UF UNIVERSITY of FLORIDA | IFAS EXTENSION

# Citrus Notes

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## Inside this Issue:



***Dear Growers,***

***We have included an update on additional citrus greening finds in Polk County along with a symptomology update from greening infected trees in Hillsborough County. Along the same theme, I have included information on helping you diagnose citrus greening foliar symptoms from those of phytophthora like induced yellowing. Researchers at the CREC in Lake Alfred have developed a starch test to screen leaves for HLB sampling. The 2007-08 Winter Weather Watch begins on November 15, 2007. Don't forget to send in your registration form for the "Citrus Employee Safety Training and Tractor Rodeo" program to be held in November.***

***Enjoy the issue,***

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## *Hillsborough County Citrus Roundtable*

Mark you calendars for Wednesday, November 7, 2007, for our Citrus Roundtable. Our meeting will begin at 10:00 a.m. at the Hillsborough County Cooperative Extension Service Office in Seffner.

This month e our topic will be “New Developments in Citrus Leafminer Monitoring and Control by Pheromones”. CEU’s will be available for your Restricted Pesticide License. We will be providing refreshments in the form of donuts, OJ and coffee for participants.

## *Citrus Greening Update Polk County*

Since our last issue, new information has been released on a number of additional citrus greening infections in Polk County. A mid-August find was detected between Winter Haven and Lake Alfred. This location, along with 4 additional finds, two off Highway 98 between Ft. Meade and Frostproof, the second just north off the West side of Lake Buffum and the third on Lake Henry Road south of Sinkhole Road. Symptoms found in Polk County are similar to those that we find over in Hillsborough County during this time of the year. It appears, based on the symptoms expressed, that some of the Polk County trees may have been symptomatic to some extent during the past year. I strongly suggest that you and your employees should make plans to attend one of the “Citrus Greening Identification and Worker Survey Training” programs offer by the UF/IFAS Citrus Extension Agents.

## *Citrus Greening Update Hillsborough County*

In October, trees that last winter had no apparent greening symptoms, if infected, are now beginning to show full blown blotchy mottle in the interior canopies of the trees. Generally one can also find yellow veining typical of trees infected with the greening bacterium. All but one of the trees that had symptoms last winter have been removed and the one remaining tree has continue to lose foliage and stopped growing. Most of the infected branches on this tree have very little fruit set.

*Yellow veins and blotchy mottle as seen in September*

*Blotchy mottle foliage that appeared first this September*

## *Diagnosing Citrus Greening from Phytophthora like Symptoms*

When comparing citrus greening symptoms and those of phytophthora diseases, I have included mechanical bark damage since expression of these symptoms are typical of phloem disruption.

I thought I might share with you a short story about a recent experience I had when out in the greening infected Hillsborough County grove last month. Let me say that until last winter my experience with citrus greening and the symptoms of the disease had largely been based on observations made during a trip to Brazil last summer. So, I would not consider myself a world class expert in greening identification last winter armed only with that limited experience. To gain additional skill in detecting citrus greening in the field, I held a number of training opportunities this past spring that allowed growers and myself to locate symptomatic trees in this grove. We identified additional trees not found earlier and felt fairly confident that any trees with symptoms had been found. This past month there were a group of folks that came out to look at symptom development in the grove and decided that it was time to see if I had missed any trees earlier this year. After a time a tree was located that they thought I had missed. We all went over to the tree and began a closer inspection of the symptoms. From a distance you could see the bright yellow veins on a shoot extending out from the

*Yellow shoot within canopy of citrus tree*

*Closer examination of yellow shoot exhibiting yellow veins*

canopy. Looking at the shoot it was evident that the twig was half broken and exhibited the characteristic symptom of damaged bark similar to footrot or phytophthora but only on one branch. This type of symptom is fairly easy to discern but will often catch your eye when surveying for greening in the field.

