

Evaluate Newly Registered Seed Treatments for Loose Smut and Rhizoctonia in Hindmarsh Barley.



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Key Messages

- Loose smut in barley is internally seed borne so if you are seeing infected heads then it means your grain source was contaminated. It is the hardest of the smut diseases to control because it is an internally seed borne infection and most current seed treatments are not as effective on internally seed borne diseases.
- EverGol Prime has excellent local systemicity, being able to move across the seed wall and into the seed. It is an excellent option for control of loose smut.
- The application for Sakura into barley was not successful with the APVMA. Therefore we will not review the results of this component of the trial in regard to the interactions with pre-emergent herbicides.

Aim

1. Comparison of EverGol® Prime, Vibrance® and Tripower® to Baytan® T for loose smut control.
2. Comparison of EverGol Prime compared to triazole seed treatments for rhizoctonia suppression.

Background

- Hindmarsh barley has in recent seasons observed high levels of loose smut infection.
- Barley crops infected with loose smut will have the characteristic dark spore filled heads within the crop but this is actually the appearance of infection from the previous season which has been within the seed. At maturity, the spores will rupture and be spread by wind infecting neighbouring crops at flowering. Moist conditions at flowering combined with mild temperatures like in the 2013 spring will favour infection. Grain infected this season will appear completely normal. When the seed is sown and germination occurs the following season, the fungus will begin to grow within the plant with a mass of spores replacing the head and continuing the disease cycle.
- Group 3 triazole (Baytan) seed treatments can cause reductions in coleoptile length, previous trial experience has shown EverGol Prime from Group 7 carboxamide chemistry does not reduce coleoptile length or delay emergence.

Trial Details

Property	G & H Pearse Pty Ltd, west Wubin
Plot size & replication	2.5m x 20m x 3 replications
Soil type	Sandy loam
Soil pH (CaCl ₂)	0-10cm: 5.2 10-20cm: 4.4 20-30cm: 4.3
Paddock rotation	2010: canola, 2011: wheat, 2012: lupin
Variety	Hindmarsh
Seeding date	Time of sowing A: 10/5/13, Time of sowing B: 31/5/13
Seeding rate	70 kg/ha
Fertiliser	60 kg/ha of Gusto® Gold or similar banded, 60 kg/ha of Urea top dressed
Herbicides	At each time of sowing: 118 g/ha Sakura®, 2 L/ha Glyphosate, 1 L/ha Lorsban® 14/6/13: 670 mL/ha Velocity®, Hasten®
Growing Season Rainfall	228mm

Site conditions

The soil pH at depth was not favourable to barley and would normally be avoided with mid 4's from 10-60cm depth.

Disease

The source of Hindmarsh barley used in this trial had high levels of loose smut infection during the 2012 season. Counts of all the plots across the site recorded a 2.8% infection level in the untreated. Predicta B soil testing across the trial site indicate a medium risk of rhizoctonia. There was limited expression across the trial with only some variance in crop biomass observed and no strong patches.

Results

Table 1: Plant emergence counts taken on 22/05/13, 12 days after sowing A (DAS). Means followed by same letter do not significantly differ (Duncans 0.05).

Seed Treatment	Plants/ m2	% Standard
Untreated	85 ^b	100
Baytan 100 mL/100 kg	80 ^b	94
EverGol Prime 80 mL/100kg	100 ^a	118
LSD (P=0.05)	12	
CV %	6.07	

The triazole or Baytan T treatment recorded 80 plants per m² which was slightly behind the untreated at the emergence count 12 days after seeding. EverGol Prime recorded 100 plants which was an improvement on the untreated.

No delay in emergence provides a useful benefit particularly in soils prone to crusting.

Loose Smut

Table 2: Percentage control and plant count of loose smut infection in Hindmarsh barley grown in 2013 at west Wubin as assessed on 06/09/13 (98 days after sowing). Means followed by same letter do not significantly differ (Duncans 0.05).

Seed Treatment	% Control	Plants/Plot
Untreated	0	118 ^a
EverGol Prime 80 mL/100 kg	99	1 ^d
EverGol Prime 40 mL/100 kg	97	3 ^d
Vibrance 360 mL/100 kg	99	2 ^d
Vibrance 180 mL/100 kg	85	17 ^d
Baytan 100 mL/100 kg	64	43 ^c
TriPower 400 mL/100 kg	44	66 ^b
LSD (P=0.05)		17.20
CV %		26.98

EverGol Prime at both rates recorded excellent control of loose smut along with Vibrance at the 360mL/100kg rate. Vibrance at the 180mL/100kg rate did not record acceptable control of loose smut in this trial.

Baytan and Tri-Power did not record significantly lower and unacceptable control of loose smut in this trial.

Yield and quality

Table 3: Yield (t/ha) and quality results of Hindmarsh barley, grown on the Liebe Main Trial Site in 2013.

Seed Treatment (rate)	Yield (t/ha)	Untreated (%)	Protein (%)	Hectolitre Weight (kg/hL)	Screenings (%)	Colour
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Untreated	1.87	100	11.1	65.7	4.3	59.8
EverGol Prime 80 mL/100 kg	1.90	102	10.9	66.2	4.1	60.1
EverGol Prime 40 mL/100 kg	1.88	101	11.3	67.0	4.5	60.1
Vibrance 360 mL/100 kg	1.69	91	11.2	65.3	4.3	59.4
Vibrance 180 mL/100 kg	1.81	97	11.5	66.5	4.2	59.5
Baytan 100 mL/100 kg	1.78	95	10.8	65.5	6.0	59.9
TriPower 400 mL/100 kg	1.84	99	11.3	64.5	4.5	58.9
LSD (P=.05)	0.394					
CV	12.6					
Kwinana Delivered \$/tonne	\$222					

All treatments met Hindmarsh food grade parameters although loose smut was not tested for, which may have excluded the untreated from delivery due to its levels of infection.

There was no significant difference in yield between treatments although the EverGol Prime treatments recorded a slight positive yield over the other seed treatments.

Table 4: Cost and return (\$/ha) for seed treatments treating for loose smut in barley.

Seed Treatment (rate)	Cost (\$/ha) at 70 kg/ha	Gross return (\$/ha)	\$ return over untreated
Untreated	-	\$415.14	\$0.00
EverGol Prime 80 mL/100 kg	\$8.02	\$421.80	-\$1.36
EverGol Prime 40 mL/100 kg	\$4.01	\$417.36	-\$1.79
Vibrance 360 mL/100 kg	\$7.48	\$375.18	-\$47.44
Vibrance 180 mL/100 kg	\$3.74	\$401.82	-\$17.06
Baytan 100 mL/100 kg	\$1.46	\$395.16	-\$21.44
TriPower 400 mL/100 kg	\$6.72	\$408.48	-\$13.38

Due to the nature of the site and unsuitability of the site for most barley varieties there was little difference in yield with this reflected in the negative \$ returns over the untreated treatment.

Comments

It is recommended that grower's retaining seed apply an effective seed treatment. For those retaining Hindmarsh or any other variety that contained loose smut in 2013 it is recommended that you use an effective seed treatment and ensure excellent coverage of all seeds. It is also recommended that when bulking up new varieties, like Bass or Litmus, growers should use an effective seed treatment to prevent build-up of loose smut.

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