Landscape Roadshow

Plant Pest Issues and How to Help Avoid Their Spread

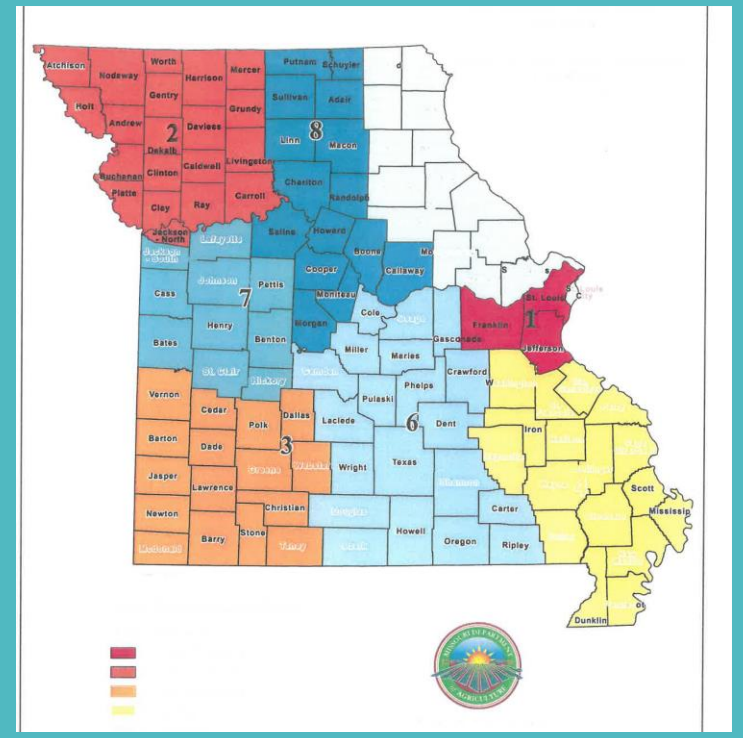
Susan Ehlenbeck, MO Dept of Agriculture
Susanehlenbeck@mda.mo.gov
573-418-8955 cell#
www.mda.mo.gov

WHAT WE DO…

-Inspect Nursery Growers and Dealers, Sod Farms and Greenhouses

-Inspect Plants/ Parts for exports

-Monitor/Prevent/Educate about Plant pests



-If you are selling hardy plants- you need a Nursery License

-Basic licenses – Nursery Grower, Nursery Dealer, Greenhouse (Voluntary unless you are shipping to other states)

-Can sign up at MDA website mda.mo.gov

-Pests we are encountering

-New pests we are looking for

-How can industry help prevent pest movement and keep plants healthy

-Industry updates

-Read and follow all label directions. Any named products i not a promotion of that product.

Powdery Mildew

Common in humid environments with warm days and cool nights.

-Prevention is the only known control of most fungal pathogens!

-Fungicide labelled for PowderyMildew

Apple Scab on Crabapple

-This fungus affects some varieties more than others
-Heavy infections can cause leaf drop
-can be prevented with regular fungicide applications, starting at budbreak in early spring

Fireblight

-Prune out this bacterial infections immediately,6-12" below, sanitize pruners between cuts.
-streptomycin application after hail or sudden late freeze can prevent some infections
-'Raindrop' series and 'SpringSnow'are very susceptible. Many apples and Pears varieties also.

Lilac Blight *(Psuedomonas syringa)*

Lilac blight is difficult to control, so planting resistant varieties is recommended. Species with demonstrated resistance include *Syringa josikaea*, *S. komarowii*, *S. microphylla*, *S. pekinensis* and *S. reflexa*.

-Prune out bacterial infections immediately 10-12" below infection, sanitize pruners between cuts.

-can apply copper based products at leaf emergence, and every 14 days in wet spring or late freeze event as prevention.

-avoid late season fertilizer and increase air circulation. Pick up infected debris.