Phytophthora may cause a rapid separation of the bark tissue from the trunk or as with phtophthora induced root-rot a severe dysfunction of the root-system. This type of

*Yellowing of foliage due to advance symptoms of phytophthora*

*Overall wilting and yellowing of young tree in advance stage of footrot demise*

decline can begin as a mild yellow vein chlorosis progressing into a total yellowing of citrus foliage with rapid subsequent defoliation

*Rapid decline and death of young tree infected with phytophthora*

*Separation of bark tissue from trunk of young tree infected with phyophthora*

and tree death if left untreated. The yellow vein symptoms of citrus greening are more persistent and are not always followed by rapid defoliation and tree death. In some recent instances some citrus trees that have shown rapid defoliation with a general dieback of the canopy have tested positive for citrus greening. It appeared that these trees did not always exhibit typical symptoms associated with citrus greening. It is speculated that this maybe a combination of tree declining problems, a tree infected with citrus greening and citrus blight at the same time. In instances like this it becomes extremely difficult to confirm the likely cause of the decline so it maybe time to adopt the tree removal motto: “if in doubt pull it out”

In a shoot with mechanical damage, the yellow veins are almost impossible to distinguish from those due to citrus greening. The defining diagnostic feature of such shoots would be mechanical or girdling damage on the shoot below the yellow foliage. In greening you will not find this characteristic damage

*Yellow veined shoot on citrus tree canopy*

*Mechanical damage that caused shoot symptoms above*

*Yellow vein mechanical damage where leave main-vein has been damaged*

on the shoot. A single leaf can also exhibit this type of damage when the leaf main-vein becomes damaged. This injury is localized to a single leaf and not an entire shoot or section of a tree.

## *An iodine-based starch test to assist in selecting leaves for HLB testing*

Ed Etxeberria, Pedro Gonzalez, William Dawson and Timothy Spann

Diagnosing huanglongbing (HLB or citrus greening disease) can be difficult under field conditions when relying solely on visual symptoms. The best diagnostic symptom of HLB is the blotchy mottle pattern on leaves (Figure 1 A). However, it can be difficult to distinguish blotchy mottle caused by HLB infection from similar symptoms caused by

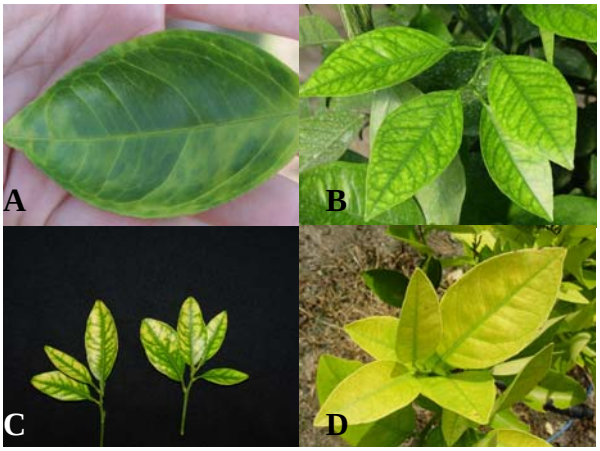


*Figure 1. Citrus leaves showing HLB symptoms (A), manganese (B), zinc (C) and iron (D) deficiency symptoms. Photos B, C, and D provided courtesy of Tom Obreza, University of Florida.*

girdling of the branches and other physiological disorders or diseases. For example, micronutrient deficiencies, such as zinc, manganese and iron (Figure 1 B-D), can be mistaken for HLB. Currently, the only definitive test for HLB is PCR analysis (PCR=DNA based test); however, this test is time consuming and expensive, and is not suitable for large numbers of samples. Thus, a rapid, simple field diagnostic test that could be used to prescreen samples intended for PCR analysis would be beneficial.

Anatomical studies conducted in the 1960s, found "massive accumulation" of starch in leaf samples collected from HLB infected sweet orange trees. More recent studies have quantified starch accumulation in HLB infected leaves at six times more than healthy leaves. Starch readily reacts with iodine, resulting in a very dark-grey to black stain. Recently, a number of researchers from Vietnam and Japan have been working to adapt this starch/iodine reaction into a diagnostic tool for HLB, and they report up to 90% agreement between PCR analysis and starch tests with iodine. IFAS has not performed a similar correlation analysis, although studies are ongoing. An IFAS developed version of this test, how to perform it, the required materials, its potential benefits, its limitations, and how to interpret the results is presented here.

