



Tree Diseases/Problems at the Plant Clinic

Stephanie K. Porter

University of Illinois Plant
Clinic Diagnostician & Plant
Diagnostic Outreach
Specialist -Crop Sciences,
CCA

University of Illinois Plant Clinic

1102 S. Goodwin

424 Turner Hall

Urbana, IL 61801

Open all year!

(217) 333-0519

IPM integrated pest management



UNIVERSITY OF ILLINOIS
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 **NPDN**
National Plant Diagnostic Network



University of Illinois website: <http://web.extension.illinois.edu/plantclinic/index.cfm>

University of Illinois Extension

University of Illinois Plant Clinic

Follow Us On...   

Let us help with your plant problems.
We do plant and insect identification, diagnosis of disease, insect, weed and chemical injury (chemical injury on field crops only), nematode assays, and help with nutrient related problems, as well as recommendation involving these diagnoses.

We just moved!

Contact Us
Plant Clinic
1102 S. Goodwin, S-417 Turner Hall
Urbana, IL 61801

Botryis Gray Mold on Strawberries

Explore the Plant Clinic

- About Us**
Get to know us better by reading about our history and current operations.
- Our Services**
We do identification, diagnosis, assays, nutrient assistance and more.
- Our Fees**
Learn about our fees for diagnosis and other services.
- Submit a Sample**
See our suggestions for specimen collection and submission.
- Sample Forms**
We have plenty of sample data forms to use with your specimen.
- Find Us**
Directions to help you find the Plant Clinic.
We are now open year round!
- Contact Us**
Contact the Plant Clinic staff for more
- Other Resources**
Check out our podcasts, publications
- Hot Topics**
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<https://www.facebook.com/UofIPlantClinic>

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<https://twitter.com/illplantcln>

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<https://universityofillinoisplantclinic.blogspot.com>

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PLANT DIAGNOSTIC SAMPLE SUBMISSION APP

- A new joint effort app involving eight cooperative universities
- A free download on the iOS app store
- Usable by anyone, allowing for a constant resource for plant, disease, pest, and other plant problem identification.
- Free submission to the U of I Plant Clinic
Not the case at all participating labs
- <https://itunes.apple.com/us/app/sample-submission/id669269520?mt=8>

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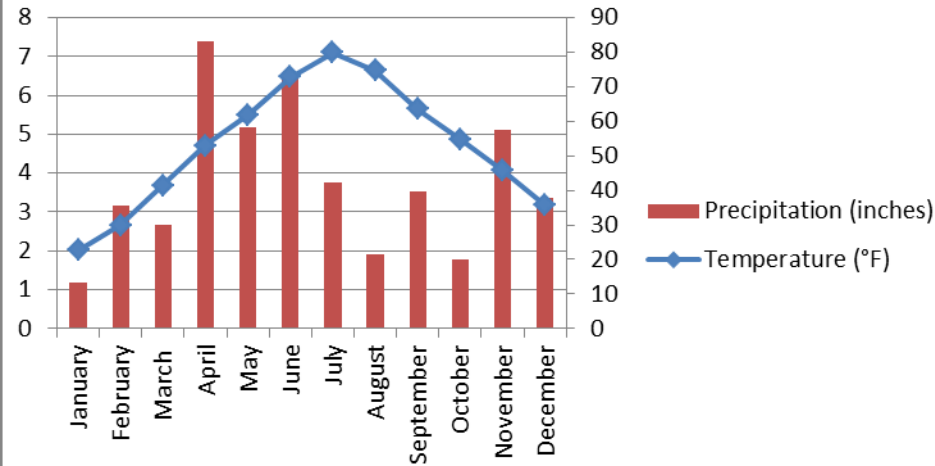
<http://hyg.ipm.illinois.edu/article.php?id=530>



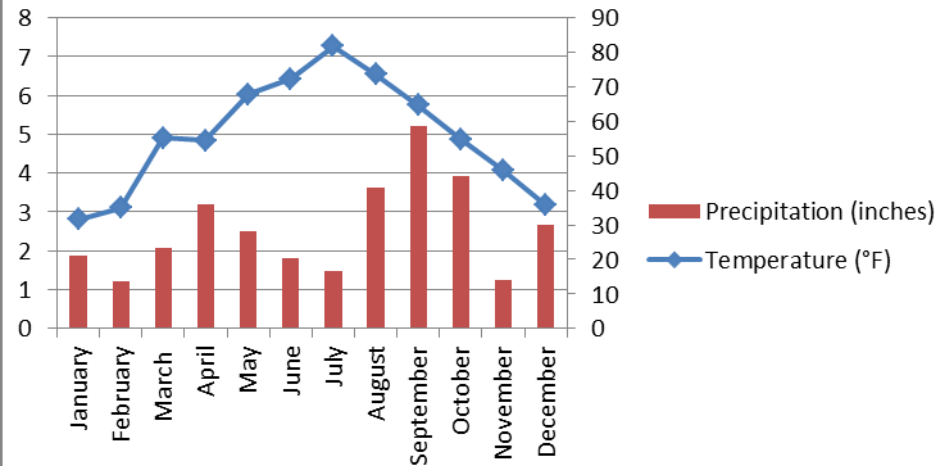
2011 – 2013 PRECIPITATION AND TEMPERATURE

— * NEW: MIDWEST REGIONAL CLIMATE CENTER OFFERS FREE ONLINE CLIMATE DATA TOOLS

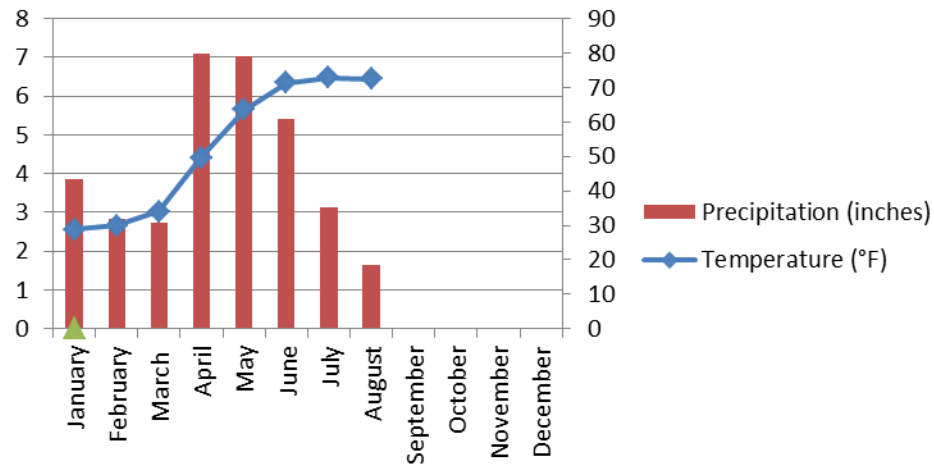
2011



2012

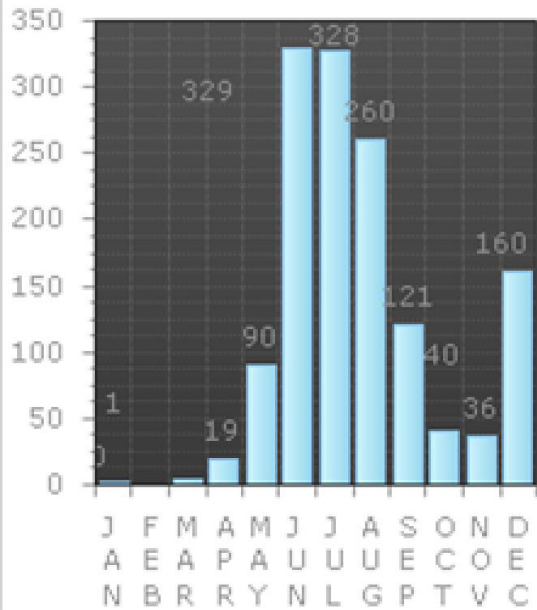


2013

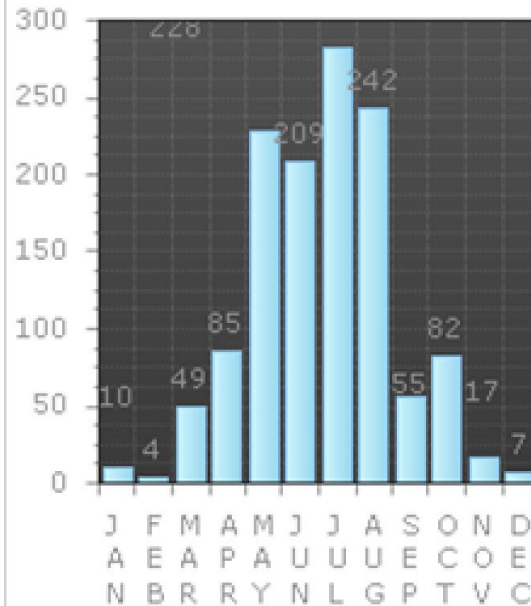


2011-2013 PLANT CLINIC SAMPLE SUBMISSION:

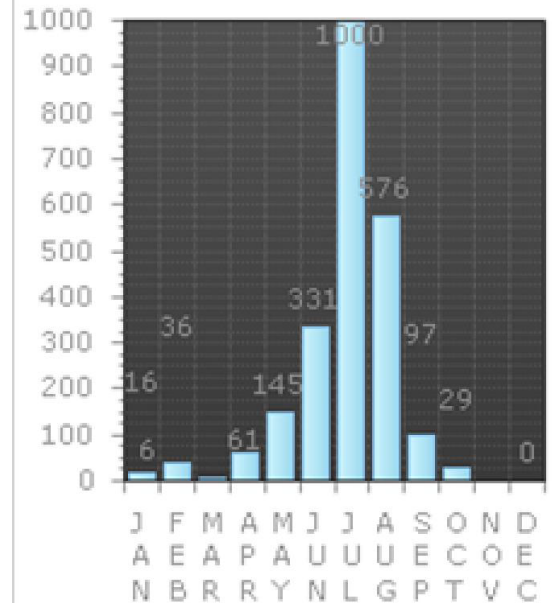
Sample Submissions By Month
(1/2011 through 12/2011)



Sample Submissions By Month
(1/2012 through 12/2012)



Sample Submissions By Month
(1/2013 through 12/2013)



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U OF I TREE DISEASE AND PEST UPDATES

University of Illinois Plant Clinic

TUESDAY, JULY 9, 2013

U of I Tree Disease and Pest Update: July 1, 2013

Monthly Summary

Average Temperature and Precipitation

Average Temperature (°F)
June 1, 2013 to June 30, 2013

Accumulated Precipitation (in)
June 1, 2013 to June 30, 2013

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BLOG ARCHIVE

- ▼ 2013 (23)
 - ▶ October (1)
 - ▶ September (1)
 - ▶ August (2)
 - ▼ July (5)
 - Why isn't my Fungicide Working in my Soybeans?
 - Identification of fire blight on apple and pear
 - U of I Tree Disease and Pest Update: July 1, 2013...
 - Plant Clinic Mystery: Iron chlorosis or Herbicide...
 - Question: What could cause an uneven stand of corn...
 - ▶ June (3)
 - ▶ May (2)
 - ▶ April (2)
 - ▶ March (3)
 - ▶ January (1)

- May 1st 2013
- June 1st 2013
- July 1st 2013

Monthly Summary of:

- Average Temperature and Precipitation
 - Modified Growing Degree Days (Base 50° F)
 - GDD of Landscape Pests
 - GDD of Conifer Pests
 - Invasive Species News from the Illinois Cooperative Agriculture Pest Survey (CAPS) Program
- Kelly Estes,

Update from the U of I Plant Clinic

(Courtesy of Stephanie Porter, Diagnostician and Outreach Coordinator and Travis Cleveland, Pesticide Safety Education Specialist)

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<http://universityofillinoisplantclinic.blogspot.com/>

TREE PROBLEMS AND DISEASE AFTER DROUGHT

Problems on:

- Newly planted and shallow planted (conifers or in clay)
- Non-native
- Unsuitable site (soil type, pH, slope, south/west facing)
- Stressed (improper planting)

Effects of drought:

- Scorching or wilt
- Slowing or stopped growth (branch/diameter)
- Fine roots die
- Premature dropping of leaves
- More sensitive to pesticides, de-icing salts
- Nutrient/pH issues (iron chlorosis)
- Secondary disease and pests
- Signs of stress (early Fall color)
- Dead or dormant? –wait until Spring

Diseases:

- Root and Butt rots (wood rots)
- Armillaria root rot – pine, fir, oak maple
- Diplodia tip blight – pine
- Rhizosphaera needle cast – spruce
- *Verticillium* wilt – many spp.
- Dutch Elm Disease
- Ash and Elm Yellows – Phytoplasma
- Pine wilt nematodes

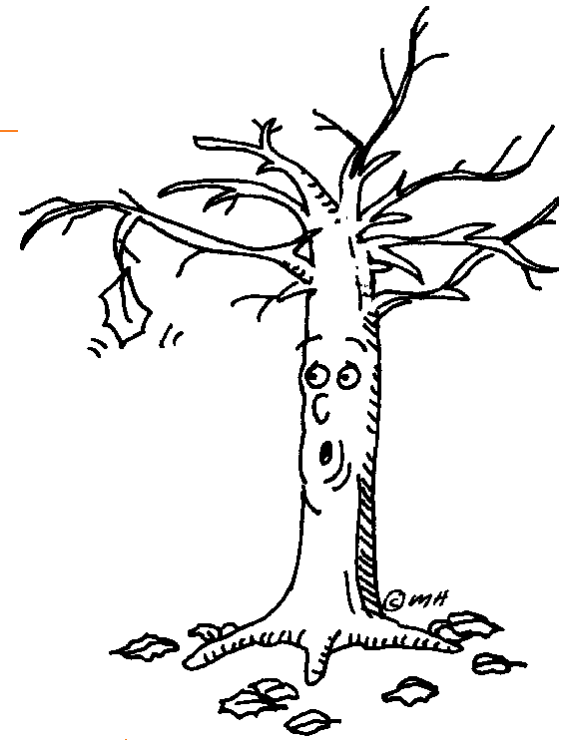
Cankers:

- Hypoxylon canker – oak, other spp.
- Thyronectria canker – honeylocust
- Cytospora or Valsa canker – prunus, poplar, willow, maple, conifers
- Botryosphaeria canker – crabapple, dogwoods, maples
- Nectria canker – maple, birch
- Bleeding cankers (Phytophthora/Bacteria) – oaks, beech

PLANT CLINIC TREE DATA:

Things to keep in mind during the presentation:

- All data is based on submissions to the Plant Clinic
- Most tree samples consist of branches and leaves (no roots, trunks)
- Some samples may be from out of state
- Plant Clinic testing



Top Illinois County Sample (all plants) Submissions in 2013:

Champaign - 478

Lake - 43

Clinton - 217

Kane - 27

Piatt - 97

Cass - 20

Effingham - 86

Kankakee - 19

Cook - 61

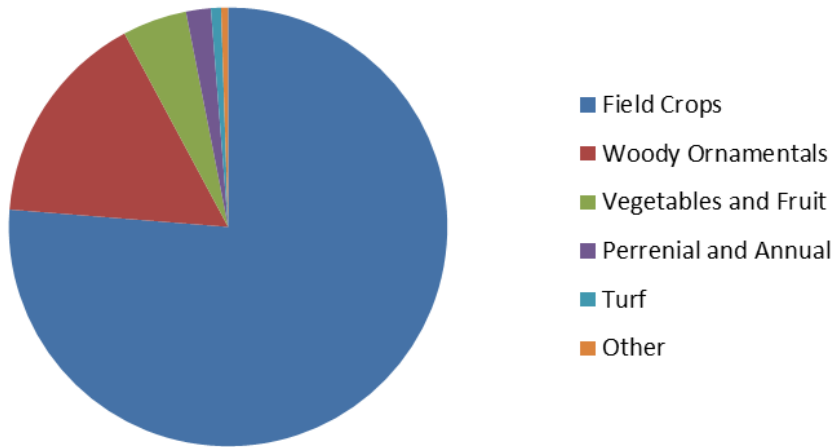
McLean, Peoria, Tazewell,

Whiteside - (each

had 18)

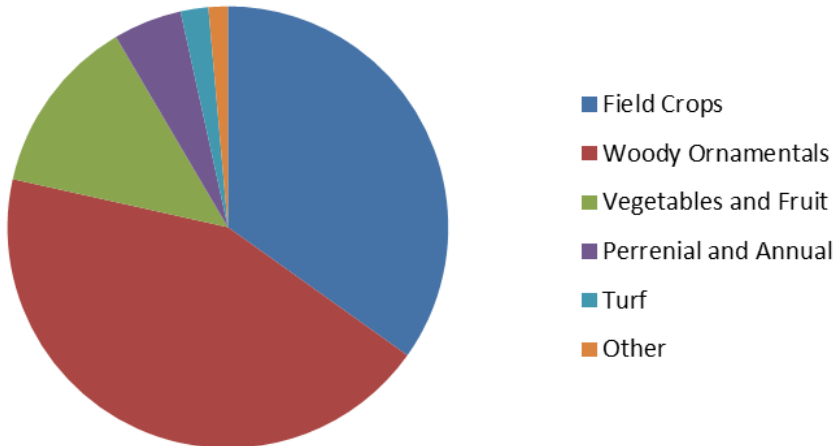
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2013 Diseases

