BY **SARA WIROLL**

EXPLORING OPTIONS IN

Stored Product Pest Control

Three industry experts provide insight into new developments and research on the methods available or on the horizon for stored product pest control.

DR. BHADRIRAJU SUBRAMANYAM
Professor, Department of Grain Science & Industry
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Q: What options are currently available to commercial users in stored product pest control?
A: The available options vary with the site where stored product insects are a problem. For instance, there are new and novel protectants as well as fumigants for managing insects in raw commodities, and there are several chemical and non-chemical options for use in food processing facilities and retail environments. Spinosad (not yet commercially available), several formulations of diatomaceous earth, Diacon II, Storcide II, phosphine, phosphine plus carbon dioxide, sulfuryl fluoride, and vacuum are suitable for use on raw commodities. For structural treatments methyl bromide, sulfuryl fluoride, and heat are commonly used options. In retail environments, hydroprene or cyfluthrin can be used.

Q: What type of research have you conducted regarding stored product pest control?
A: I have been conducting research for the last 25 years on the use of diatomaceous earth, spinosad, pirimiphos-methyl, chlorpyrifos-methyl, various pyrethroids, including cyfluthrin, hydroprene, infrared radiation, ultrasound, heat, phosphine, methyl bromide and sulfuryl fluoride for managing insects stored-product insects in raw commodities, food processing facilities and retail establishments. Since last year, I have been involved in assessing population rebounds of stored product insects, especially red flour beetles, in flour mills subjected to fumigations with sulfuryl fluoride and methyl bromide. I have also been involved in developing a model for predicting survival of insects during facility heat treatments.

Q: As a result of your research, what is the most effective treatment option when attempting to eliminate stored product pests?
A: First, it is impossible to eliminate 100 percent of stored product insects with any tactic in "real-world settings," and second, treatment effectiveness, if measured by degree and duration of insect suppression following an intervention, varies with rate of the chemical used (at or below labeled rates), type of species, life stage of species, environmental conditions, insect density, duration of insect exposure, degree of sealing for fumigants, uniform lethal temperatures attained if using heat and understanding sources and dynamics of re-infestation.

Q: What results lead you to believe this?
A: There has always been a heated debate about one tactic being better than the other, and comparisons based on small-scale laboratory tests are not a true indicators of field performance of any pest control product, because many of the variables I have mentioned are uncontrolled and there is limited information on these aspects from actual field data. Every effort should be made to conduct field trials in multiple locations and in multiple years to verify the most effective treatment option. Although cost is an important issue, it should not be an overriding factor in assessing treatment effectiveness. Furthermore, any one making comparisons regarding products should first define treatment effectiveness that is not based on just percentage mortality.

Q: What have been some recent "hot topics" in the field regarding treatment of stored product pests?
A: The use of vacuum for controlling insects in bagged commodities and spinosad for bulk-stored grains are recent hot topics that are getting a lot of attention. Other hot topics include the future of methyl bromide, and methods for optimizing effectiveness of treatments with heat and sulfuryl fluoride.

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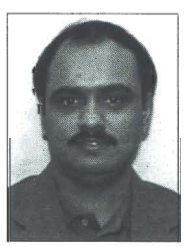

ProFume gas fumigant has received registration from the EPA for use in food handling establishments. All fifty states and Puerto Rico have registered uses for ProFume. Dow AgroSciences is the manufacturer of this product.

Q: What led Dow AgroSciences to introduce a new product for use in stored product pest control?
A: The active ingredient, sulfuryl fluoride, has been used successfully for controlling structure infesting pests for