**Selecting leaves for testing**

Choosing leaves to test is a crucial step in the diagnostic or confirmation process. Just as submitting hundreds of leaves for PCR testing would not be efficient, it is not efficient to use this test on leaves whose symptoms can easily be determined to be caused by something other than HLB. We recommend the following criteria be used in selecting leaves:

1. Select leaves expressing strong symptoms and avoid those with physical damage or symptoms clearly related to some other problem, e.g. nutrient deficiency. Use of the IFAS Citrus Greening Field ID Pocket Guide or other such tool is helpful.
2. Select symptomatic leaves only from healthy, undamaged branches. Branches that are broken, girdled or are otherwise physically damaged may cause starch to accumulate in leaves even if HLB is not present.
3. Leaves that are in full sun locations are best, try to avoid heavily shaded leaves.
4. Always test at least 2-3 leaves displaying prominent symptoms of HLB.

**Iodine solution**

There are a number of iodine solutions available at drugstores and pharmacies (Table 1). For this test, purchase products labeled as either "tincture of iodine" or "iodine tincture." These products contain iodine and sodium iodide dissolved in alcohol and water. Other iodine products that are labeled "iodine solution" such as Betadine® (povidone-iodine) contain surfactants and other chemicals that prevent them from reacting with starch.

For use in this test, the purchased tincture of iodine should be diluted 1 to 10 with water (i.e. 1 part iodine mixed with 9 parts water).

Do **not** use the iodine tincture straight; the undiluted tincture will react very strongly with even small quantities of starch, potentially leading to false positives. The diluted iodine solution should be stored in a dark tinted (e.g. brown glass) or opaque container. Clear containers can be covered with aluminum foil. The prepared solution will last for a few days when properly stored.

**Performing the test**

The steps to follow to perform the iodine test are outlined below. As with leaf selection, the portion of the leaf tested is important. In cases where the entire leaf is not symptomatic, the symptomatic section is preferred for testing. This test is intended to be used in the field; however, if is impractical to test leaves in the field, they may be sealed in a zip-top bag and stored in a cooler with ice until the test can be performed. Leaves should not be stored for more than 24 hours, and then only under refrigerated conditions.

1. Using a sharp, clean razor blade cut a section from the selected leaf that includes the symptomatic tissue (Figure 2). Do not cut through the mid-vein, rather cut sections from the leaf blade on either side of the mid-vein.
2. Immerse the cut section(s) of leaf in the prepared iodine solution for 1.5 - 2 minutes.
3. Remove the sections and rinse with clear water.
4. Examine the cut edge of the section(s) for dark staining using a hand lens or magnifying glass.

Figures 3-5 show a series of leaf sections, including healthy leaves, HLB positive leaves and nutrient deficient leaves, after iodine staining. Healthy leaves may show some starch staining; however, it is generally confined to a few cell layers at the upper side of

*Figure 2. A citrus leaf with the vein corking symptom of HLB properly sectioned for the iodine test. The arrow indicates the symptomatic section to be used for testing.*

the leaf and does not show the same intensity of staining as an HLB positive leaf (compare Figures 3B and 4). HLB positive leaves stain a very intense dark grey to black throughout the entire cut surface (Figure 4). Nutrient deficient leaves generally stain similar to a healthy green leaf (Figure 5).

