The 2004 International Quality Grains Conference was held in Indianapolis, Indiana, July 19-22, 2004.

More than 200 individuals from 14 countries attended the Conference. The overall goal of the 2004 International Quality Grains Conference was to provide a global symposium on quality-assured, traceable, and biosecure grains and oilseeds.

The specific objectives of this conference were to present current research-based knowledge on:

- Measurement technologies to quantify agronomic, quality, and end-use traits of cereals and oilseeds.
- Best management practices to assure the identity, purity, integrity, quality, and biosecurity of cereals and oilseeds through the supply chain from production through harvest, handling, post-harvest, and processing operations to final end use.
- Quality management system approaches for the identity preservation, certification, trace back, and biosecurity of cereals and oilseeds in the evolving global market place of differentiated products.

Participants and presenters at the 2004 International Quality Grains Conference included the leading scientists, engineers, economists, and professionals from academia, government, and the agricultural and food/feed industry involved in the production, handling, and utilization of cereals and oilseeds, and the manufacturing of grain-based foods and feeds from throughout the world.

The organizing committee is comprised of the following individuals:
- Dr. Dirk E. Maier, Purdue University, Conference Coordinator and Chair
- Dr. Charles R. Hurburgh, Iowa State University, Conference Co-Chair and Objective 1 Chair
- Dr. Marvin L. Paulsen, University of Illinois, Conference Co-Chair and Objective 2 Chair
- Dr. Mike D. Montross, University of Kentucky, Commercial and Educational Exhibit Chair
- Dr. Mark E. Casada, USDA-ARS-USGMPRC
- Dr. Tim J. Herrman, Kansas State University
- Dr. D. Demcey Johnson, USDA-ERS
- Dr. Eluned Jones, Texas A&M University
- Dr. Bill Ravlin, NC-213/The Ohio State University
- Dr. Steven N. Tanner, USDA-FGIS

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Residual Products

Historically methyl bromide was not extensively used as a grain fumigant in the United States, and until the early to mid-1980s, there were several registered fumigants that could be used instead of methyl bromide. Today phosphine is the only other fumigant still labeled for raw stored grains, and it receives heavy use by the grain industry. Methyl bromide is more commonly used in mills, processing plants, and food warehouses.

The Methyl Bromide Technical Options Committee (MBTOC) has on several occasions listed a variety of control strategies that are considered as alternatives to methyl bromide for indoor and structural treatment. These alternatives are not limited to other fumigants; they include residual surface sprays, aerosol and fogging applications, and targeted control for specific areas, and sampling and monitoring of insect populations to determine the need for insecticide application.

Several residual sprays are labeled for direct application to floors and walls of mills, warehouses, food-processing plants, and other indoor areas. One example of a residual spray is cyfluthrin (Tempo), a pyrethroid insecticide labeled as both a general surface spray and a crack-and-crevice spray. Another example is the insect growth regulator hydroprene, which is labeled as an aerosol spray. Some organophosphates are still registered for use in mills and processing plants, but only as crack-and-crevice or spot applications or applications to outside perimeters around structures. Other pyrethroids are also labeled as surface or crack-and-crevice sprays, and the insecticide label will always give the specifications for use along with the application rates for specific areas or locations.

Current research with residual products encompasses several broad areas, including evaluation of new products for control of stored-product insects, improving the performance of existing products, and identifying the factors that can affect insecticide efficacy. The temperature at which insects are exposed to a particular insecticide often affects residual performance and actual persistence of the chemical. The presence of food material, either during or after the insects’ exposure to residual chemicals, often leads to higher survival rates. Sanitation and cleaning in conjunction with pesticide applications is extremely important because trash and spilled material can compromise pesticide efficacy. Insect species vary in their response to particular insecticides; some species are simply more susceptible than others to a particular insecticide. Also, susceptibility can be different depending on the specific insecticide or class of insecticides used. Finally, the actual time that insects are directly exposed to a residual insecticide often affects mortality, and some insecticides kill at faster rates than others.

Movement of insects over and through a treated surface can be important, especially if they are repelled by the insecticide, or if they can avoid exposure or even move through the treated area without being affected by the insecticide. Insects exploit individual food patches or selected areas and may never come into contact with the insecticide. Population dispersal from centers of infestation and how insects disperse from these centers can also affect control efforts, particularly when the centers of infestation are not located in the same areas that are being treated with insecticides.

One of the goals in pest-management programs is to identify the source of infestation and target control efforts toward that source or area of infestation. Certain areas within a facility may be more vulnerable to infestation, and efforts can be targeted to those sites. However, insects can still move from untreated areas, and populations may quickly rebound even after insecticide treatment. Researchers are employing several strategies for identifying and mapping the distribution of insect populations. Spatial mapping can be used to chart the dispersal and movement of insect populations, and it often can point out that the source of an infestation may be well away from any areas being treated with residual insecticides.

Residual insecticides can still be a viable part of modern pest-management programs for flour mills, processing plants, and food warehouses. Selected use of residuals may lead to less total insecticide use and could even eliminate some fumigations with methyl bromide. As pest management shifts from a chemical approach to a more knowledge-based strategy for insect pest management, selected use and management of insecticides will be included as a component of broader, more integrated approaches to insect control.

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