

Keep stored grain bug-free — safely

Thanks to a new non-toxic treatment that dehydrates insects, **there's now an easier way to protect grain in bins and elevators**

By Andrew Douglas

So you pulled the short straw and now you're stuck spraying empty bins for bugs. Lucky for you, the job just got safer and easier.

Protect-It, an insecticide made from naturally occurring diatomaceous earth, is gaining ground with farmers and elevator managers tired of spraying toxic insecticides to control bugs in stored grain. A fine-powder formulation, it has a Canadian registration for control of grain-storage insects.

Grant Piggott, location manager for Cargill in Talbotville, Ont., says Protect-It has been used in Cargill storages for the past 2 years. In the past, they sprayed malathion to control bugs, but that was before grain-storage periods extended to 6 to 8 months. If they did store grain long-term, they used a fumigant.

Establishment of infestation during storage

To calculate the number of bushels in a 3' layer, square the radius of the bin and multiply by 7.34. For example, a bin with a 10' radius:

$$\text{Bushels} = (10)^2 \times 7.34 = 100 \times 7.34 = 734$$

To treat one 3' layer in the above example you need:
734 bu./1,000 x 3.26 = 2.4 kg

For more information about the new label and specific application rates and methods, call Hedley Technologies Inc.

Application rates in kilograms per 1,000 bushels

Grain	Rusty grain beetle (kg/1,000 bu.)	Red flour beetle (kg/1,000 bu.)
Wheat	2.72	8.16
Barley	3.26	7.62
Oats	2.31	5.40
Rye	3.81	8.89
Peas	8.16	
Corn	12.70	25.40
Soybeans	Surface treatment	
Feed grains	Use relevant rates above	

"Safety was the main reason we switched," says Piggott. "Protect-It is a lot easier to handle. We treat the bottom 20' and the top 20' in our 120' silos."

The product works by destroying the protective waxy layer that coats stored-grain insects and prevents loss of internal moisture. The bugs end up dying of dehydration. If you get Protect-It on your hands, you'll notice it blots the oils on your skin, but it is harmless to humans.

Its mode of action makes Protect-It most effective on dry grain (below 16% moisture). Moisture from damp grain offsets the dehydration effect.

Chris Van Natto, technical manager with Hedley Technologies, makers of Protect-It, recommends emptying, cleaning and treating bins before adding new grain.

"The worst thing you can do is have old crop in the bin and put new crop overtop," he says. "That's almost guaranteed to bring an infestation."

The second worst thing you can do is put grain into a dirty bin. "Even a thimble full of material is enough to have a few bugs in it," says Van Natto.

The company suggests a 3-step process to apply Protect-It. First, clean out empty bins and apply a dusting of the product 7 to 14 days before storing new crop. Then shake Protect-It onto grain as you auger the bottom 3' and the top 3' into each bin. "You should apply it evenly," says Van Natto, "but we've had acceptable results by sprinkling it in by hand."

The third step is to apply a light dusting of Protect-It to the surface of the grain mass.

Even if you put clean grain in a clean bin, says Van Natto, you may still get an infestation. "It's good to treat the grain, or at least a portion of it," he says. "Treat the top 3' at least."

Ideally, says Van Natto, when storing wheat treat it all. That's partly because the cost is only 2.7¢ per bushel. Recommended application rates depend on crop and insect species (table). It costs 5 times as much to treat corn, so there's more financial incentive to treat only the top and bottom 3' of a bin. Protect-It retails for \$9.80 per kilogram.

If you have an aerator, he says, "fill the bin, treat the top 3', and put a shot in the bottom so the plenum underneath is all coated."

Whatever protective strategies they use, Van Natto urges farmers to take bin bugs seriously. "It's usually just a nuisance issue," he says. "But if you get a load rejected and have to fumigate, you can lose all your profit." ☞