Shepards Crook symptom, blackened stems, bud and flower failure

Psuedocercospera on Lilac

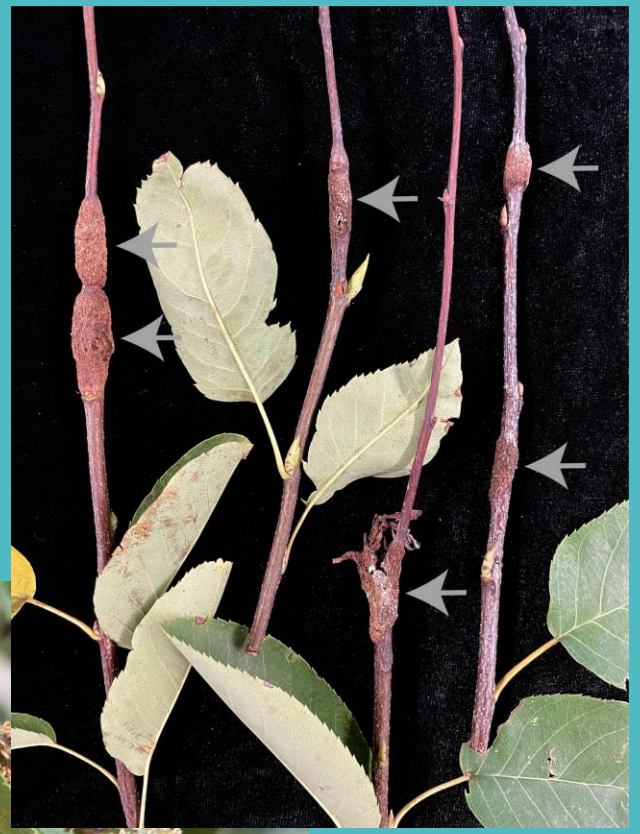
- This is a fungal infection, fairly new to the USA

-Heavy infections can cause leaf drop, especially in humid environments. Repeated infections weaken the plant.

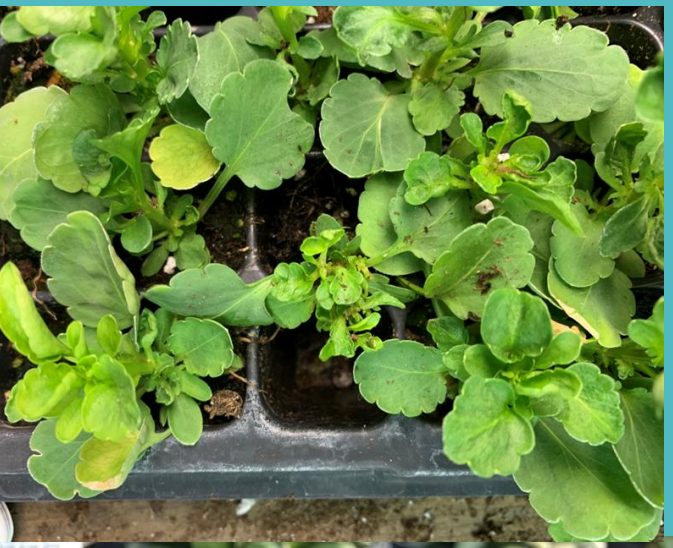
-nothing specifically labelled yet, but fungicides (ie copper sulfate, myclobutanil, tebuconazol) at budbreak/early leaf development may help. Must prevent—cant cure it!

Good air circulation and picking up leaf debris are essential- spores can live of debris for up to 2 years.

Rust, especially on Rosaceous hosts and junipers



Rhodococcus fasciens- Leafy Gall (bacteria)



--Causes a proliferation of shoots

--can be moved around on infected plants, water, or tools– careful scouting!