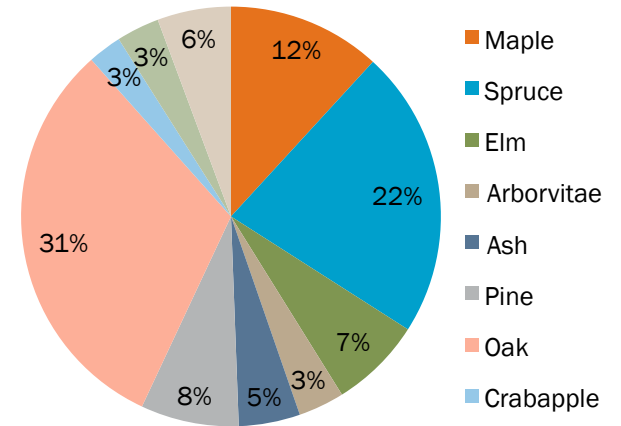


Pie chart below does not include nematode samples

2013 Diseases



Top 10 Tree Diseases 2013



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Problem Trees of 2013

Based on:

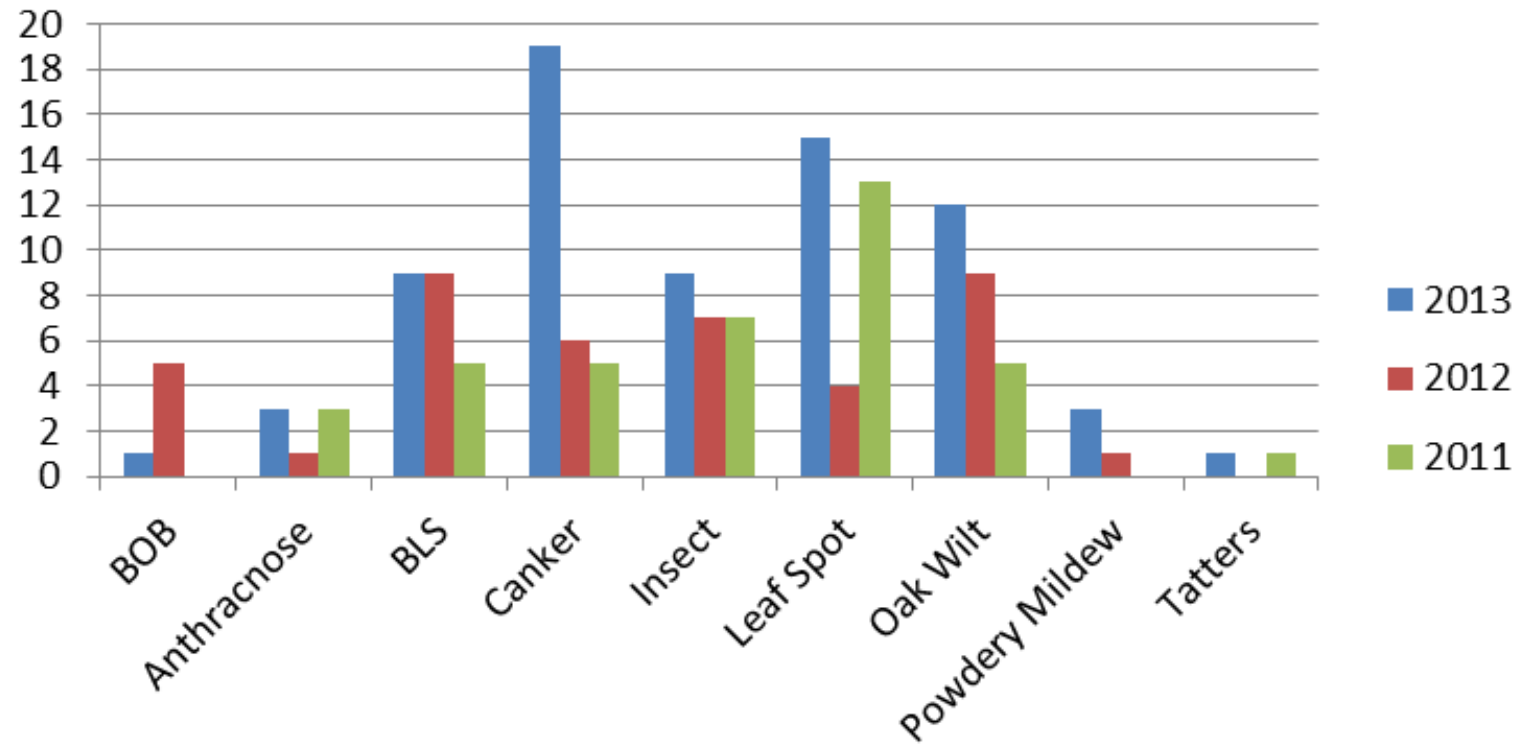
U of I Plant Clinic

Trees Samples and Questions

TOP
10

LIST

Oak



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ISOLATIONS FROM KNOWN POSITIVE OAK WILT SAMPLE

(SLIDE COURTESY OF IOWA STATE PLANT & INSECT DIAGNOSTIC CLINIC)

Treatment	Ave. Success Rate
Harvested, delivered, refrigerated, plated next day	86%
Harvested, delivered, left at room temp overnight, plated 1 day later	28%
Harvested, delivered, heated to 125° for 1 hour, refrigerated overnight, plated next day	0%
Harvested, taken to post office and mailed to PIDC. Arrived 4 days later.	16%

OAK WILT SAMPLING

- Oak wilt is intolerant of temperatures about 90°F and can be sensitive to drying
- Proper packing is key to proper isolation and diagnosis

Sampling tips:

- Collect suspected oak wilt samples from a living branch showing early symptoms of the disease. The pathogen will not survive in dead or dry branches.
- Try to send branches with symptoms of vascular streaking. Our best chance of isolating the pathogen occurs when culturing tissues with vascular streaking.
- Mail samples the same day they are collected, or refrigerate and mail them soon after.
- Send samples early in the week. This will help to prevent samples from being held over the weekend in a hot mail truck.
- Higher rates of successful isolation occur with samples that's were kept cool. When possible, send samples in an inexpensive cooler with a disposable ice pack.
- Clinic results for oak wilt testing often take 7-14 days to complete. The Plant Clinic will send a detailed report with recommendations when the results are available.



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OAK WILT - *CERATOCYSTIS FAGACEARUM*

Ceratocystis fagacearum

Confirmed (+) 13

Tested 31



Oak sp. that tested

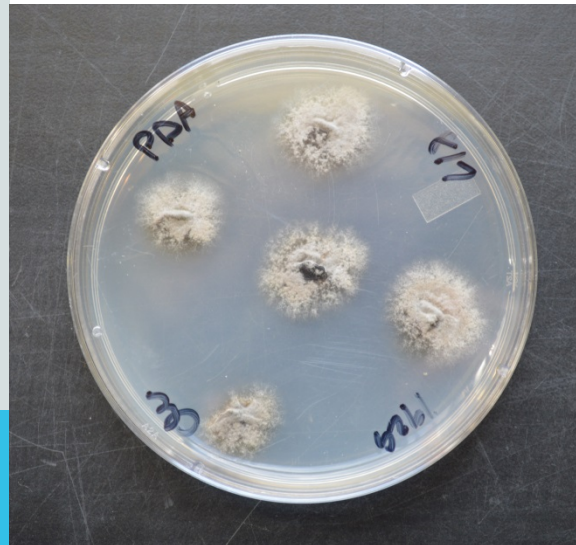
Oak wilt (+):

Bur Oak - 1

Red Oak - 6

Northern Red Oak - 1

Pin Oak - 5



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BACTERIAL LEAF SCORCH – *XYLELLA FASTIDIOSA*



Management:

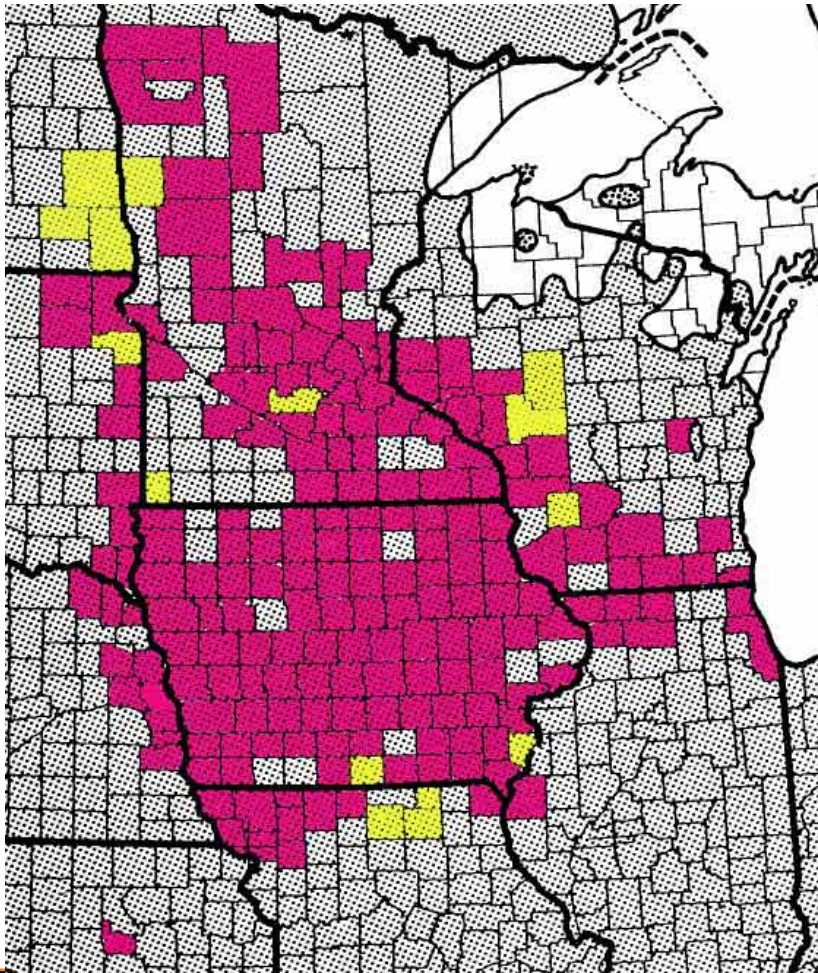
- There is no effective treatment or cure
- Spread by leafhoppers and root grafts
- Insecticides considered impractical
- Trunk injections and drench with antibiotics suppress symptoms
- Sanitation (tree removal or pruning) not shown to reduce incidence of new infections
- The best course of action is to maintain the health (water, fertilize, reduce stress) of your tree to delay symptoms. **WATER DURING DROUGHT!**

