

GRAIN STORAGE FACT SHEET

NORTHERN AND SOUTHERN REGION GRAIN PROTECTANTS PREVENT PESTS

Grain protectants are one of many management tools for preventing pests in stored grain and have a particular role in unsealed storage and seed storage.

KEY POINTS

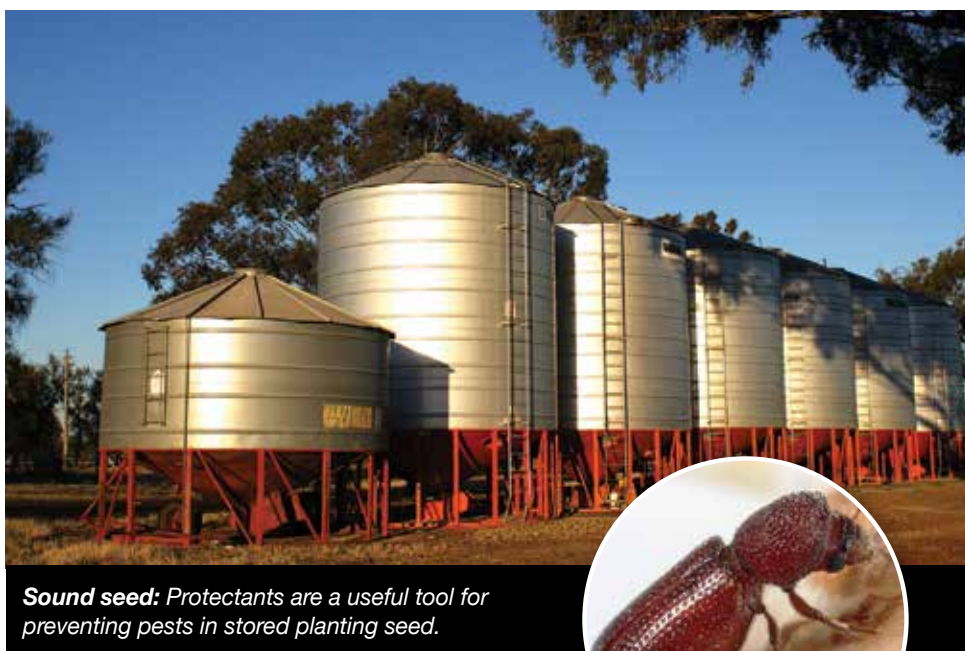
- Consider using grain protectants when gas-tight sealable storage is not available and to ensure security of planting seed.
- Grain protectants work best when combined with meticulous storage hygiene and aeration cooling.
- Stringent maximum residue limits (MRLs) leave no margin for error in application. Always check with your grain buyer before applying.
- Even coverage is required to reliably manage stored grain insects.

Growers across Australia's northern and southern cropping regions can use grain protectants to help prevent pest infestations in stored grain. The use of protectants combined with meticulous hygiene and aeration cooling are especially useful in unsealed storages, where effective fumigation is not possible.

Pest prevention

Grain protectants are designed to prevent pest infestations and not to control existing infestations. Grain must be clean and free of pests before applying a protectant. A common misunderstanding is that grain protectants kill insects already infesting the grain, but those types of products (contact disinfestants) are no longer available for on-farm use.

In order to give protectants the best chance to defend stored grain, combine their use with meticulous storage hygiene practices before and after harvest. Cleaning up the storage site and the harvesting equipment removes harbours where pests can survive,



Sound seed: Protectants are a useful tool for preventing pests in stored planting seed.

ready to infest the new season's grain. The addition of aeration cooling also provides an unattractive environment for pests in stored grain.

Read the label

Always read the chemical label before choosing a protectant to ensure it is registered for use on the grain you wish to apply it to and will target the main insects commonly found in your storage. As a general guide, most protectants are only registered for use on cereal grains, except malting barley, rice and maize.