-NO known cure- dispose of plants

Phytophthora blight (could be on stems or roots)

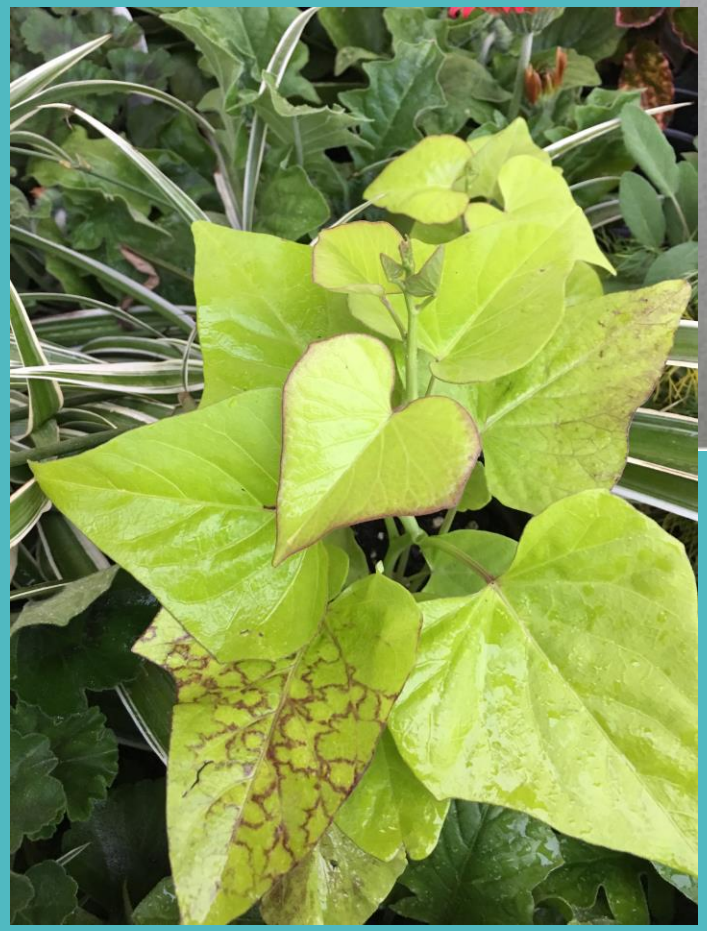
-Affects many species of plants
-Can be infected from other plants or pruners or from recycled, infected water, soil, or pots
-no known cure, prevent instead!

-we watch plants closely from CA, OR, WA where Phytophthora ramorum (Sudden Oak Death) is known to occur in coastal landscapes and in some nurseries

TOSPO Viruses (Tomato Spotted Wilt Virus and Impatien Necrotic Spot Virus)

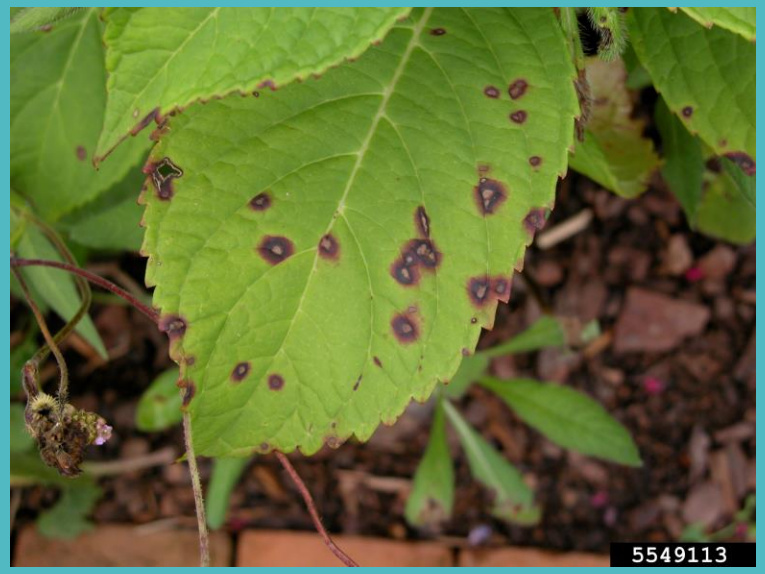
Rose Rosette Virus,
Rose Mosaic Virus Complex
Multiple Viruses on Firepower Nandina--
(Arabis Mosaic Virus and Nandina Mosaic Virus)

