Science Update

For Beet Armyworms, Too Much Pheromone Makes Sex Elusive

Flooding a cottonfield with the scent of the beet armyworm's sex attractant disrupts the insect's mating and helps protect the crop from damage. Male beet armyworm moths find a female by sensing her attractant or pheromone. But in a test in two 35-acre cottonfields, ARS scientists placed commercial dispensers to release the pheromone. With the scent all around them, the male moths became confused about where to look for a mate. They didn't find any for more than 100 days. The scientists say the strategy can be incorporated into an integrated pest management program using the pest's natural enemies, environmentally friendly pesticides, and other strategies. Beet armyworms have become a chronic problem in cotton-growing regions. In 1995, the pests caused multimillion-dollar losses in Texas alone. *Everett R. Mitchell, USDA-ARS Center for Medical, Agricultural, and Veterinary Entomology Research, Gainesville, Florida, phone (352) 374-5710.*

Feathers for Fiber

ARS and Perdue Farms in Salisbury, Maryland, will try to turn chicken feathers into a cheaper, biodegradable substitute for wood or synthetic fibers. The work is being done under a cooperative research and development agreement (CRADA). An ARS scientist discovered that feather fibers are strong and more absorbent than wood or plastic fibers. Commercially available microorganisms can compost feather fiber in 3 weeks. ARS is patenting a feather fiber separation process. It uses less water, energy, and chemicals than methods for other fibers. Initially, feather fibers may be used in disposable diapers, hospital "wipes," and sanitary napkins. Future products may include air and oil filters, specialty papers, and structural composites. *Walter F. Schmidt, USDA-ARS Environmental Chemistry Laboratory, Beltsville, Maryland, phone (301) 504-5030.*

Nature Versus Nurture: A Formula for Goats

How much of a dairy goat's observed traits is a result of the animal's genetics, and how much is an environmental influence? Breeders could more accurately evaluate a dairy goat's merit if they had clearer answers to these questions. ARS researchers have devised a mathematical formula that will help. The formula describes genetic as well as environmental components of traits such as a goat's strength, stature, and udder shape. It separates temporary environmental factors, such as the season, from permanent ones, like injury. The formula also considers influences of all of the animal's relatives—not just its sire, as other models do. The researchers found that the least likely genetic influences are rear udder arch and rear legs. By contrast, stature and teat diameter and placement are highly heritable. The formula was developed with data from the American Dairy Goat Association, including records of 154 herds and 6 breeds and pedigrees for animals born in 1978 or later. *Suzanne Hubbard and George Wiggans, USDA-ARS Animal Improvement Programs Laboratory, Beltsville, Maryland, phone (301)504-8334.*

Regulating Drought Damage to Cotton Fiber

ARS, Texas A&M University, and BASF Corp. of Research Triangle Park, North Carolina, will test whether a BASF plant growth regulator cuts down on undeveloped cotton fibers. These cause imperfections when textiles are dyed. The regulator, called PIX, is widely used to reduce plant height and thus grow more cotton bolls and make them ripen earlier for harvesting. New tests will see if the regulator may also reduce drought damage. Currently, for example, western cotton grown without irrigation can develop more than its share of immature fibers. The university scientists will grow PIX-treated and untreated cotton plants with and without irrigation. ARS researchers will test fiber quality. *Gayle H. Davidonis, USDA-ARS Fiber Physics and Biochemistry Research Unit, New Orleans, Louisiana, phone (504) 286-4273.*

Three New Neem Products Do Double Duty

An extract from neem tree seeds is the key ingredient in three new commercial biopesticides developed under a CRADA between ARS and Thermo Trilogy Corp. in Columbia, Maryland. The products are the first capable of controlling both insect pests and disease-causing fungi at the same time. ARS scientists pioneered the use of neem seed as an alternative for chemical pesticide. They found that the seed oil can kill pests such as whiteflies, aphids, mealybugs, and mites. They also showed that the oil can protect several ornamental and food crops against fungal diseases such as rusts and powdery mildew. The new products—Trilogy, Triact, and Rose Defense—are covered by five U.S. patents held jointly by USDA and Thermo Trilogy. *James Locke, USDA-ARS U.S. National Arboretum, Washington, D.C., phone (301) 504-6413.*