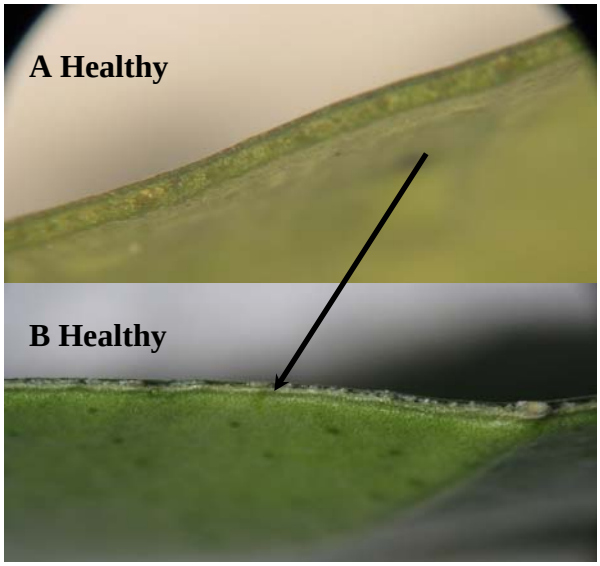



*Figure 3. A healthy citrus leaf will show no (A) or very little (B) staining after immersion in the iodine solution for 2 minutes. Note how the staining that does occur in a healthy leaf (B) is limited to a couple of cell layers along the leaf surface (arrow).*

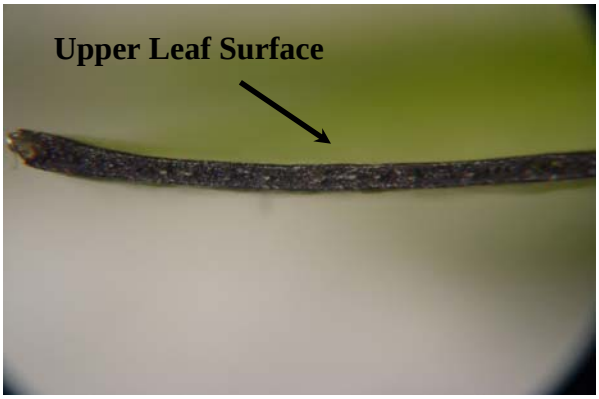



*Figure 4. A leaf that showed strong blotchy mottle symptoms of HLB infection stains very dark grey to black along cut surfaces when immersed in iodine solution for 2 minutes. Note that all cell layers of the leaf are stained unlike in a healthy leaf (see Figure 3B).*

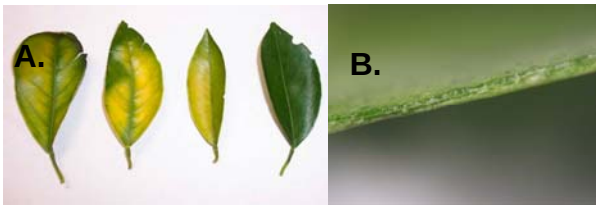



*Figure 5. Leaves showing various yellowing symptoms, not typical of HLB, probably due to nutrient deficiency (A) do not stain darkly when immersed in iodine solution (B), indicating that these would not be good samples to submit for PCR analysis.*

Table 1. Iodine solutions commercially available at most pharmacies and drugstores.

| Name | Active ingredient(s) | Starch reactive |
|---|---|---|
| Betadine, Xenodine or generic equivalent | Povidone-Iodine 10% (PVP) | No |
| Iodine tincture USP | Iodine 2% (may or may not also include sodium iodide 2.4%) | Yes |
| Lugol's iodine* | Iodine 2%, potassium iodide 4% | Untested, but should react |

*This is a dietary supplement sold to alleviate iodine deficiency in humans, and thus is expensive and impractical to use for this test.

## Interpreting the results

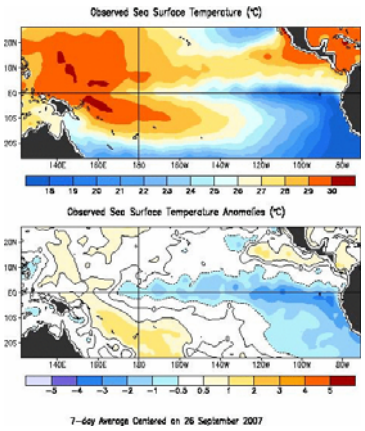
A darkly stained leaf from an undamaged branch indicates that leaf has an above normal level of starch accumulation; it **does not** indicate that the leaf is HLB positive. HLB infection is **not** the only condition that may cause excessive starch accumulation in leaves. Some cultivars of citrus (e.g. Murcott) have naturally high levels of starch in their leaves. Physical damage (e.g. girdling, limb breakage, insect feeding) that disrupts sugar transport in the phloem will lead to starch accumulation. Diseases other than HLB (e.g. *Phytophthora*) may also lead to starch accumulation in leaves. Similarly, the test does not appear to be useful when trees are growing in pots or greenhouses, or for small trees growing in nurseries.

