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Pest Alert

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**The Pest Alert is now found on the World Wide Web at
<http://www.colostate.edu/programs/pestalet>**

NOTE: BEGINNING JANUARY, 2001, PEST ALERT WILL ONLY BE AVAILABLE ON THE WEB. HARD COPY ISSUES WILL NO LONGER BE MAILED. FOR ELECTRONIC NOTIFICATION, PLEASE EMAIL YOUR ADDRESS TO bspm@lamar.colostate.edu

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DIGITAL DIAGNOSIS OF PLANT DISEASES

The latest issue of Plant Disease, Vol. 84:1256-1265, 2000, has an interesting article entitled "What's A Picture Worth? The Use of Modern Telecommunications in Diagnosing Plant Diseases". The article was written by G. J. Holmes - North Carolina State Univ., E. A. Brown - Univ. of Georgia, and G. Ruhl - Purdue Univ. The paper discussed the benefits, risks and limitations associated with digitally assisted diagnosis (DAD) of plant diseases. They compared this practice to Telemedicine, which is the widespread delivery of health care and sharing of medical knowledge over a distance using telecommunications systems. The Univ. of Georgia pioneered the development of a statewide, web-based delivery system for DAD with private funding that equipped county extension offices with digital imaging stations in 94 of 159 counties. Stations included a computer, digital camera, dissecting and compound microscopes with digital camera attachments, and a set of 26 American Phytopathological Society disease compendia and other reference books. The current cost per station is about \$6000.

Colorado State University, U.S. Department of Agriculture and Colorado counties cooperating.
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A survey revealed that the following states have or will have a university-related plant disease clinic that utilizes digital imaging for diagnosis: AL, CT, FL, GA, IL, IN, IA, LA, MO, NE, NY, NC, ND, OK, OR, SC, SD, TN, TX, VI, WY. The sequence of DAD is simple: (i) acquire the image, (ii) send the image, (iii) view the image. Images can be acquired using a digital camera or video camera equipped with a video capture device. Prints and slides can be digitized using slide or flatbed scanners. Plant material can also be scanned directly on a flatbed scanner. Digital or video cameras also can be attached to microscopes to capture microscopic features of pathogens or host tissue.

Digital images can be posted to a website and viewed by the diagnostician, or they can be sent as e-mail attachments or live video. DAD offers tremendous advantages when speed and distance are significant obstacles. Digital image transfer can be used as a preliminary check before live samples are shipped. Some diseases lend themselves to this type of diagnosis, while others do not, so this technology is an aid not a replacement for the well-trained and experienced diagnostician.

At its simplest, DAD is nothing more than a means of improving communication. This improvement, however, may have a profound impact. It drastically reduces the problems of distance and speed. It allows the expert to view more problems and the novice to seek assistance more quickly and effectively. The potential for client education in the process of DAD is perhaps one of its greatest benefits. Conversely, DAD has many of the same pitfalls as traditional diagnostic methods and some new ones. While there is potential for use and abuse, this discussion has illustrated that accurate diagnosis can be achieved when high-quality digital images are submitted to a skilled diagnostician. Perhaps no other tool has had a more rapid, widespread impact on plant disease diagnostics. (Schwartz)

STARLINK CORN RECAP AND UPDATE

The following is an article that I took of the Kansas web page. KSU Ag Biotech Newsletter Jan. 17, 2001, Issue 2001-1. It is an excellent update. (Brown)

“The most important public relations event in plant biotechnology of the last year was undoubtedly the corn recall based on the detection of genetically modified (GM) StarLink corn that was not labeled for human consumption. Here’s a brief recap and update on the situation.

The problem began with a seemingly harmless EPA decision made in 1998 allowing a company to market a new type of insect-resistant Bt corn called StarLink. StarLink was genetically engineered to produce a protein called Cry9C that makes it resistant to larvae of corn borer moths. While this insecticidal protein was similar to Cry1A(b) protein in Bt corn hybrids already approved for human consumption, initial tests showed that Cry9C was more resistant to digestion. This raised concerns that it might be able to cause some type of allergic reaction. Therefore, the EPA decided to hold up full registration until the allergenicity question was settled. StarLink was given only a partial registration for domestic feed and industrial non-food uses while awaiting further testing. The registrant was supposed to make sure StarLink grain was kept out of the human food supply.

By the summer of 2000, the acreage of StarLink had grown to over 300,000 acres in 29 states. Unfortunately, there was still no decision on its potential as an allergen and thus no approval for human consumption. In addition it was still not approved for sale in the European Union, Canada or Japan. On September 18th, anti- GM food activists reported they found evidence of StarLink DNA in taco shells. This was soon confirmed and was, of course, a violation of the product registration.