POTY Virus



Hydrangea Chlorotic Mottle Virus

Vs. Fungal Leaf Spot



Vs Bacterial Leaf Spot

Boxwood Blight

-Starts low or inside plant

-Often creates blackened stems

-Sticky Spores- easy to move by humans, animals, irrigation, leaves in vehicles, pruning equipment

Boxwood Dieback (Colletotrichum theobromicola)

English boxwood (*Buxus sempervirens*), Japanese boxwood (*Buxus microphylla* var. *japonica*), and Korean boxwood (*Buxus microphylla* var. *koreana*) are susceptable to this new disease

-random infected leaves, can cause blackened rot at crown of plant.

-Mimics other diseases, easy to miss symptoms

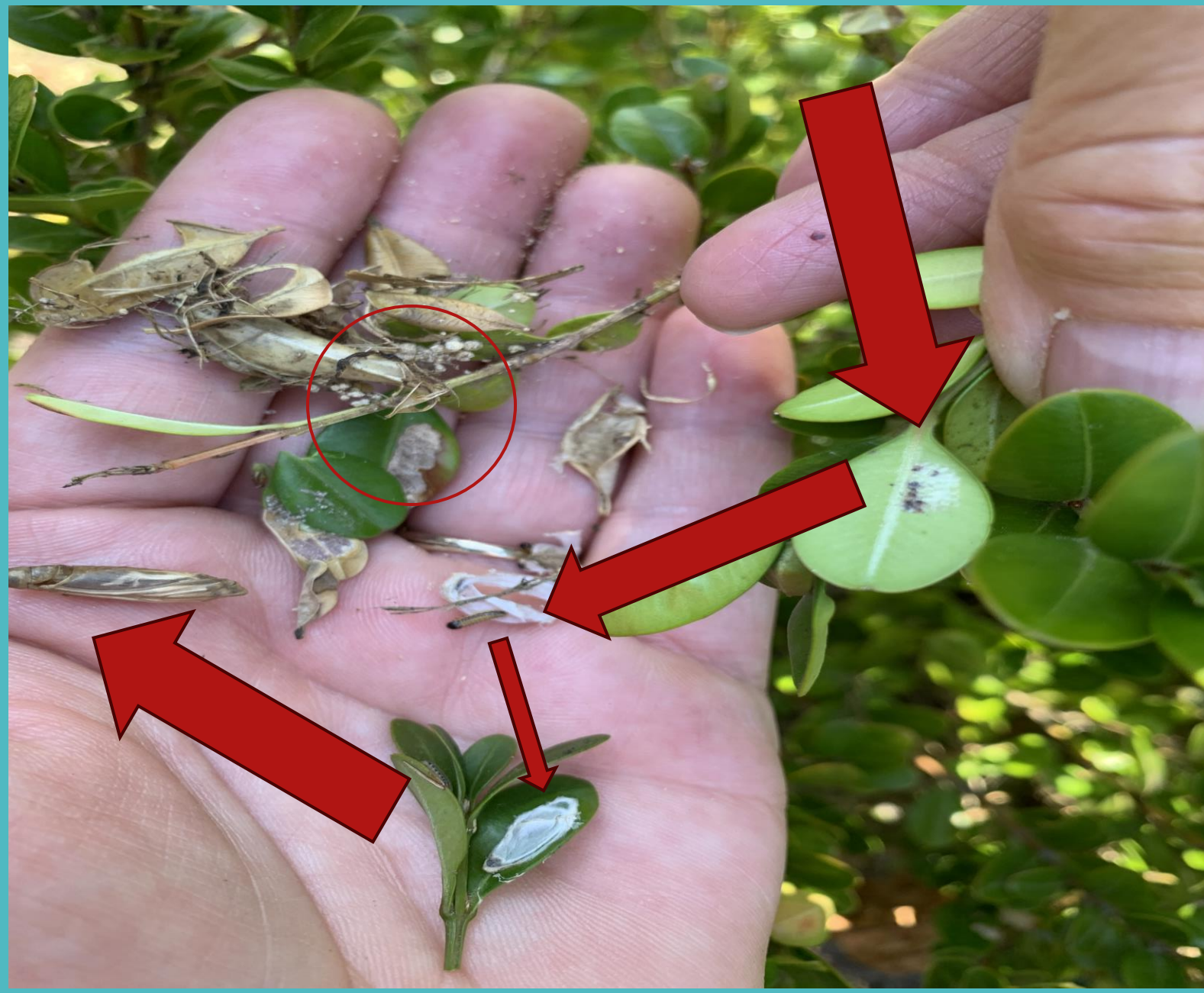
-Can be spread by humans, pruners, wind, water