The purpose of this test is to assist you in determining which leaves, with difficult to interpret symptoms, should be submitted for PCR analysis. For example, this test can help you to distinguish between confusing nutrient deficiency symptoms and leaves that may be HLB positive. This test can be a useful tool to help you select the best samples for PCR analysis, thus helping to reduce the number of negative samples submitted. IFAS **does not** recommend that the results of this test be used in making decisions about the HLB status of a tree or whether to remove a tree. PCR testing remains the current, definitive test for HLB and it should be relied upon for making management decisions.

## Selected References

Hong, L.T.T. and N.T.N. Truc. 2003. Iodine reaction quick detection of huanglongbing disease. Proceedings of the 2003 Annual Workshop of JIRCAS Mekong Delta Project: 1-11. http://www.ctu.edu.vn/institutes/mdi/jircas/JIRCAS/research/workshop/pro03/B3-Fruit%203%20(Hong).pdf

## *Winter Outlook Calls for La Nina Conditions to Continue*




The latest forecast from the Climate Prediction Center of The National Oceanic and Atmospheric Administration (NOAA) calls for La Nina conditions to persist through the 2007-08 winter. This in general terms relates to above normal temperatures and reduced rainfall during the winter months for Florida. The following forecast summary comes from the Southeast Climate Consortium's AgClimate website at: http://www.agclimate.org

Cooler than normal waters first surfaced near the coast of South America back in late February of 2007. Since that time, the cooler surface temperatures have persisted in the area while a large pool of colder waters has grown beneath the surface and extends well out into the Pacific, nearly to the international date line. The surface waters in the central Pacific have also begun to respond and the pattern of cold water is now taking the classic La Niña form. In addition, atmospheric indicators including surface winds, pressure, and cloudiness are all beginning to point to La Ni–a conditions developing.

A La Niña watch has been issued by the Southeast Climate Consortium and the state climatologists of Alabama, Florida and Georgia. A watch means that conditions are likely for the development of a full-fledged La Niña event. The watch will be followed by an official La Niña declaration if development continues in the next one to three months.

The tropical Pacific Ocean is now poised to slip into a full-fledged La Niña. Chances are very good that La Niña conditions will develop, strengthen, and persist through the fall and winter months. This follows months of threatening with cooler than normal water temperatures near the coast of South America.

La Niña is commonly thought of as the opposite of El Niño. Under La Niña conditions, sea surface temperatures along the equator in the eastern and central Pacific Ocean are a few degrees colder than normal for a minimum of five months. La Niña typically returns every 2 to 7 years.

If La Niña continues to strengthen, the first impact we would anticipate is a more active tropical hurricane season. Studies show that La Niña is more favorable for hurricane development in the Atlantic Basin and that storm tracks curving up the U.S. East Coast are more likely. La Niña would also favor a warm and dry fall season in the Southeast and a likely continuation of drought.

## *Winter Weather Watch 2007-2008*

The 2007-08 Winter Weather Watch program is scheduled to kickoff on November 15, 2007, and last through March 15, 2008. The program provides daily agricultural weather forecasts for locations from West Central Florida to South Florida. We will be providing daily zone or county forecasts along with the 6-10 day, 8-14 day and the weekly outlook. Leaf freezing tempera-

tures will also be available weekly during the winter. This year citrus leaf freezing point temperatures will only be available for locations within the Southwest Florida Water Management District. Our ability to provide citrus leaf freezing temperature information statewide was due to grant funds provided by the Florida Department of Agriculture and Consumer Services, Office of Agricultural Water Policy. Unfortunately, funds were not available for this year's statewide citrus leaf freezing point temperatures. We do have support from the Southwest Florida Water Management District and thus we will be providing citrus leaf freezing temperature data for locations in Polk and Hillsborough Counties. A special thanks goes out to the district for their continuing support of this water management tool.