The company marketing the taco shells immediately began a recall. On September 29, the USDA and Aventis CropScience (the current owner of the StarLink technology), in an effort to ensure that the nation's food supply would be kept free of this unregistered commodity, announced a plan whereby Aventis would purchase all of the grain from StarLink hybrids and document that it be fed to livestock. However, by this time the horse was out of the barn, or in this case the corn was out of the bin. While a large percentage of the corn could be accounted for, some had obviously entered the grain trade channels. This then spurred a rush to test grain and corn-based products throughout the country (one testing company reportedly sold more than 400,000 test kits by October 26th). The illegal corn was found in over 300 corn products and in several overseas grain shipments. In many cases, contaminated corn had to be replaced with more expensive uncontaminated food corn. Surprisingly, Cry9C protein was also detected in a Garst corn hybrid that was not sold under the StarLink trademark. Apparently seed or pollen contamination occurred at some point in the seed production process. Any non-StarLink corn testing positive for Cry9C can be channeled to approved feed and industrial uses, in the same manner as StarLink corn.

In hindsight, Aventis and EPA agreed that the partial registration was impractical to enforce. Therefore, sales of StarLink corn seed to farmers for next season were voluntarily halted. The use of StarLink corn in livestock feed and industrial, non-food uses remains fully approved by EPA. Aventis has asked for a temporary four-year food registration to allow the remaining small amount of StarLink to move through the food grain system. Several anti-GM food groups oppose this proposal.

On December 5, EPA's scientific advisory panel stated that based on existing data, Cry9C had a "medium probability" of actually being a human allergen. But they said amounts in food are so low that there is a "low probability" that anyone would actually have an allergic reaction. The panel noted that approximately 40 people claimed they became ill after eating products containing StarLink. Studies are planned to follow up on these cases. Any kind of food registration is unlikely until the allergen question has been settled.

Fortunately, the impact of this episode in Kansas has been rather minor. There were reports last fall that a milling facility in Atchison, Kansas had to be shut down and cleaned out because of possible StarLink contamination. But since most corn in Kansas already goes to animal feed, Kansas producers have been relatively unscathed by the StarLink issue. Producers and grain handlers in some other states have not been as lucky. Aventis has several programs in place to help compensate farmers and grain handlers for those losses. At least two class action lawsuits were filed on behalf of producers because they blame the company for not properly informing them of the need to keep StarLink separate from food corn.

There are several lessons from this fiasco. First, do not register products for animal feed uses that are not approved for human consumption. It is very hard to keep them from accidentally commingling with food grain. Second, do not assume that non-GM seed is necessarily GM-free because seed contamination can occur. Third, it would be very helpful if we had a contamination tolerance standard since even trace levels can be detected with ultra-sensitive DNA tests. The Europeans use a 1% contamination tolerance and it might have avoided the whole StarLink debacle if we did the same. Fourth, be cautious with new products that have not been approved by our major grain customers. Both Pioneer and Monsanto have recently committed to keeping new GM varieties out of international grain shipments until approved by the recipient country. Rather than a moratorium, they proposed grain segregation and/or targeting new products to farming regions that do not export significant amounts of grain. We shall see whether they can do a better job of product stewardship than was done with StarLink."

For more information, visit the Aventis CropScience website:

<http://www.us.cropscience.aventis.com/AventisUS/CropScience/stage/html/regstatus.htm>

(Phil Sloderbeck, Kansas State University)

EPA's PESTICIDE PRODUCT LABEL SYSTEMS (PPLS) NOW ON WEB

I recently received this from a colleague. "EPA's Pesticide Product Label System (PPLS) is now available on the Internet. PPLS is a collection of images of pesticide labels, which have been approved by the Office of Pesticide Programs (OPP) under Section 3 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). EPA is posting this collection to make EPA's pesticide regulatory program more readily accessible to the public and to simplify the process by which stakeholders can review label information.

The collection contains the initially approved label for pesticide products registered under FIFRA, Section 3, as well as subsequent versions of labels, which have changed via amendment or notification.

In addition to the stamped approved labels, this collection contains any associated correspondence about the terms of registration specifying any changes which the registrant was required to make in the final printed label.

Information on the system, including limitations to its content and functionality, are available at the website at <http://www.epa.gov/pesticides/pestlabels/>.

For further general information on PPLS, contact Yvonne Brown at 703-305-6473; e-mail: Brown.Yvonne@epa.gov. For web-related questions on this matter, contact either John Jamula at 703-305-642; e-mail: Jamula.John@epa.gov, or Jim Beech at 703-305-6622; e-mail: Beech.James@epa.gov.

UPCOMING MEETINGS

Colorado Conservation Tillage Association (CCTA) Winter Conference Sterling – February 6 & 7

The CCTA will hold it's annual Winter Conference at the Northeastern Junior College Events Center in Sterling, Colorado on February 6 and 7, 2001. The Theme is "Sharing the Wealth of Experience". This will be the 13th annual CCTA meeting. The conference is specifically for reduced till and no till farmers from Colorado, Kansas, Nebraska, Wyoming and South Dakota.

There will be various talks and breakout sessions on numerous subjects. The breakout sessions are 50 minutes in duration with about 35-40 minutes of topic presentation and then about 10-15 for open discussion. Many of the sessions will be repeated, so everyone can get to the ones most relevant to their interest.

For more information, contact: Ronald Miller, CCTA Event Coordinator,
CCTAREP@aol.com. (Brown)

Colorado Organic Producers Association Conference and Trade Show Brighton, February 7 & 8

The Colorado Organic Producers Association will hold their annual conference and trade show at the Adams County Regional Park and Fairgrounds, Wednesday, February 7 and Thursday February 8.

