

Black Mold Building Sickness

When testing buildings for air quality, inspectors have focused on *Stachybotrys chartarum*, or black mold, a toxin-producing fungus. Now, research has shown that it may be important to test for additional fungi from the genus *Myrothecium*, a close relative of *Stachybotrys*.

Though *Myrothecium* species are known to cause diseases in plants, *Stachybotrys* has been linked to serious diseases in livestock and humans, and both are known to produce the same kinds of toxins.

All these fungi are common in nature, where they pose no threat to human health. But these toxins can accumulate and become a hazard indoors, especially if a building is relatively airtight and contains moist, woody materials. *Lisa A. Castlebury, USDA-ARS Systematic Botany and Mycology Laboratory, Beltsville, Maryland; phone (301) 504-5270, e-mail castlebl@ba.ars.usda.gov.*

Bacterial Glue

Gut-dwelling bacteria that help cows and other herbivores break down tough dietary fiber might one day find use in products like plywood and particleboard. Researchers have found a way to combine strains of fiber-digesting *Ruminococcus* and *Clostridium* bacteria with scrap plant material—wood chips, crop residue, even recycled newspapers—to make a fermentation product with powerful adhesive properties.

It's the glycocalyx, or slime layer, that allows certain cellulose-digesting bacteria to cling tightly to a surface. Work with U.S. Forest Service researchers has shown that bacteria-based residues might replace up to 45 percent of traditional adhesives used in many wood products. A patent has been filed, and the technology is now available for licensing. *Paul J. Weimer, USDA-ARS Dairy Forage Research Center, Madison, Wisconsin; phone (608) 264-5408, e-mail pjweimer@wisc.edu.*

Fine-Tuning Fertilizer

Researchers are seeking more accurate methods for predicting the optimal amount of fertilizer for grain crops. With the old "yield-goal" method, farmers calculated the amount of nitrogen fertilizer needed by estimating the potential yield. But farmers who used this method were often applying too much fertilizer because it could not account for unpredictable factors such as weather and variations in soil fertility in different fields.

Scientists are testing new methods—including canopy-reflectance sensing to monitor crop vigor—to fine-tune fertilizer applications and save the farmer money. The net result will be not only higher profit for the farmer, but also less nitrogen released into the environment. *Newell R. Kitchen and Kenneth A. Sudduth, USDA-ARS Cropping Systems and Water Quality Research Unit, Columbia, Missouri; (573) 882-1135 [Kitchen], (573) 882-4090 [Sudduth], email kitchenn@missouri.edu, sudduthk@missouri.edu.*

A Plant-Protective Pepper

Charleston Belle, a new bell pepper, is notable for its resistance to heat and to three major root-rot nematodes. Another benefit is that when Charleston Belle is planted first in double-cropping systems, the pepper conveys its nematode resistance to nematode-susceptible crops that follow it. For example, tests showed that cucumber and squash yields were larger and their fruits heavier when they were planted after Charleston Belle peppers.

So when methyl bromide, a major pesticide used against these tiny worms, is banned by the U.S. Environmental Protection Agency, growers may find Charleston Belle's nematode-resistant qualities even more useful in their ongoing battle against these destructive pests. *Judy A. Thies, USDA-ARS Vegetable Laboratory, Charleston, South Carolina; phone (843) 402-5300, e-mail jthies@saa.ars.usda.gov.*

Predicting Powdery Mildew on Hop Crops

In the Pacific Northwest, powdery mildew is a serious problem for hop growers. To reduce crop losses, growers use fungicides, which can be costly to both the grower and the environment.

Scientists have determined that brief exposure to high air temperature reduces the likelihood of hop becoming infected with powdery mildew. Combining that knowledge with weather-forecasting data, researchers have developed an Internet-based model to predict when fungicides could be applied most effectively. The accuracy of the model should allow growers to reduce the number of pesticide applications. *Walter F. Mahaffee, USDA-ARS Horticultural Crops Research Unit, Corvallis, Oregon; phone (541) 738-4036, e-mail mahaffew@science.oregonstate.edu.*

Sorghum Instead of Wheat?

For people who suffer from gluten intolerance, there's heartening news. Researchers are investigating food-grade sorghum as a substitute for wheat in pasta, bakery products, and breakfast foods, such as waffles. Besides being free of gluten—a specific type of protein present in wheat, rye, and barley—some kinds of sorghum contain significant levels of cancer-fighting compounds. White, food-grade sorghums can be milled directly into whole-grain flour to produce foods high in dietary fiber.

Unfortunately, sorghum's lack of gluten affects the texture and flavor of products made with it. To solve this problem, researchers are investigating improved cultivars of food-grade sorghum. They're also testing recipes for producing high-quality breads and other baked goods from this nutritious grain. *Scott Bean, USDA-ARS Grain Marketing and Production Research Center, Manhattan, Kansas; phone (785) 776-2725, e-mail scott@gmprc.ksu.edu.*