Fred Crosby (retired meteorologist in-charge NWS Ruskin) will be providing the weekly outlooks for our forecast area. In addition, Fred will be providing special weather narratives during freeze events for our forecast area. One more feature available only from the Winter Weather Watch program is the use of the "Modified Brunt Equation" for prediction of minimum temperatures based on sunset air temperature.

If you are interested in participating, just fill out the enclosed registration form along with a $100.00 subscription fee (that averages out to only $25.00 per month). You will receive an updated Winter Weather Watch Manual and an unlisted phone number to receive the weather forecast products.

## *Pesticide News and Information*

**Link Between Virus and Bee Collapse**

A team led by scientists from the U.S. Department of Agriculture's Agricultural Research Service, Pennsylvania State University, and Columbia University has found an association between colony collapse disorder (CCD) in honey bees and a honey bee virus called Israeli Acute Paralysis Virus, according to a paper published in the journal Science. Genetic screening of honey bees collected from 30 colonies with CCD and 21 bee colonies with no CCD from four locations in the United States allowed researchers to identify pathogens to which the sampled honey bees had been exposed. In total, the honey bees (both CCD and non-CCD honey bees) were found to harbor six symbiotic types of bacteria and eight bacterial groups, 81 fungi from four lineages, and seven viruses.

The search for potential pathogens was done using a new means of sequencing the genetic material from the healthy and unhealthy bees. This technology, termed high-throughput sequencing, allows for an unbiased look at DNA from all the organisms, bacteria, fungi and viruses present in the bees. Then the DNA sequences are searched against known genomic libraries for best matches. This gives a very precise picture of the organisms present, at least to the family or genus level. Often specific species can be identified, and unknown organisms can be cataloged for further study.

The only pathogen found in almost all samples from honey bee colonies with CCD, but

not in non-CCD colonies, was the Israeli Acute Paralysis Virus (IAPV), a dicistrovirus that can be transmitted by the Varroa mite. It was found in 96 percent of the CCD-bee samples. This is the first report of IAPV in the United States. This virus was initially identified in honey bee colonies in Israel in 2002, where the honey bees exhibited unusual behavior, such as twitching wings outside the hive and a loss of worker bee populations. Although IAPV has not yet been formally accepted as a separate species, it is a close relative of Kashmir Bee Virus, which has been previously found in the United States. More information about CCD can be found at: www.ars.usda.gov/is/br/ccd/ (USDA ARS, 9/6/07).

**Rice Purge**

On August 18, 2006, the U. S. Department of Agriculture announced that traces of an unapproved, genetically engineered rice had been discovered in U. S. long-grain rice supplies. Keith Glover, president and chief executive officer of Producers Rice Mill Inc. in Stuttgart, was quoted as saying, "I wish that day would never have happened. It really created a lot of hardship for a lot of people: farmers, mills, exporters, seed dealers... everybody in the industry was impacted." The USDA and the Food and Drug Administration said the genetically engineered rice - one of Bayer CropScience's LibertyLink varieties - posed no health, food safety or environmental risks. But many foreign countries, which buy about half of each year's U. S. rice crop, shun genetically engineered foods. As a result, sales in nearly half of all U. S. rice export markets were negatively affected. Exports to the 27 member nations of the European Union halted almost completely. The fallout from the problem was particularly acute in Arkansas where the state's farmers produce about half of all U. S. rice. In 2006, Arkansas' rice harvest was worth $892 million, making it the state's single most valuable crop.

Since then, the U.S. rice industry has been working to purge LibertyLink traits from the country's long-grain rice supply. Great strides have been made, said Ray Vester, a Stuttgart rice farmer who is chairman of the USA Rice Federation's environmental regulatory subcommittee. Arkansas took the lead by banning the 2007 planting of Cheniere and Clearfield 131 seed, which both tested positive for the "adventitious presence" or unintentional commingling of trace amounts of the protein that makes LibertyLink rice varieties resistant to the herbicide Liberty, also known as glufosinate. Farmers and millers then were urged to thoroughly clean their equipment before starting the 2007 harvest.

