

Gel Could Stop Two Mites With One Treatment

Formic acid mixed with a food-grade gel protects honey bees from tracheal and varroa mites, the two worst bee pests in this country. In field tests, the experimental ARS product killed up to 84 percent of varroa mites and 100 percent of tracheal mites. The gel could help gain U.S. Environmental Protection Agency registration of formic acid to combat both mites. Currently, in the United States, the only registered control for varroa mites is fluvalinate; and for tracheal mites, menthol. Formic acid has proved effective against the pests. But in liquid form it evaporates quickly and must be applied several times per season. Sealing acid and gel in a plastic bag would provide a longer lasting product requiring less handling. The bag could be sliced open inside the hive. Formic acid would evaporate and leave behind a harmless residue. ARS scientists are seeking patent protection.

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Tracheal mites infest the breathing tube of a honey bee. Left unchecked, these parasites live, feed, and reproduce, eventually blocking oxygen flow and killing their host. Magnification about 140x.

Nationwide Poultry Microbe Hunt Under Way

Scientists have begun a 1-year survey to learn where chicken pathogens such as *Salmonella* and *Campylobacter* can get their start at farms. The survey could also supply producers with a new way to track and control bacterial risks—and reduce food-safety risks for consumers. Five top poultry producers have invited ARS scientists to conduct the study, the largest of its kind in the United States. Scientists will sample 25 sites on 10 farms in Arkansas, California, Georgia, Maryland, and Mississippi. Sites will include feed bins, hatcheries—even farmers' boot soles. DNA tests will distinguish among the bacteria. *Salmonella* and *Campylobacter* can enter the food supply at various places—from the hatchery to the consumer's kitchen. Proper cooking and handling remain the best protection.

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Helpful Wasp Recruited To Fight Cotton Pest

Scientists will be closely watching some cotton fields in California's San Joaquin Valley. Will the tiny black wasps they released help growers get a grip on cotton aphids? The aphids feed on plant sap and excrete a sticky goo that contaminates cotton fibers and can jam cotton gins or equipment at textile mills. But the female *Lysiphlebia japonica* wasp attacks the aphid by injecting one of her eggs inside it. The larva that hatches feeds on the pest, killing it. The project is a cooperative effort of two ARS labs in California, the California Depart-

ment of Food and Agriculture, and University of California Cooperative Extension Service, with support from the California Cotton Pest Control Board. ARS scientists were first to import the wasp—an Asian native—and determine how to lab-rear it for outdoor tests. The cotton aphid and other aphids cost California cotton growers more than \$11 million in 1996. ARS scientists in Florida are evaluating the wasp's ability to attack citrus pests.

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Papaya Enzyme Tenderizes Abalone

Tender, tasty blue abalone, *Haliotis fulgens*, sells for about \$50 a 1-pound can on the West Coast. More consumers may someday enjoy a more affordable abalone—the black abalone—as a result of a cooperative project between ARS and the University of Georgia. Black abalone, *H. cracherodii*, is sold for about \$10 a pound, mainly in Mexico. Its taste and nutritional value are essentially the same as those of its higher priced blue cousin. What's missing is tenderness. Papain, an approved papaya enzyme, will break down abalone collagen, but how much is enough to tenderize black abalone without compromising flavor? To determine this, scientists began with a texture analyzer. It compared the force needed to mechanically “chew” both blue and modified black abalone. The scientists then checked and refined their conclusions by recruiting taste-testers for a 12-week project.

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