Science Update

"Sting Operation" To Protect Groceries

Nearly invisible, harmless, parasitic wasps might one day patrol the aisles of large grocery stores and warehouses, homing in on various stored-product pests that sometimes infest flour, cereal, pet food, and other grain-based products. These pests can even chew through some types of tough protective packaging. Controlling them with traditional chemicals isn't always effective.

Parasitic wasps are an Earth-friendly way to keep these stored food pests in check. Work with one of the most common offenders, the Indianmeal moth, is showing that tiny wasps in the genus *Trichogramma* could do the trick. *Trichogramma* wasps have been used outdoors for decades to control insects plaguing cotton and other crops.

In tests, *T. deion* wasps no bigger than dust specks were able to find, sting, and kill moth eggs. The results were even better when they were paired with other tiny parasitic wasps belonging to the genus *Habrobracon,* which finished the job by killing the few larvae that developed from eggs that *Trichogramma* missed. *Paul Flinn, USDA-ARS Grain Marketing and Processing Research Center, Manhattan, Kansas; phone (785) 776-2707, e-mail paul.flinn@gmprc.ksu.edu.*

Catch Their Drift?

The first user-friendly computer software for estimating how far droplets of pesticide sprays from ground sprayers will drift has been developed, in cooperation with Ohio State University (OSU). Aided by the FLUENT computational fluid dynamics program, DRIFTSIM extrapolates from its large database of drift distances calculated for single droplets of sprayed pesticide. It can estimate drift distances for controlled variables, unlike outdoor tests in which the weather and other factors often confound experimental outcomes.

DRIFTSIM allows users to specify windspeed, droplet size and speed, nozzle height, operating pressure, air temperature, and relative humidity. It can help extension educators and farmers choose equipment, settings, and techniques to minimize pesticide drift and aid manufacturers in formulating pesticides and selecting spray equipment to minimize their products' drift potential. The Windows-based software may be obtained for $10 plus shipping and handling from OSU Media Distribution, 385 Kottman Hall, 2021 Coffey Rd., Columbus, OH 43210-1044; phone (614) 292-1248. *Heping Zhu, USDA-ARS Application Technology Research Unit, Wooster, Ohio; phone (330) 263-3871, e-mail zhu.16@osu.edu.*

Less Pain for Lab Animals

A new lancet has been developed for use in laboratories where blood samples must frequently be drawn from test mice—with potential for use with other animals used in medical research to improve human and animal health. Designed in cooperation with medical manufacturer MEDIpoint, of Mineola, New York, the improved lancet has been named "Goldenrod." It makes the drawing of blood samples from small animals, such as mice, easier for the technicians and more humane for the animals. Inexpensive and easy to use, the new lancet has already won praise from the medical community and earned its developers an award for excellence in technology transfer. *William T. Golde, USDA-APHIS Plum Island Animal Disease Center, Orient Point, New York; phone (631) 323-3249, e-mail william.golde@ars.usda.gov.*

A Zippy Test for Zinc Sufficiency

Optimal brain and immune system functioning depend on an adequate intake of zinc, among other nutrients. But the test now used to assess zinc status isn't as sensitive, fast, and reliable as users would like. So a new test, based on what's called the *ZIP1* gene, might be just what the doctor ordered, so to speak. Instructions contained in this gene tell cells to form a protein, also named ZIP1, which can shuttle zinc into a cell where more zinc is needed.

Researchers worked with 25 healthy female volunteers aged 20-25 or 64-75. Some received zinc supplements, while others did not. All ate their usual meals, which provided about 7 milligrams of zinc daily.

White blood cell samples were taken at the beginning and end of the study to see whether *ZIP1* gene activity was affected by zinc supplementation. Indeed, activity was reduced in the volunteers receiving the zinc supplement, which suggests that supplements did help cells meet their zinc needs and that *ZIP1* gene activity does reflect zinc levels in white blood cells. *Liping Huang, USDA-ARS Western Human Nutrition Research Center, Davis, California; phone (530) 754-5756, e-mail lhuang@whnrc.usda.gov.*

Novel Pig Gene Database

Pigs and humans share anatomical and physiological features that are useful for modeling the effects of nutrition on human immune function and response to disease. But until recently, molecular and pig data have been poorly annotated for immune- and nutrition-related genes. Now, assembly of a Porcine Immunology and Nutrition (PIN) Database is allowing users to compare information on 2,600 annotated swine genes and proteins related to nutrition and immunity. It can be accessed on the World Wide Web at http://www.ars.usda.gov/Services/docs.htm?docid=6065

This new database links gene expression to gene function and identification of related gene pathways. It contains sequences for 900 real-time PCR assays and information on more than 140 protein reagents. PIN will also allow researchers to compare gene expression in pigs with more extensive information provided in human and rodent databases. *Harry Dawson and Joseph Urban, USDA-ARS Nutrient Requirements and Functions Laboratory, Beltsville, Maryland; phone (301) 504-9412 [Dawson], (301) 504-5528 [Urban], e-mail dawsonh@ba.ars.usda.gov, urbanj@ba.ars.usda.gov.*