Meanwhile, a German food producer, Rickmers Reismuehle, based in Bremen, filed separate federal complaints against Riceland Foods Cooperative and Producers Rice Mill. Rickmers alleged the Arkansas millers breached contracts with the food company by selling rice that did not meet the terms of a 2003 European Union ban on the importation and sale of genetically modified foods. The lawsuits seek judgment for damages incurred by Rickmers in purchasing, using, and recalling the rice and the food products made with it. (Arkansas Democrat-Gazette, 8/18/08 & AP, 8/23/07).

**Hard Time to Get Ahead for Plants**

Botanists at Oregon State University have discovered that a single plant gene can cause resistance to one disease at the same time it produces susceptibility to a different disease - the first time this phenomenon has ever been observed. The finding, published this week in Proceedings of the National Academy of Sciences, may help scientists better understand the pathways that genetic disease resistance can take. Plant diseases are a multi-billion dollar problem in agriculture, and scientists for decades have been trying to develop new

varieties of plants with resistance to one disease or another.

The research also explains why an epidemic of Victoria blight in oat, a fungal disease, occurred in the United States in the 1940s. The Pc-2 gene in a widely-planted, imported variety of oat provided good resistance to oat rust, which is a costly crop disease. However, the same gene also caused susceptibility to Victoria blight, and its use had to be discontinued as a result. "The blight fungus makes a toxin that causes disease in susceptible plants - that is, only plants that carry this gene," said Jennifer Lorang, an OSU research associate. "But it also turned out that the same gene can provide disease protection. This is very unusual, and should provide insight into genetic influences on disease resistance and susceptibility." Most work that has been done on plant diseases is focused on disease resistance, the researchers said, and less has been done on the genetic basis for disease susceptibility. Among other things, the study suggests that plants bred for resistance to one disease may inadvertently be changed in ways that make them susceptible to a different disease. It also indicates that the physiological basis for disease resistance and susceptibility may have some similarities.

The actual plant used to identify these genetic pathways was Arabidopsis, a small plant in the mustard family, which is frequently used for genetic research. The scientists put the Pc-2-like gene in Arabidopsis, which has a similar function in oat, and were able to determine that it causes disease susceptibility, although it looks like a resistance gene. (OSU, 8/27/07).

**Enable® 2F**
The Florida Department of Agriculture and Consumer Services (FDACS) has approved a significant new use for fenbuconazole (Enable® 2F) fungicide on citrus fruit. It was effective 8/3/07. (FDACS PREC Agenda, 9/6/07).

**Matrix®**
Based on a request by Dupont, the EPA has approved tolerances for the herbicide rimsulfuron (Matrix®). Tolerances of importance in Florida include citrus and stone fruit. (Federal Register, 8/1/07).

**Imidan® 70W**
The Gowan Company has submitted a 2(ee) recommendation for the use of phosmet (Imidan® 70W) to control citrus psyllid on oranges and grapefruit. (FDACS letter of 8/20/07).

**Nexter®**
The Gowan Company has announced that pyridaben (Nexter®) miticide/insecticide is available again to Florida citrus growers. Field research conducted by the company supports the label claims of highly effective citrus rust mite management. Data indicate that the compound provides quick knockdown and extended control. It also may complement a resistance management program.

**Metasystox-R®**
On August 10, the EPA announced that it will not initiate a special review for 2,4-D, 2,4-DB, or 2,4-DP based on extensive scientific review of many epidemiology and animal studies that, by weight of evidence, do not support evidence of carcinogenicity. They also will terminate the special review of oxydemeton (Metasystox-R®) because mitigation measures are already in place. (OPP Update, 8/10/07).

