Department of Agriculture and Food

GOVERNMENT OF WESTERN AUSTRALIA

Factsheet

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Controlling loose smut of barley

This Factsheet has been prepared to provide an update on the effectiveness of seed dressings for the management of barley loose smut for the 2015 season.

Key messages

- Correct application of seed dressings registered to control loose smut is a critical step in controlling loose smut. *Every* seed needs to be adequately treated.
- All seed dressings trialled in WA in 2013 significantly reduced levels of barley loose smut.
- Trial data from 2013 indicates that the seed dressings EverGol® Prime, Vibrance® and Jockey® + Raxil® T can reduce loose smut to near zero levels in seed that was heavily infected.
- All barley crops should be treated as the inoculum levels of loose smut are relatively high due to the popularity of Hindmarsh, which is more susceptible to loose smut than other varieties.

Why control loose smut?

Loose smut reduces grain yield. Every tiller of infected plants produces a smutted head instead of grain, so if 5% of tillers are affected, a yield penalty of up to 5% can occur. Also, countries such as Pakistan have zero tolerance to loose smut contaminated grain.

If my seed is infected, is it better to replace it?

No. In the past it was suggested that growers replace seed that had a 5% level of infection. Replacing seed can be costly and poses the biosecurity risks of introducing new weeds or weeds with herbicide resistance. Instead, the data presented here demonstrates that even with heavily infected seed, the most effective fungicides can have close to 100% control of loose smut, so seed from those treatments should be suitable for sowing in the following season. Hence growers can retain their own seed and with the correct application of a seed dressing annually, keep the incidence of loose smut to minimal levels.

Supporting your success

Which seed treatment should I use?

All registered seed treatments trialled are effective at reducing the amount of loose smut. Seed harvested from infected crops should be treated with one of the most effective fungicides to ensure the best control of disease transmission. Select a seed dressing that is registered for loose smut control and suitable for your level of risk of other diseases such as scald or powdery mildew. A list of registered fungicides is available on the DAFWA website (hyperlink - https://www.agric.wa.gov.au/barley/seed-dressing-and-furrow-fungicides-cereals-wa). Insecticides are not discussed here but some seed treatments also have active ingredients that control storage pests or aphids during early growth.

Can I use in-furrow fungicides instead of seed dressing fungicides?

In-furrow fungicides are not registered for control of loose smut and numerous trials have shown they do not control smut.

Is Hindmarsh more susceptible to loose smut than other barley varieties?

Yes. A trial in 2014 showed that Hindmarsh and its sister line La Trobe are both more likely to be affected by loose smut than the varieties Bass, Commander, Flinders, Gairdner, Granger, and Scope CL. Results from South Australia also suggest that Hindmarsh may be at a higher risk of loose smut infection than other varieties. Seed of Hindmarsh and La Trobe should be treated with the seed dressings which provide best control.

2013 Trial Results

Table 1. The level of loose smut control (%) in DAFWA trials at Gibson and Wongan Hills in 2013, where the loose smut levels of untreated controls in 2013 were 4.1% and 2.5% respectively. Different letters indicate a statistically different level of effectiveness and all treatments were significantly better than nil. Vibrance data is not shown due to an application error at sowing. Prices were current 2013.

Product Name	Rate applied / tonne seed	Cost to treat 70 kg/ha seed ($)	Smut (% controlled) Gibson	Smut (% Controlled) Wongan Hills
EverGol® Prime	400 mL	4.01	100% a	100% a
Jockey® + Raxil® T	3 L + 1 L	10.75	99% a	99% a
Raxil® T	1 L	1.30	93% b	77% b
Vitaflo®-C	2.5 L	4.20	93% b	99% a
Zorro®	4 L	6.93	87% c	85 % b
Rancona® C	1 L	2.17	85% c	78% b
Jockey®	3 L	9.45	76% d	61% c

Table 2. The level of loose smut control (%) in Bayer trials at Regan's Ford and Wubin in 2013 where the loose smut levels of untreated controls in 2013 were 4.0% and 2.8% respectively. Different letters indicate a statistically different level of effectiveness and all treatments were significantly better than nil. Prices were current 2013.

Product name	Rate applied / tonne seed	Cost to treat 70 kg/ha seed ($)	Smut (% controlled) Regans Ford	Smut (% controlled) Wubin
EverGol® Prime	400 mL	4.01	100% a	97% a
Vibrance®	1.8 L	3.74	97% a	86% a
Baytan® T	1 L	3.05	75% b	64% b
Tri-Power®	4 L	9.52	51% c	44% c

Correct seed application is important

Auger and applicator calibration are important as under and over treating seed is money wasted in addition to poor disease control (under-treated seed) or may reduce coleoptile lengths or cause other phytotoxic effects on the germinating seedling (over-treated seed). Three steps in the correct application of a seed dressing are:

(1) Calibrate your auger grain output.

$$\text{Tonnes per hr} = \frac{\text{Weight of sample (kg)} \times 3.6}{\text{Time (seconds)}}$$

(2) Use a constant auger flow rate during the dressing operation.
(3) Match the amount of seed dressing that is delivered to the auger flow rate.

Example; if the auger is delivering grain at 20 t/hr and the dressing rate is 4 L/t seed, then 80 L of dressing will need to be applied per hour or 1.333 L/minute. Measure this to calibrate the applicator and adjust as required to achieve this rate.

Figure 1 Poor application of a seed dressing; many grains are untreated while some are over treated.

Company technotes are available on the internet. Other useful tips and a comparison of seed treatment applicators can be found in the Kondinin Group Research Report Seed dressing applicators

(www.**farmingahead**.com.au/uploads/article_item/news/530/FA**122**-32.pdf)

Will treated seed have no loose smut in it?

Loose smut is a numbers game –a seed treatment will greatly reduce the likelihood of plants producing an infected head, but even with 99.99% control of transmission occasional infected plants will occur. For example if you have seed with an initial infection rate of 1% (40 mg seed sown @70 kg/ha), 99.99% control means that you could still see 2 infected plants per hectare.

In terms of seed for the following season, loose smut spores are easily windborne, therefore spores from affected plants outside a crop can be blown into clean crops resulting in the harvest of infected seed. This is why treatment every year is necessary.

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