Sampling:

- Wait until late summer and call before submitting
- Look for scorched tissue, and ensure plenty of fresh, leaves with petioles attached are included in the sample



BUR OAK BLIGHT



Sampling: 1.) Leaves that consist of *Tubakia* leaf blight 2.) branches that possess "second-year petioles". 3.) collect branches that have leaves and petioles still attached to the tree in the winter.

Management:

- Boost tree vigor
- Pruning and removing branch dieback
 - For high value trees: Iowa State University found trunk injections of propiconazole (Applications require specialized equipment and will need to be made by a certified professional.)
- Injections should be made in late May or early June just after the leaves have fully expanded
- The recommended application rate is 8-10 mls per 1"DBH. Higher applications rates reportedly resulted in phytotoxicity to leaves. The rate will also need to be adjusted if the tree has significant branch dieback in the canopy.
- One application should last several years. Iowa State currently recommends repeat application only after a severe outbreak recurs.



OAK DISEASE LOOK-A-LIKES



BOB



Oak wilt



BLS



Scale



Scorch



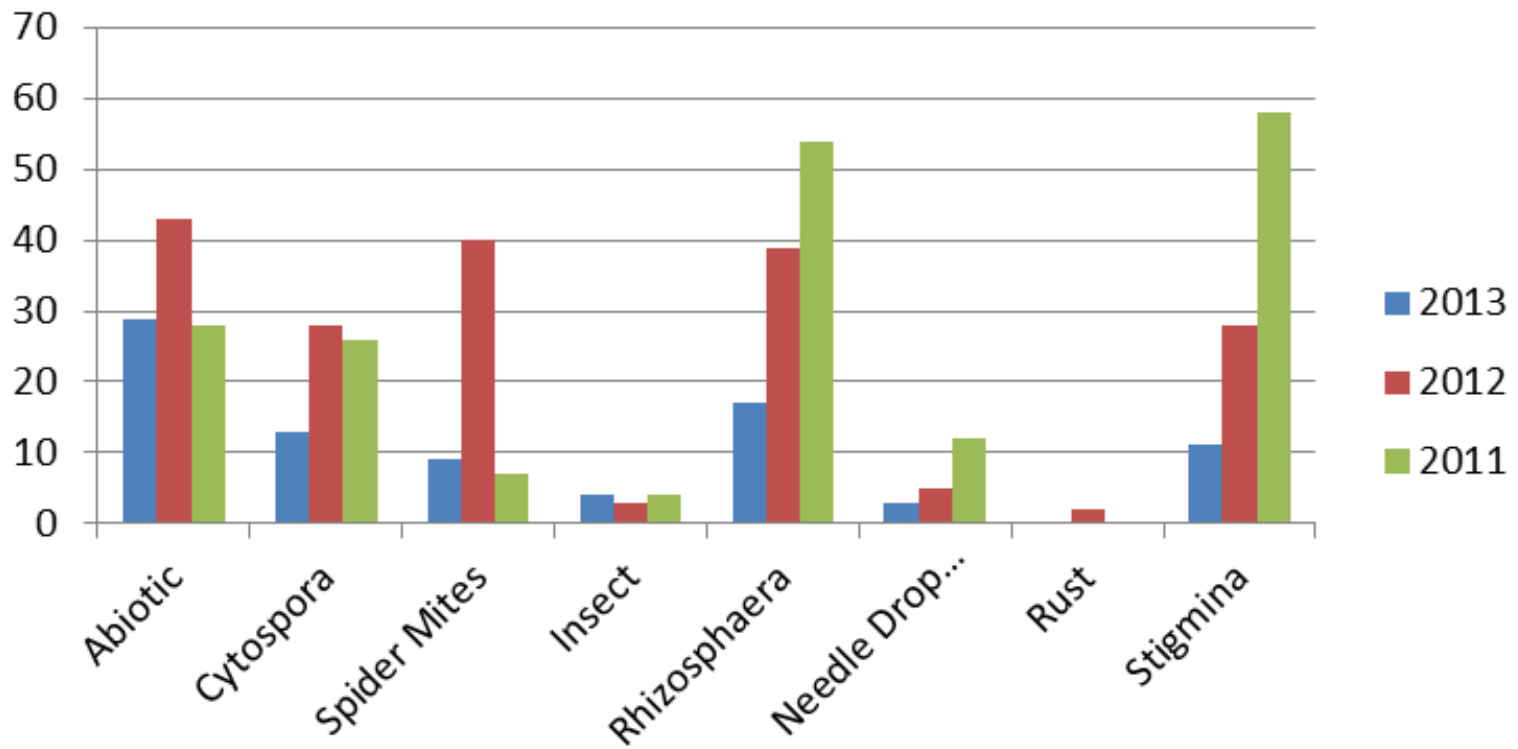
Anthracnose



Tubakia leaf spot

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Spruce



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In order to address the spruce issues of 2011:

Plant Clinic **REPORT**

Diagnosis and management recommendations

DISEASES • INSECTS • WEEDS



Spruce Problems

(Pest and Cultural Issues)



Several species of spruce are commonly planted in the Midwest for use as windbreaks, screens and specimen plantings. Norway spruce (*Picea abies*) and Blue Colorado Spruce (*P. pungens* var. *glauca*) are the most frequently planted in the landscape, while White spruce (*P. glauca*). Serbian

trees are planted in locations that the species is not well adapted to. For instance, spruce trees require full-sun exposures, and will grow poorly when planted in shade. Soil conditions within the planting site are often overlooked, but are critical to a plants health. Locations with poorly drained



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<http://web.extension.illinois.edu/fmpt/downloads/45140.pdf>