**Lorsban®/Chlorpyrifos**
The United Farm Workers of America, AFL-CIO, and several other organizations have filed suit against the EPA in an attempt to get the agency to ban the pesticide chlorpyrifos (Lorsban®). Chlorpyrifos, which can be used

only for agricultural purposes in the U.S., is used by farmers for treating pests on cotton, corn, almond, and fruit crops. According to representatives from the United Farm Workers, the pesticide puts workers at risk of serious illness. In July, 28 Tulare County, CA grape pickers were reportedly sickened when the pesticide drifted from a nearby almond orchard into the vineyard in which they were working. An estimated 11 million pounds of chlorpyrifos is sprayed in the U.S. annually, 2 million pounds of which are sprayed in California. Chlorpyrifos has been on the market for more than 40 years and is approved for sale in over 100 countries. (CAL/OSHA Compliance Advisor, 8/8/07).

**On the lighter side**

In Wisconsin, farmer Mark Hilgendorf uses standard pesticides and he sprays them on his cornfield only twice a year. But a pesticide warning sign that he erected - tombstone-shaped, with a skull and crossbones at the top - has been up every day for the past three years, dead ahead of the entrance to an upscale subdivision that is being developed. Hilgendorf stated that he posted the sign simply to notify the subdivision residents that he uses pesticides, adding, "I didn't need these people to complain." But some residents of Prairie Glen, where homes sell "from the $340s," believe that the sign aims to scare people from moving in, or at least to irritate them. Enough of them have complained to the subdivision's developer, Bielinski Homes of Waukesha, that the home builder is trying for a second time to get the sign removed. Hilgendorf, 51, made news in 2002 when he parked a manure spreader in front of a "Welcome to Germantown" sign along Mequon Road north of what is now Prairie Glen. He said he was upset that the village put the sign in a leased field that he farms. (Milwaukee Journal Sentinel, 8/24/07).

**Food for thought**

In Bangkok, eleven tons of papayas were dumped outside the Agriculture and Cooperatives Ministry by Greenpeace in protest at the agency's move to lift a ban on open-field trials of genetically-modified crops. Passers-by took matters into their own hands and ran off with the fruit. Many, who mostly knew nothing about transgenic fruit, said they did not care about any health risks. They were just thinking about how hungry they were. (The Bangkok Post, 8/28/07).

## *Environmental Quality Incentives Program (EQIP)*

The Natural Resources Conservation Service (NRCS) is now taking applications for the Environmental Quality Incentives Program (EQIP). EQIP is a voluntary program that provides assistance to farmers and ranchers who face threats to soil, water, air and related natural resources on their land. **November 13, 2007 is the last day applications will be considered for the current funding period**. Growers and Ranchers can sign-up for EQIP at their local NRCS office at the USDA service center in their county. Growers must meet eligibility requirements.

One of the main benefits citrus growers can receive is cost-sharing assistance to convert existing irrigation systems to low volume irrigation systems to conserve water. Citrus growers can receive up to $690 per acre to convert to a more efficient irrigation system. The purpose is for growers to practice irrigation water management (IWM). Existing inefficient low volume systems which are upgraded in their efficiency may also be eligible for cost-share assistance. In addition, growers who wish to utilize soil moisture measuring equipment to practice advanced IWM may also receive an incentive payment of $52 per acre for a maximum of three years. Using

IWM, growers can irrigate to meet the water requirements of the crop without over watering the grove. Not only does over watering waste water, it can also lead to leaching of nutrients and pesticides out of the root zone where they are of benefit to the grower.

Cattle producers can benefit from EQIP by installing conservation practices such as cross fencing, watering facilities, brush control and other conservation practices. Additionally, the control of invasive exotic species such as tropical soda apple, cogon grass and others may be eligible for cost-share assistance. The amount of cost-share depends on the species being treated. Additional practices may be eligible for cost-share payments.

All EQIP applications are evaluated based on a system which utilizes national, state and local priorities to rank the applications.

Additional information can be obtained by contacting your local NRCS office or visiting the national or state NRCS websites. They are: http://www.nrcs.usda.gov/ or http://www.fl.nrcs.usda.gov/. The NRCS in Polk County can be reached at (863) 533-2051 ext. 3.