The lesser grain borer (*Rhyzopertha dominica*) is the toughest of the common grain storage pests to deter with protectants, with only two products currently available – K-Obio® and Conserve On-Farm™ (under permit PER14362).






To prolong the working life of these two products, alternate their use each year or two to avoid pests developing resistance to them.

Close to MRL

As grain markets have become less tolerant to protectants and maximum residue limits (MRLs) are monitored scrupulously, accurate application is essential. Some of the protectants, even if used at the recommended label rate, are right on the MRL leaving no room for error in applying the correct rate and even spread. Commodity vendor declarations are also used in many cases to ensure a parcel of grain is only subjected to one application of the protectant to avoid exceeding the MRL.

TABLE 1 NORTHERN AND SOUTHERN REGION STORED GRAIN PROTECTANTS GUIDE

BEFORE APPLYING – CHECK WITH YOUR GRAIN BUYERS / BULK HANDLERS AND READ LABELS CAREFULLY

PROTECTANT					
	LESSER GRAIN BORER (<i>Rhyzopertha dominica</i>)	RUST-RED FLOUR BEETLE (<i>Tribolium castaneum</i>)	RICE WEEVIL (<i>Sitophilus oryzae</i>)	SAW-TOOTHED GRAIN BEETLE (<i>Oryzaephilus surinamensis</i>)	FLAT GRAIN BEETLE (<i>Cryptolestes ferrugineus</i>)
Pirimiphos-methyl eg. Actellic 900 [®]					
Fenitrothion eg Fenitrothion 1000 [®]					
Chlorpyrifos-methyl eg Reldan Grain Protector [®]					
Chlorpyrifos-methyl + S-methoprene eg Reldan Plus IGR [®]					
Deltamethrin + Piperonyl Butoxide eg K-Obiol ^{® 1}					
Spinosad + Chlorpyrifos-methyl + S-methoprene eg Conserve On-Farm [™]					

KEY Effective control. Resistance widespread (unlikely to be effective). Not registered for this pest.
 Source: APVMA
 Notes: ¹ Approved user ID card required for purchase — contact Bayer to obtain ID.

Accurate application

Always follow label directions, but as an example some protectants are applied at a rate of one litre of mixed product per tonne of grain. To achieve even coating of the grain best results are achieved with one, or even better with two, flat fan nozzles mounted to spray into the auger as the grain is loaded into storage. Mixing 1 L/t is not easy and relies on agitation as the grain passes up the auger.

Applying protectants in a belt conveyor does not provide adequate mixing and even coating. Spray can also cause issues with the belt slipping on drive rollers. Some conveyor manufacturers offer a separate application kit — ensure it can apply the protectant evenly to the stream of grain and includes agitation to mix the product through the grain.

Some protectants start deteriorating 48 hours after being mixed with water so avoid leaving for long periods before applying to grain. The product label will also indicate the anticipated effective life of the protectant on the grain.

The effective life of protectants is shortened if applied to grain above 12 per cent moisture content (MC) and above 27°C or is exposed to direct sunlight, such as the end of a shed or an open bunker.

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FURTHER READING

Grain storage pest control guide

(GRDC fact sheet)
www.storedgrain.com.au/pest-control-guide-ns/

Hygiene and structural treatments for grain storage

(GRDC fact sheet)
www.storedgrain.com.au/hygiene-structural-treatments/

Aeration cooling for pest control

(GRDC fact sheet)
www.storedgrain.com.au/aeration-cooling/

GRAIN STORAGE SPECIALISTS

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Southern NSW, VIC, SA and TAS, Peter Botta

Email pbotta@bigpond.com

USEFUL RESOURCES

GRDC Grain storage extension project

www.storedgrain.com.au

Grain Trade Australia

02 9235 2155
www.graintrade.org.au

Dow AgroSciences

www.dowagro.com/au/markets/grain.htm

Bayer

www.k-obiol.com.au/

Agnova

<http://agnova.com.au/products/actellic.html>

Nufarm

www.nufarm.com.au

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