STIGMINA -STIGMINA LAUTII - UPDATE



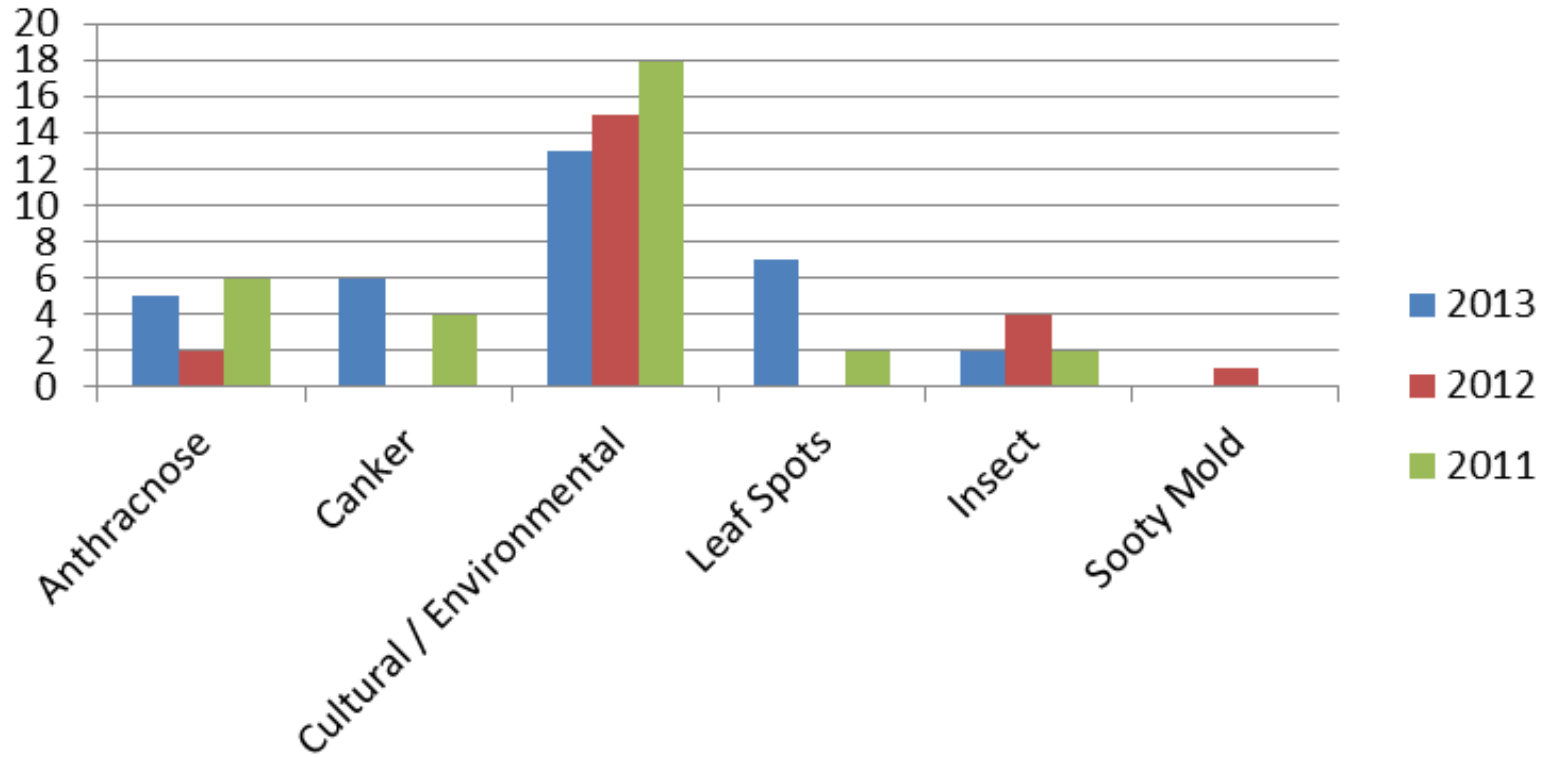
- *Stigmina* - Infects all spruce
- *Rhizosphaera* – Blue spruce (Norway resistant)
- *Stigmina* - Associated with needle blight symptoms on spruce. (not proven to be a pathogen)
- *Stigmina* Needle symptoms and fungal fruiting structures look very similar to *Rhizosphaera* needle cast!
- (second year needles)
- (lower and North side of tree)
- *Rhizosphaera* – spray with needles are half-grown (bud caps fall off) and again when elongated

North Dakota (Preliminary research)-

"Timing of treatment for *Stigmina* needle cast is similar to *Rhizosphaera*, except preliminary data suggest that the trees should be treated indefinitely, with at least two properly timed fungicide applications per year."

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Maple



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MAPLE BLIGHT MANIA

- An epidemic of leaf blight pathogens on maple due to extended cool, wet weather
- Three causal pathogens
 - -Anthracnose (*Discula spp.*, *Kabatella apocrypta*),
 - -Leaf Blister (*Taphrina spp.*),
 - -Venturia Leaf Spot (*Venturia acerina*)
- Brown to black spots, blotches, bordered by veins, as well as dark black blisters, can eventually take over the entire leaf, unsightliness and leaf drop

Management: Mostly cosmetic but can stress tree, tree will recover and produce a new flush of leaves in late season, fungicides not recommended, keep tree in good vigor



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TAPHRINA SPP.

- Cool wet weather caused infection by *Taphrina spp.* diseases
- Infects various ornamental and fruit trees (host specific)
 - Can lay dormant until perfect conditions, infects at bud break
- Leaf curls, blisters, stem dieback, leaf drop, and fruit deformation

Management: apply fungicide before bud break – difficult to provide complete spray protection on large and/or dense trees, cannot control once infection has taken place, apply N, watering, thinning fruit, mostly cosmetic but can cause yield loss, not known to cause death



MAPLES TURNING RED



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Recreation | Destinations | Nature | Education / safety | Licenses / permits / regs.

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Home > Assistance > Nurture nature > Tree care > Forest Insect and Disease Newsletter > August 1997 >

Forest health

- Main page
- Annual reports
- Emerald ash borer
- Firewood can move pests
- Forest Insect & Disease Newsletter
- Forest tent caterpillars
- Gypsy moth
- Invasive animals
- Invasive plants
- Oakwilt
- Pine bark beetles
- Spraying tree pests
- Two-lined chestnut borers

Previous Issues

2013: [May](#) | [Feb](#)
2012: [Nov](#) | [June](#) | [April](#) | [Jan](#)
2011: [Aug](#) | [May](#) | [Jan](#)
In PDF format [PDF](#)
2010: [Sept](#) | [June](#) | [May](#) | [Jan](#) | [Jan](#)
2009: [June](#) | [May](#) | [March](#)
2008: [Jan](#) | [May](#) | [June](#) | [Nov](#)
2007: [Oct](#) | [May](#) | [June](#)
2006: [May](#) | [June](#)

null

Maple : premature fall color

Each August brings a few trees that begin the fall color frenzy ahead of schedule. In addition to signaling the change of seasons, these trees are sending a clear signal that they are suffering from some form of stress. Stress can have a wide variety of causes, be mild or severe, or, benign or fatal. In any case, professional tree "care givers" should be aware that the trees are talking to you. Are you listening?

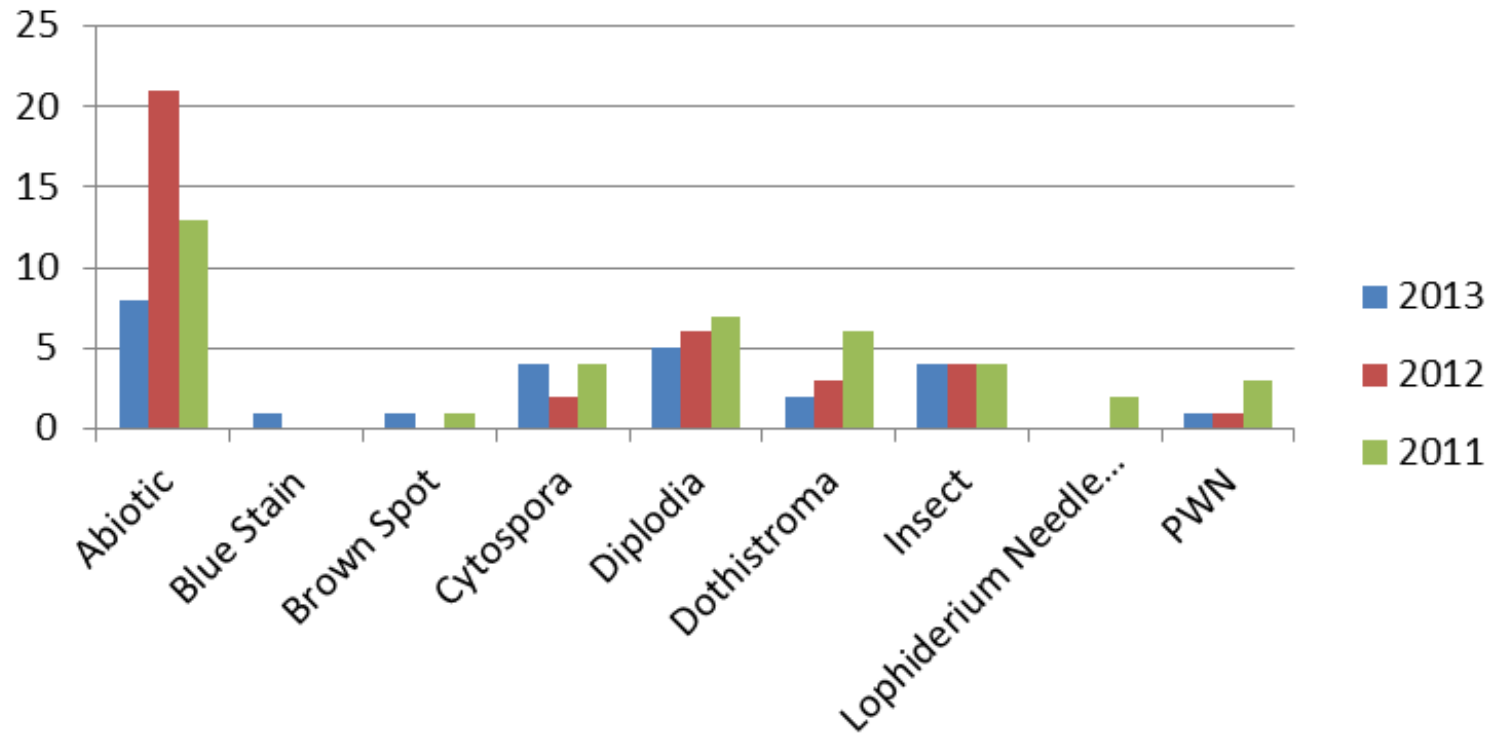
Maples are probably the group of trees that most commonly exhibit premature fall color. Sensitive to changes in their environment, maples commonly show early color in years when summer rains are heavier than normal and raise soil moisture to or above field capacity during the period from mid to late summer. The maples that show this characteristic the best are the several species of soft maples (sliver and red) that commonly inhabit the shrubby areas around wetlands. These trees commonly begin to show deep, rich purples as early as the first week in August.

