

# Perceptions on Grain Protectants

Kansas producers responded to a 2004 survey regarding wheat protectants.

In 2004, I conducted a survey and two focus group meetings with Kansas producers to summarize their perceptions regarding the loss of organophosphate grain protectants under the 1996 Food Quality Protection Act (FQPA) and stored grain pest management options.

The questionnaire-based survey and focus group meetings were conducted in cooperation with the Kansas Wheat Commission, *The High Plains Journal*, Farmer Direct Foods, and The Kansas Crop Improvement Association.

A total of 17,000 questionnaires were mailed to producers in Kansas. Of the 17,000 surveys, 236 from 73 counties were completed and returned. The farm size of the respondents varied from 80 acres to 20,800 acres, with an average size of 2,132 acres.

## FQPA Review of Grain Protectants

The first question dealt with producers' familiarity with the FQPA. Approximately 60% said they were aware of the act, while 39% were unaware.

The organophosphate insecticides were the first targets for review under the FQPA. Grain protectants, including malathion, chlorpyrifos-methyl (Reldan), and pirimiphos-methyl, were included in the review of organophosphate insecticides.

As a result of the FQPA review, the only insecticide that is no longer approved as a grain protectant is chlorpyrifos-methyl. The use of chlorpyrifos-methyl as a grain

## Pest Management



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protectant was allowed until Dec. 31, 2004.

Malathion can be used as a grain protectant, but there is documented resistance in economically important stored-product insects to this compound.

Pirimiphos-methyl has received a favorable review and is legal to use on stored corn and sorghum.

## Controlling Stored-Product Insects

Nearly 97% of the respondents indicated that control of insects in their stored wheat is important.

When asked to rank insect species that are troublesome in their stored wheat, producers felt that weevils were most important, followed by the Indianmeal moth, red flour beetle, lesser grain borer, and rusty grain beetle.

Producers typically call any beetle found in grain a weevil. However, weevils generally are not a serious problem in stored wheat. The most important insect pest is the lesser grain borer. All of the chemical applications, including the fumigant phosphine, are applied to manage this pest throughout the wheat marketing system.

**Grain protectant vs. fumigant.** Most grain-protectant applications occur on the farm, while phosphine is predominantly used once the wheat leaves the farm.

About 55% of the producers indicated that they apply protectants to their stored wheat, while 44% said they apply the fumigant phosphine.

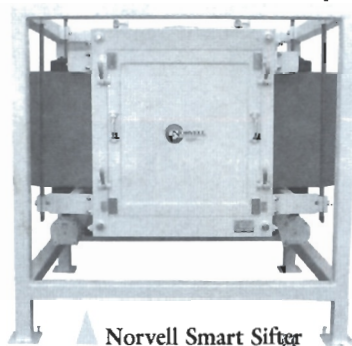
Protectants are applied to uninfested, newly-harvested grain at the time of bin-filling. One application, depending on the product, offers long-term protection. Therefore, use of protectants is a preventive approach.

Phosphine gas is used after an infestation is detected. It has no residual effectiveness; hence the use of phosphine is a responsive approach.

Even though phosphine is used routinely once the wheat leaves the farm, a 1999 survey conducted by the National Agricultural Statistics Service (NASS)

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showed that only about 11% of the wheat in the marketing channels is treated with phosphine.

#### Protectants Used in 2004

When asked about the specific products used, 48% of the producers indicated that they used malathion, 28% used chlorpyrifos-methyl, 5% used diatomaceous earth, 5% used phosphine, and 2% used Storcide. Keep in mind that these responses were received while chlorpyrifos-methyl was still legal to use.

As you can see, malathion, despite insect resistance, is still popular among producers.

Storcide (Bayer Environmental Science) was first registered only for seed treatment. The formulation originally contained 3 ppm chlorpyrifos-methyl and 2 ppm cyfluthrin (Tempo). Bayer has changed the formulation slightly, by replacing cyfluthrin with 0.5 ppm deltamethrin. This new formulation is called Storcide II and can be used for treating empty storage structures, stored seed, and grain (wheat, barley, oats, rice, and sorghum).

**Protectant alternatives.** Approximately 37% of the producers felt that potential alternatives have been identified, while 29% felt that they have not been identified. Only 20% felt that satisfactory alternatives exist today.

Producers (54%) indicated that safety to humans and the environment was important in choosing an alternative to malathion and chlorpyrifos-methyl, and 38% indicated that they would use an alternative if it was more effective against insects than either malathion or chlorpyrifos-methyl. Only 8% indicated that they would use a protectant that degraded quickly.

Overwhelmingly, 93% indicated they would use a protectant if it was shown to be better than malathion and chlorpyrifos-methyl.

#### Focus Group Responses

During the focus group meetings, producers said they wanted new protectants to be evaluated by a third party (such as a university). They wished to be a part of the product evaluation and needed product information in an easily understandable format (video), including product limitations.

Cost was not generally an issue with a new protectant. Producers said they were willing to pay 0.5 to 5 cents a bushel for an effective product.

Finally, producers emphasized that they will use an effective product on their grain if they are able to export the treated grain without any hassles.

#### Current Protectants

Producers and grain managers can use Storcide II, Diacon II, and a new product, Suspend SC, on stored grain, in addition to diatomaceous earth, malathion, and pirimiphos-methyl.

Suspend (Bayer Environmental Science) is a new protectant registered in 2007.

It contains 0.5 ppm deltamethrin. It can be used to treat empty storage structures and grain (barley, oats, corn, popcorn,



*Suspend SC was registered in 2007.*

rice, rye, sorghum, and wheat).

Spinosad, another protectant, received registration in January 2005. However, commercial Spinosad products will not be released until fourth quarter 2009.

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