Science Update

Fresh Strawberries for Winter Holidays!

It's now possible for growers in the mid-Atlantic area to harvest in early winter, and again in spring, from June-bearing strawberries. And the berries that ripen into December will bring premium prices!

This new production method requires rooting runner tips collected from mother plants in early July and planting them as 8-week-old transplants in early September. These new plantlets will flower and fruit during autumn, yielding ripe berries for fresh-market sales into December, and possibly beyond. In those places where freezing might be a danger, inexpensive plastic tunnels are used to protect the fruit, which also speeds the harvest of spring-season berries. *Fumiomi Takeda, USDA-ARS Appalachian Fruit Research Station, Kearneysville, West Virginia; phone (304) 725-3451, ext. 212, e-mail ftakeda@afrs.ars.usda.gov.*

An Amazing Corn-Based Website

Here's a one-point source to tap to find everything there is to know about maize—that is, *Zea mays* ssp. *mays,* the Latin name for today's corn. The Maize Genetics and Genomics Database, or MaizeGDB, offers information on traits, genetic sequences, and other features of this valuable staple crop, including those related to its breeding and improvement. Few realize that, in addition to corn's extensive food and feed use, research has facilitated its use in products as diverse as glue, paint, insecticides, toothpaste, rubber tires, rayon, and molded plastics. It's also the major feedstock for domestic ethanol production.

Developed in collaboration with Iowa State University-Ames, MaizeGDB gives free access to an amazing array of information in a way that summarizes biological relationships, and it features easy-to-use computational tools. To access MaizeGDB, go to www.maizegdb.org. *Carolyn J. Lawrence, USDA-ARS Corn Insects and Crop Genetics Research Unit, Ames, Iowa; phone (515) 294-7380, e-mail triffid@iastate.edu.*

Boosting Ethanol Production—With Shiitakes?

The ability of shiitake mushrooms to dissolve the fallen logs that they call home may one day speed conversion of farm-based feedstocks into ethanol for fuel. That's because scientists have found and copied a shiitake gene, called *Xyn11A,* that lets the mushroom produce an enzyme known as xylanase. This enzyme helps convert decaying wood into sugars that shiitakes use for food.

In the laboratory, researchers successfully transferred the gene into a yeast, which was then able to produce xylanase—something it can't normally do. Next they'll try to modify the *Xyn11A* gene so it enables the yeast—or some other organism—to make more of the xylanase enzyme in less time. Such a boost in efficiency might one day help make production of plant-based fuels an even more practical alternative to petroleum products. *Charles C. Lee, USDA-ARS Bioproduct Chemistry and Engineering Research Unit, Albany, California; phone (510) 559-5858, e-mail clee@pw.usda.gov.*

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Shiitake mushrooms.

Honey Bees Get a New Antibiotic

Pity the poor honey bee. It works so hard—pollinating the trillions of blossoms that eventually develop into billions of dollars worth of U.S. farm crops. Yet this tireless worker is vulnerable to some pests and diseases that have made its future—and agricultural economics—somewhat perilous. One of these perils is American foulbrood, a widespread and devastating bacterial disease of honey bees. It kills young bee larvae and turns their remains into dark, shriveled corpses, or "scales," that contain billions of spores that easily spread. While the disease poses no human danger, severe outbreaks can weaken or kill entire bee colonies.

The bacterium responsible for this bee carnage, *Paenibacillus larvae,* has developed resistance against the one antibiotic that's been effective against American foulbrood. Recently, however, a new one, tylosin tartrate (TYLAN Soluble), produced by Elanco Animal Health of Greenfield, Indiana, was approved for use by the U.S. Food and Drug Administration after research demonstrated its field efficacy and safety for both honey bees and humans. *Mark F. Feldlaufer, USDA-ARS Chemicals Affecting Insect Behavior Laboratory, Beltsville, Maryland; phone (301) 504-8637, e-mail feldlaum@ba.ars.usda.gov.*

Reducing High Harvest Costs

While modern combines efficiently harvest, thresh, separate, and clean grains, the expensive mechanisms for performing these operations can bring the total purchase cost to $250,000 per combine. Now there's an alternative that relies on a simple, low-cost harvesting unit and a stationary thresher. The system components are much less expensive, and one thresher could significantly lower overall production costs by serving several farms.

This harvester strips wheat heads and stores them in a bulk tank while a flail mower chops standing residue into small pieces to facilitate later field operations. The thresher separates wheat from chaff. An assessment is under way to determine the feasibility of using a fluidized bed to segregate the harvested material by density. Early studies suggest that this method could improve grain quality consistency, especially with soft white wheat. *Mark C. Siemens, USDA-ARS Columbia Plateau Conservation Research Center, Pendleton, Oregon; phone (541) 278-4403, e-mail markc.siemens@oregonstate.edu.*