Maples in communities also commonly display early color due to stress mechanisms more common to the urban environment. Sugar maple, in particular, shows early color due to the stress induced by infection from Verticillium wilt. This disease may occur in nursery grown stock in commercial trade. It is difficult to detect because it is soil-borne, difficult to culture, and commonly not tested-for in the nursery. In addition, Verticillium wilt is a relatively weak pathogen that does not do well on young, vigorous nursery stock. Trees can be infected for many years without showing external symptoms of the disease. When they do begin to show symptoms, one of the first is premature fall color followed in succeeding years by a progressive, if not slow, crown decline and dieback.

Maples in communities that are planted "just-a- little" too deep often show premature fall color. Again this is more pronounced in years with wet summers. The likely mode-of-action is decreased soil oxygen content. Planting too deep "smothers" roots reducing oxygen in the root zone. So does over watering whether natural or artificial. The bottom line is stress-induced premature fall color. Remember that stress is (1) caused by many factors, (2) cumulative, and (3) potentially fatal if left untreated.

<http://www.dnr.state.mn.us/fid/august97/08259704.html>

Pine



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Update on Imprelis®Herbicide Injury



- Purdue study on potential plant injury due to bark mulch/chips used from trees that were exposed to Imprelis Herbicide



A Turf Professional's Guide to Imprelis®Herbicide Injury in the Landscape

<http://www.ppd.l.purdue.edu/PPDL/pubs/briefs/ImprelisLCO.pdf>

Imprelis®Update: 2012 Field Notes on Injury and Recovery

<http://www.ppd.l.purdue.edu/PPDL/pubs/briefs/ImprelisUpdate2012.pdf>

2013 Imprelis®Update: Tree Maintenance, Replacement, and Disposal

<http://www.ppd.l.purdue.edu/PPDL/pubs/briefs/ImprelisUpdate2013.pdf>

PINE PROBLEMS



White Pine decline or Drought?



Cankers



White Pine decline- roots

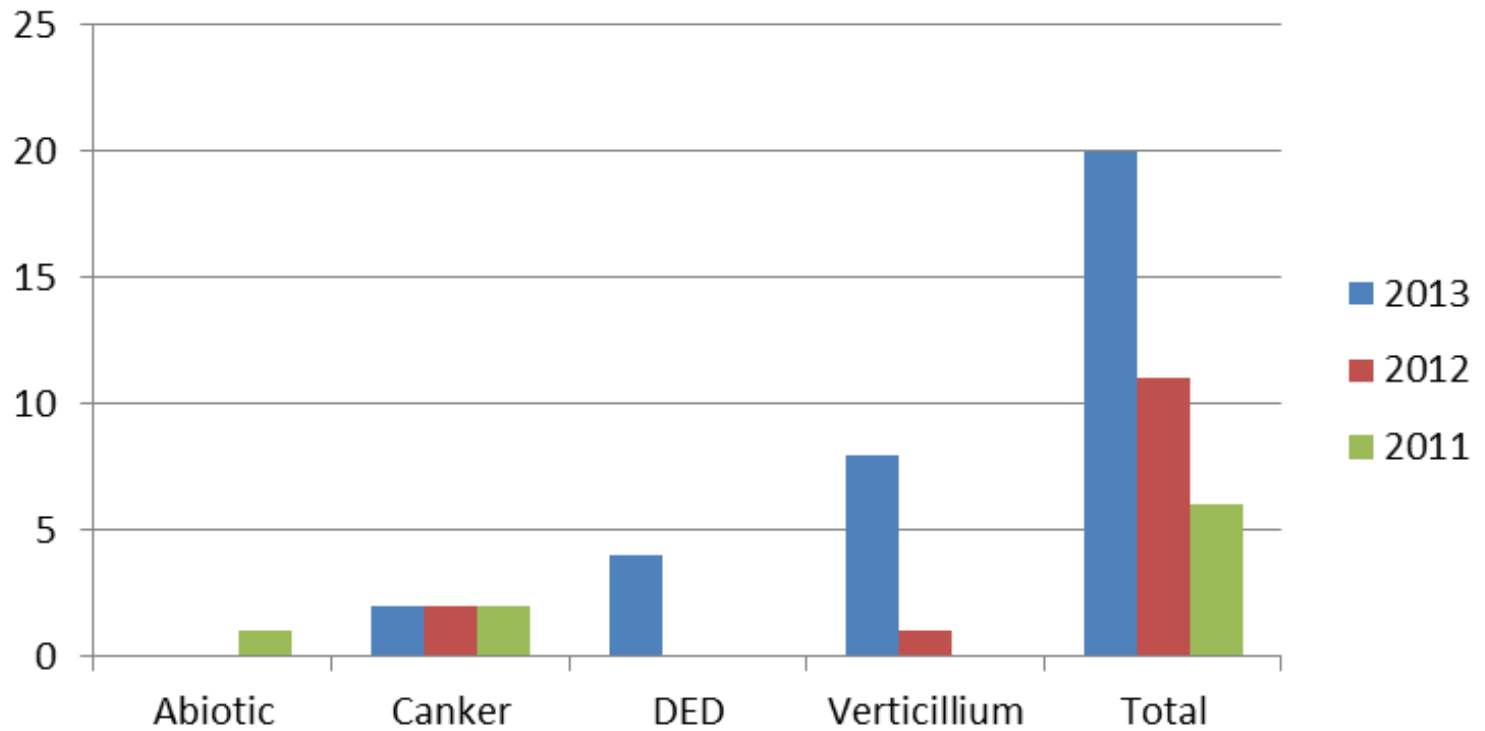


Pine Engraver beetle
(*Ips pini*)



Blue stain fungus -
spread by bark beetles

Elm



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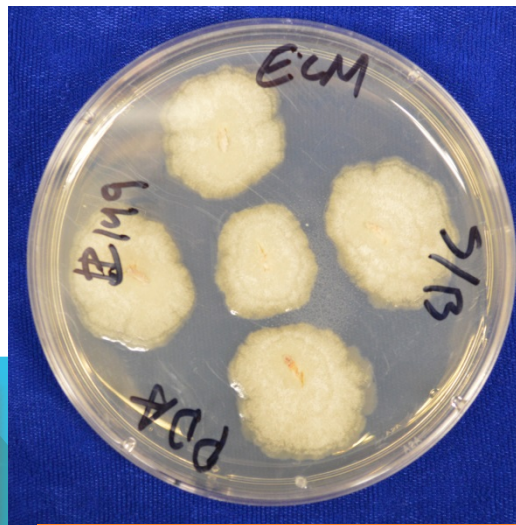
VERTICILLIUM WILT

Verticillium sp.

