Science Update

Chickpea Disease Tied to Fungal Culprit

Although the fungus *Sclerotinia trifoliorum* plagues legume crops worldwide, most chickpea crops appeared to have evaded infection. But during the 2005-06 chickpea growing season in central California, scientists observed stem and crown rots reminiscent of *Sclerotinia* infection. Subtle irregularities in the symptoms led the researchers to believe their prime suspect—*S. sclerotiorum,* which infects more than 400 plant species—had an accomplice, namely *S. trifoliorum*.

The researchers examined 10 *Sclerotinia* isolates from their collection of chickpea stems and subjected each to three identification criteria. Their analysis showed that *S. trifoliorum* isolates were slower growing, displayed "ascospore dimorphism," which is the formation of two versions of the same spore type, and harbored a set of group I intron markers that were not found in *S. sclerotiorum*.

S. trifoliorum's occurrence on central California chickpeas might stem from prior plantings of alfalfa—another legume host—and not an accidental introduction from Australia, the only continent where the fungus has previously been reported on chickpea. *Weidong Chen, USDA-ARS Grain Legume Genetics Physiology Research, Pullman, Washington; phone (509) 335-9178, e-mail weidong.chen@ars.usda.gov.*

ARS Scientists Test MRI Device To Measure Piglet Body Fat

A new magnetic resonance imaging (MRI)-based device can accurately and precisely measure total body fat in piglets using the principles of quantitative magnetic resonance (QMR). This device, which is called "EchoMRI," was developed by Echo Medical Systems and is more advanced than the technology currently used for body composition tests.

Standard MRI systems are commonly used to scan and visualize tissue in humans, but these imaging systems are subject to substantial error rates. EchoMRI uses a new type of QMR methodology to obtain body composition results based on hydrogen nuclei density and the physical state of the tissue.

Research results indicate that EchoMRI is a precise and accurate method suitable for measuring piglet whole body composition, total body fat, lean tissue mass, free water mass, and total body water. EchoMRI allows measurements to be conducted quickly without anesthesia or sedation. It is also radiation free and does not require the subject to remain completely motionless.

The research was done under a grant from the National Institutes of Health, where researchers want to know if the new technology could have future applications for human pediatric use. *Alva D. Mitchell, USDA-ARS Animal Biosciences and Biotechnology Laboratory, Beltsville, Maryland; phone (301) 504-8868, e-mail alva.mitchell@ars.usda.gov.*

Database of Isoflavones in Foods Updated

A newly updated food composition database of plant chemical compounds called "isoflavones" has been launched. Isoflavones are found mainly in soybeans and soybean products and have mild estrogenlike properties and other biological attributes that may reduce the risk of some chronic diseases. The new database provides analytical values for three individual isoflavone compounds—genistein, daidzein, and glycitein—in nearly 550 foods.

In assembling the database, the researchers conducted an extensive review of various data sources and evaluated scientific articles published in peer-reviewed journals since 1999. The Isoflavone Database is one of several "Special Interest Databases" produced by the ARS Nutrition Data Laboratory (NDL) to provide data on bioactive compounds for selected foods. Others include the Flavonoid, Proanthocyanidin, and ORAC databases.

The Special Interest Databases complement the NDL's core product—the National Nutrient Database for Standard Reference—which is the major authoritative source of food composition information in the United States. The new Isoflavone Database can be accessed online at: www.ars.usda.gov/nutrientdata/isoflav. *David B. Haytowitz, USDA-ARS Nutrient Data Laboratory, Beltsville, Maryland; phone (301) 504-0714, e-mail david.haytowitz@ars.usda.gov.*

Making Fluorescent Markers for Corn Tissues

The different components of a corn kernel—plant embryo, endosperm, and hard outer pericarp—are used in food, animal feed, and industrial products. Now a group of researchers has used green fluorescent protein (GFP) to create experimental corn lines with distinctive kernel tissues.

The team developed transgenic corn lines containing GFP as either an embryo or an endosperm marker. In one line they developed, 100 percent of the GFP fluorescence was found in the endosperm. In another line, about 67 percent of the GFP fluorescence was found in the embryo.

The group then identified GFP concentrations in the different tissues, which gave them baseline levels to use for identifying different tissues during the fractionation processes and succeeded in determining GFP fluorescence levels for each tissue. But most importantly, they were able to easily identify the mix of tissues that had been dry-milled.

These results indicate that transgenic lines of corn containing GFP could be used to optimize existing fractionation methods and improve processing techniques and for a variety of corn-related research projects. *Paul Scott, USDA-ARS Corn Insects and Crop Genetics Research Unit, Ames, Iowa; phone (515) 294-7825, e-mail paul.scott@ars.usda.gov.*