown Rot Severity	Disease Incidence % Fp Recovery
1	Barley	Skiff	-	31	64
2	Barley	Skiff	2g	44	82
3	Barley	Grout	-	52	70
4	Barley	Grout	2g	65	91
5	Barley	Fitzroy	-	43	81
6	Barley	Fitzroy	2g	58	89
7	Barley	Gairdner	-	44	71
8	Barley	Gairdner	2g	58	83
9	Wheat	EGA Wylie	-	12	69
10	Wheat	EGA Wylie	2g	23	88
11	Wheat	Sunco	-	12	62
12	Wheat	Sunco	2g	33	80
13	Wheat	Lang	-	20	60
14	Wheat	Lang	0.5g	28	75
15	Wheat	Lang	1g	36	79
16	Wheat	Lang	2g	43	91
17	Wheat	Sunvale	-	16	57
18	Wheat	Sunvale	2g	24	87
19	Wheat	EGA Gregory	-	14	75
20	Wheat	EGA Gregory	2g	26	95
21	Wheat	Strzelecki	-	22	79
22	Wheat	Strzelecki	2g	53	94
23	Wheat	Ellison	-	24	57
24	Wheat	Ellison	2g	43	97
25	Durum	Bellaroi	-	53	87
26	Durum	Bellaroi	2g	81	98
27	Durum	Jandaroi	-	57	86
28	Durum	Jandaroi	2g	76	95
P =				0.00	0.00
LSD =				10.5	Arcsin detransf

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