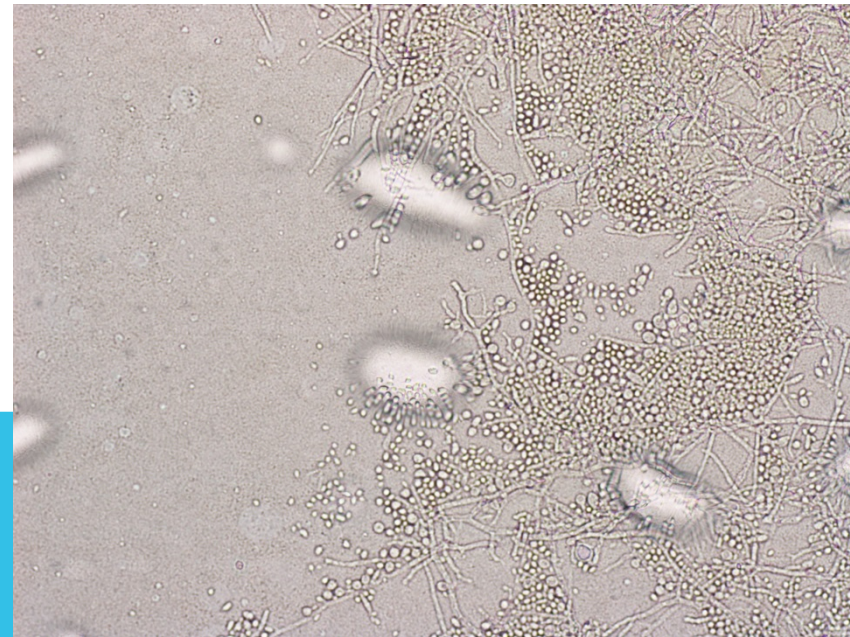
Confirmed (+)	7
Tested	32



Verticillium (+) streaking on Elm



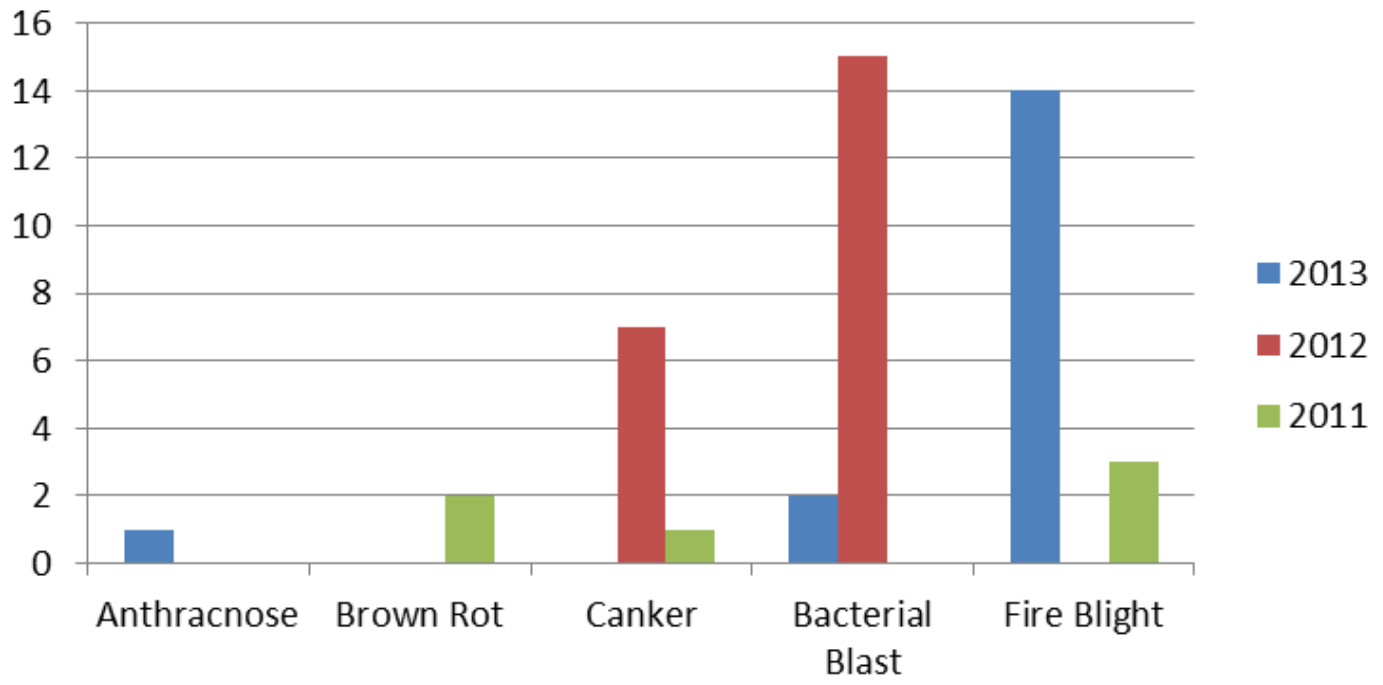
Verticillium (+) on Elm



Verticillium conidia

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Pear



FIREBLIGHT (2013)
ERWINIA AMYLOVORA



BACTERIAL BLAST (2012)
PSEUDOMONAS SYRINGE



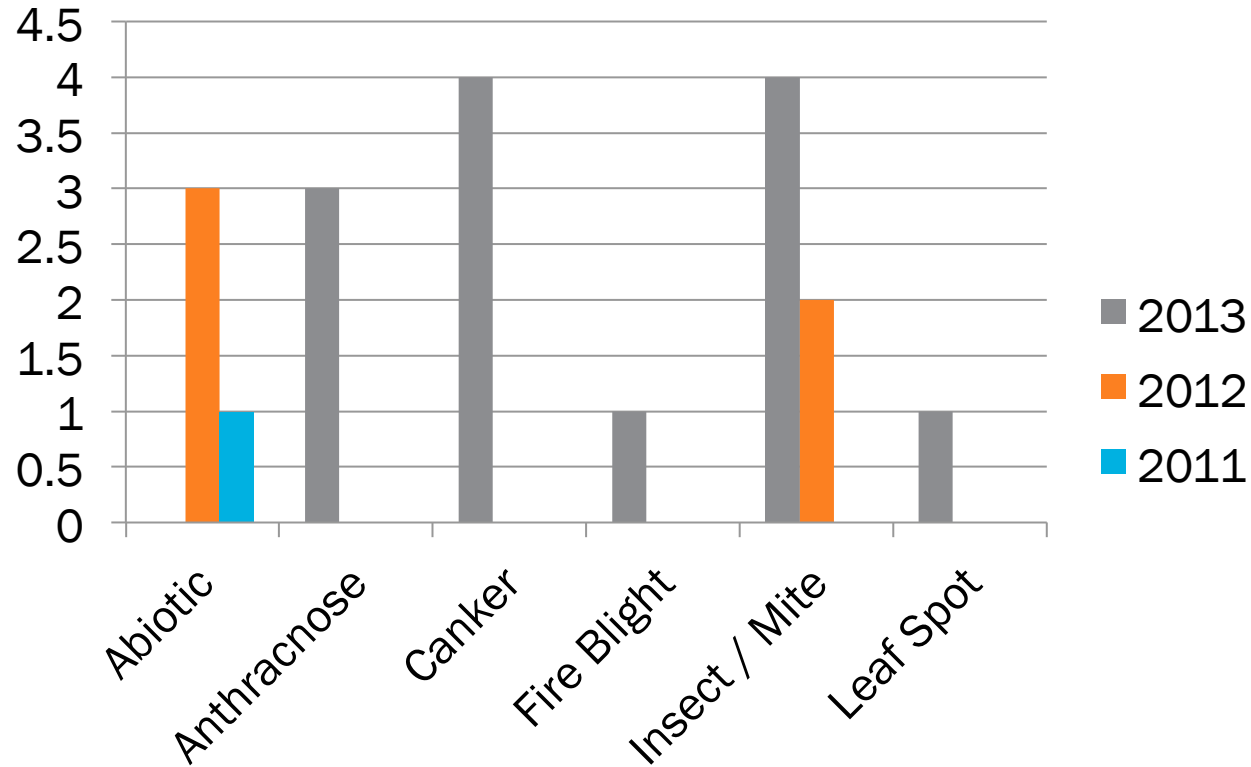
Callery pear

PEAR BLIGHTS

- *Pseudomonas spp.* is a weak, opportunistic pathogen that takes advantage of unfavorable weather conditions
- *Erwinia spp.* infects through open blossoms and young leaves and shoots in the springtime and spreads best in hot dry weather
- Unsightly blighted leaves and shoots, Shepard's crook
- Management: Prune out infected tissue during dormancy – 8-10 inches below canker (dry weather), chemical options (copper products) limited for the home grower -timing critical (4-5 day intervals throughout bloom), avoid practices that promote lush growth



Ash



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*Note: Fire blight (*Erwinia amylovora*)
can infect Mountain Ash (*Sorbus*)

ASH ANTHRACNOSE

- Many reports of Anthracnose in 2013
- Cool wet spring conditions during leaf expansion can encourage outbreaks (disease severity)
- Symptoms appear at the bottom of the tree – humidity
- Water soaked spots that grow to form blotches
 - Can turn tan in color, defoliation
- Due to extended periods of wetness, we observed leaf drop because petioles were infected

Management: Mostly cosmetic, can cause stress, tree will produce a new flush of leaves in late season, fungicides not recommended, keep tree in good vigor



ARBORVITAE

&

JUNIPER

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Picture taken from Purdue

Arborvitae – “Disease Free”

Can be infected by tip blights and spruce spider mites (not going to kill them)

Dieback or Death:

- **Think underground**
- “too little or too much water”
- Root rot (*Phytophthora spp.*)
- Drought (Winter desiccation)
- Compacted soil (too little aeration)
- Soil pH Extremes
- Abiotic factors (improper planting, physical injury, girdling roots, construction, salt)

- <https://sharepoint.cahnrs.wsu.edu/blogs/gardentips/archive/2005/09/10/AILING%20ARBORVITAE%20.aspx>
- <http://www.ppd1.purdue.edu/ppdl/pubs/briefs/conifer-dieback.pdf>
- [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex4144](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex4144)

PHYTOPHTHORA ROOT & CROWN ROT

- Very common due to the extended cool, wet, spring experienced this year
- Causes root and crown rot

Management: No simple “cure, ” prevention is the key, start with healthy plants, keep plant vigor, avoid overwatering and low lying areas, choose tolerant or less susceptible plants, fungicide seed control is only used in commercial situations

Phytophthora (+):