The program is quite varied and promises something for anyone interested in organic production, regulation and economics. Topics range from "***Trends in the Organic Industry, Transgenic Crops: Methods, Benefits, Concerns, GMO Influence on Organic Production, Chemical Trespassing, Coping with Uncertainties in Organic Farming, Food Safety and Quality Standards from Field to Table***" and many more. It is an outstanding collection of diverse topics, viewpoints and speakers. I urge anyone remotely interested in organic production to attend.

For further information, contact: Nana Mejia (Adams County Cooperative Extension) at (303) 637-8114 or e-mail nmejia@adams.co.us or the Adams County Cooperative Extension office at (303) 637-8100 or e-mail adams@coop.ext.colostate.edu. (Brown).

Commercial Pesticide Applicator Training Workshop Grand Junction - February 22 & 23

The Pesticide Applicator's Act (Title 35, Article 10) requires that any person engaged in the business of applying or supervising the use of pesticides in Colorado (for hire) have a valid license. In order to renew a license without examination, each qualified supervisor and each certified operator must obtain Continuing Education Credit (CEC) in each of the categories for which he/she is licensed.

A workshop has been scheduled for the Grand Junction Holiday Inn for February 22 and 23. The sessions in this workshop have been approved by the Colorado Dept of Agriculture for CEC credit. The schedule is located on the Internet at:
<http://www.colostate.edu/Depts/CoopExt/TRA/compestwksp.htm>

If you have questions on this workshop, please contact:
Curtis Swift (cswift@coop.ext.colostate.edu) or Wayne Cooley
(wcooley@coop.ext.colostate.edu).

CYTOSPORA CANKER

Curt Swift (Cooperative Extension, Grand Junction) prepared this summary of a recent paper on *Cytospora* canker published by Bill Jacobi and one of his students, Jeff Kepley at CSU. The paper notes that *Cytospora* canker is host specific and more damaging on drought-stressed trees. The paper is:

Kepley, J.B., and Jacobi, W.R. 2000. Pathogenicity of *Cytospora* fungi on six hardwood species. *Journal of Arboriculture* 26(6):326-332.

Cytospora Ehrenb.:Fr., the causal agent of *Cytospora* canker, is reported worldwide infecting more than 70 species of woody plants. In this research report, Kepley and Jacobi collected *Cytospora* isolates from six common urban and riparian tree species in Colorado.

The *Cytosporas* and respective hosts were identified as:

aspen (<i>Populus tremuloides</i>)	- <i>Cytospora chrysosperma</i>
green ash (<i>Fraxinus pennsylvanica</i>)	- <i>Cytospora pruinosa</i>
Siberian elm (<i>Ulmus pumila</i>)	- <i>Cytospora sacculus</i>
alder (<i>Alnus</i> spp.)	- <i>Cytospora umbrina</i>
cotton wood (<i>Populus</i> spp.)	- <i>Cytospora chrysosperma</i>
multi- and single-stemmed willow (<i>Salix</i> spp.)	- <i>Cytospora fugax</i>

Three experiments were conducted inoculating the tree species listed above with each of the *Cytospora* isolates. Wounds were made at four sites around each tree. Three of these wounds were inoculated with the fungus. The fourth site did not receive the fungus and was used as a comparison (control) for canker development. In one portion of the study, trees were subjected to drought stress conditions.

Following are the results of this research.

1. Several species of *Cytospora* are common in Colorado.
2. *Cytospora* tends to be host specific:
 - a. Aspen and cottonwood isolates were pathogenic only on aspen and cottonwood trees.
 - b. Isolates collected from multi-stemmed willows caused cankers on aspen but not on single-stemmed willows.
 - c. *Cytospora* collected from green ash caused cankers on green ash and Siberian elm.
 - d. *Cytospora* collected from Siberian elm was found to cause cankers on Siberian elm and seldom on cottonwood.
 - e. Isolates collected from alder caused cankers only on alder and even then, only rarely.
3. Drought stressed willows were found to be more susceptible to canker development than willows that were well-watered.

Conclusions:

- *Cytospora* fungi that are host specific are generally not a threat to other nearby different tree species.
- Drought stress increases canker development.”
(Swift)

WEB SITES FOR BOTANICAL WEB PAGES

Nana Mejia, (Adams County Cooperative Extension, nmejia@co.adams.co.us) recently sent the following address for web pages on botanical and horticulture terms. These are extremely useful and are of interest to many working in ag and related areas. I have included them below. Thanks to Nana.

Harcourt AP Dictionary of Science and Technology Botany

<http://www.harcourt.com/dictionary/browse/15/A.html>

<http://www.harcourt.com/dictionary/browse/15/A.html>

GardenWeb Glossary of Botanical Terms

<http://glossary.gardenweb.com/glossary/>

<http://glossary.gardenweb.com/glossary/>

(Brown)

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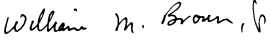
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Where trade names are used, no discrimination is intended, and no endorsement by the Cooperative Extension Service is implied.

Sincerely,


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