Cauliflower - 1

Holly - 2

Juniper - 1

Ginkgo - 1

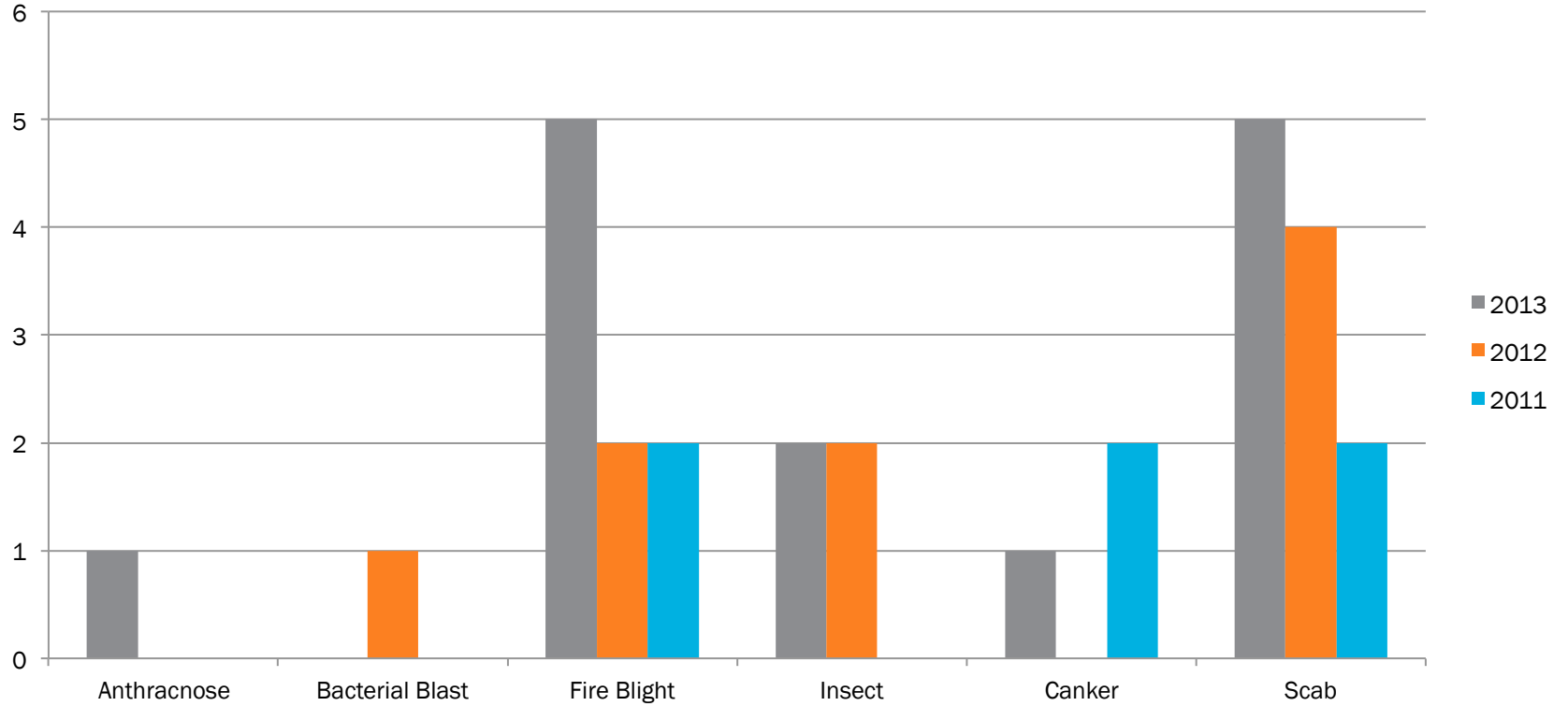
Wave Petunia - 1

White Oak - 1

Raspberry - 1



Crabapple



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Cedar-apple rust

- Most common cedar rust
- Apples and crabapples
- Affects leaves, fruit, and twigs
- Appears in May/ June as pale yellow spots on upper leaf surface. These enlarge and turn orange
- Will turn into tube like aecia on the underside of leaf



Cedar-hawthorn rust

- Foliar symptoms similar to Cedar-apple rust
- Most often affects leaves
- Causes yellow spots that enlarge and turn gray-brown
- Leaves often turn bright yellow before dropping prematurely



Cedar-quince rust

- Common in 2013 and caused much dieback
- Leaf symptoms limited to infections of petioles and veins
- Noticeable damage is done to stems (cankering), thorns, and fruits.
- Fruits will become covered in aecia



APPLE SCAB -*VENTURIA INAEQUALIS*



“I planted a scab-resistant crabapple variety several years ago and scab is still a problem”

Possible explanations:

- -It may not be apple scab
- -Resistance is not immunity
- -The var. may have been misidentified
- -It could be a “new” scab strain

Predisposing factors:

- Drought
- Wet spring = primary infections
- Continued damp = secondary infection

Management:

- Choose resistant varieties!
- Recommended Crabapples for Illinois Landscapes
http://extension.illinois.edu/IPLANT/plant_select/trees/Selecting_Crabapples.pdf
 - Spray fungicides when leaf buds break and continue until 2 wk past petal-fall

WATCH OUT FOR INVASIVES!



Illinois First Detector Tree Pest Program 2014



- **1 day workshop** (Speakers represent Plant Clinic, CAPS, IDOA, and IDNR)
- Each location will have sessions devoted to SOD, invasive oak pests, invasive plants, and safeguarding/regulation.
- Hands-on activities at the end of the day!
- Participants receive a binder of information and certificate of completion
- CEU's available



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FIRST DETECTOR



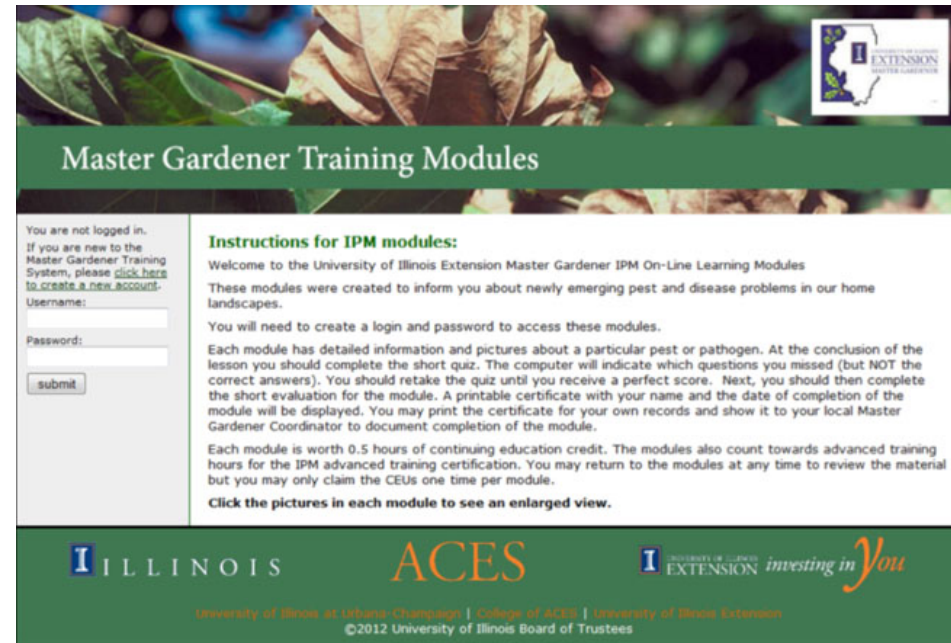
Dates and Locations:

- January 14** **ICC in Peoria**
Contact: Rhonda Ferree (ferreer@illinois.edu)
- January 16** **Madison-Monroe-St. Clair Unit Branch Office in Collinsville**
Contact: Sara Ruth (ruth1@illinois.edu)
- February 20** **Jackson County Extension Office in Murphysboro**
Contact: Sonja Lallemand (lalleman@illinois.edu)
- February 27** **Klehm Arboretum in Rockford**
Contact: Candace Miller (mille116@illinois.edu)
- March 12** **Macon County Extension Office in Decatur**
Contact: Jennifer Nelson (jaschult@illinois.edu)
- March 27** **Will County Extension Office in Joliet**
Contact: Richard Hentschel (hentesche@illinois.edu)

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IPM COMPUTER TRAINING MODULES

- Sudden Oak Death (SOD)
- Thousand Cankers Disease (TCD)
- Spruce Problems
- Burr Oak Blight (BOB)
- Bacterial leaf scorch (BLS)
- Emerald Ash Borer (EAB)
- Boxwood Blight
- Brown Marmorated Stink bug
- Downy Mildew of Impatiens & Basil
- Spotted Wing Drosophila



You are not logged in.
If you are new to the Master Gardener Training System, please [click here to create a new account](#).

Username:

Password:

Instructions for IPM modules:

Welcome to the University of Illinois Extension Master Gardener IPM On-Line Learning Modules. These modules were created to inform you about newly emerging pest and disease problems in our home landscapes.

You will need to create a login and password to access these modules.

Each module has detailed information and pictures about a particular pest or pathogen. At the conclusion of the lesson you should complete the short quiz. The computer will indicate which questions you missed (but NOT the correct answers). You should retake the quiz until you receive a perfect score. Next, you should then complete the short evaluation for the module. A printable certificate with your name and the date of completion of the module will be displayed. You may print the certificate for your own records and show it to your local Master Gardener Coordinator to document completion of the module.

Each module is worth 0.5 hours of continuing education credit. The modules also count towards advanced training hours for the IPM advanced training certification. You may return to the modules at any time to review the material but you may only claim the CEUs one time per module.

Click the pictures in each module to see an enlarged view.

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THE END