Box Tree Moth

*First found in Europe, move to Western Asia & Northern Africa. Found in Canada in 2018. Moved on Plants to the US 2022, found in New England states, MI and OH.

*Hosts: Boxwood then Euonymous alatus (Burning Bush), Euonymous japonicas (Japanese Spindle Tree), Ilex Chinensis (Purple Holly), Murrraya paniculate (Orange Jessamine)

Promote diverse landscape plantings!



Vascular Streak Disease

-Host = Redbud

-Additional hosts: at least 20 known species, including: Maple, Dogwood, Redbud, Wax Myrtle, Spicebush, Magnolia, Sweetshrub, Catalpa, Witchhazel, Hawthorn, Black Gum, Fothergilla, Lilac, Serviceberry, Tulip Poplar, Sumac

-Known infections: TN, VA, NC, IN, FL

-Could be in more states
(No one knows to look for it)

-Primarily in smaller trees in nurseries

-Seedlings, grafted plants, older nursery stock, landscape trees

-Most Mo inceptions have come from TN

VSD found on Sweetbay Magnolia

Now for some insects-

-Oak Phylloxera

and- closely related- Wooly Apple Aphid found on on Stems of Apple, Crabapple, Hawthorns, and Elm and causes Root galls on Malus Spp.

Oak Flake Gall

Leaf Galls are usually not major pests.

If they become extremely heavy, remove leaf debris (eggs for next year). Spray at budbreak next year may decrease population. Many predators of leaf galls, so spray may not be needed.

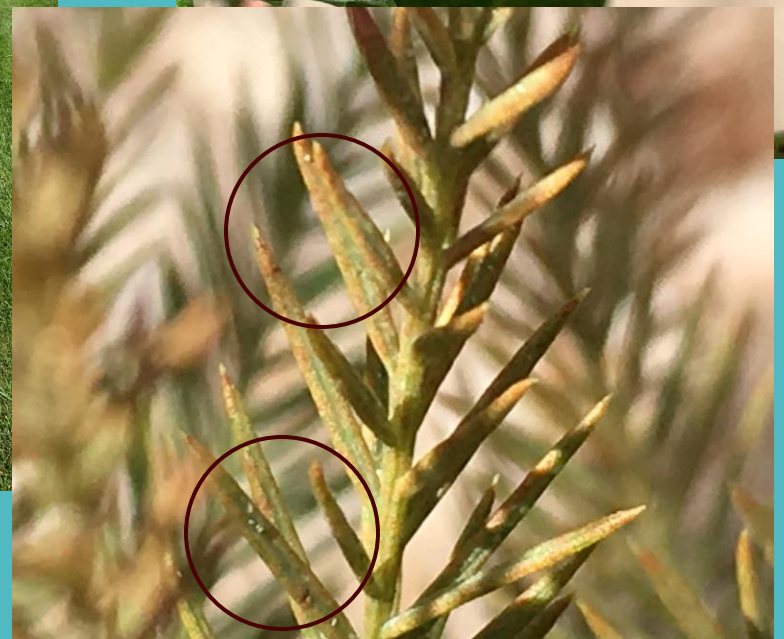
Photo 15 – Oak flake gall damage on upper surface of the leaf

oto 14 – Underside of an oak leaf covered in oak flake gall

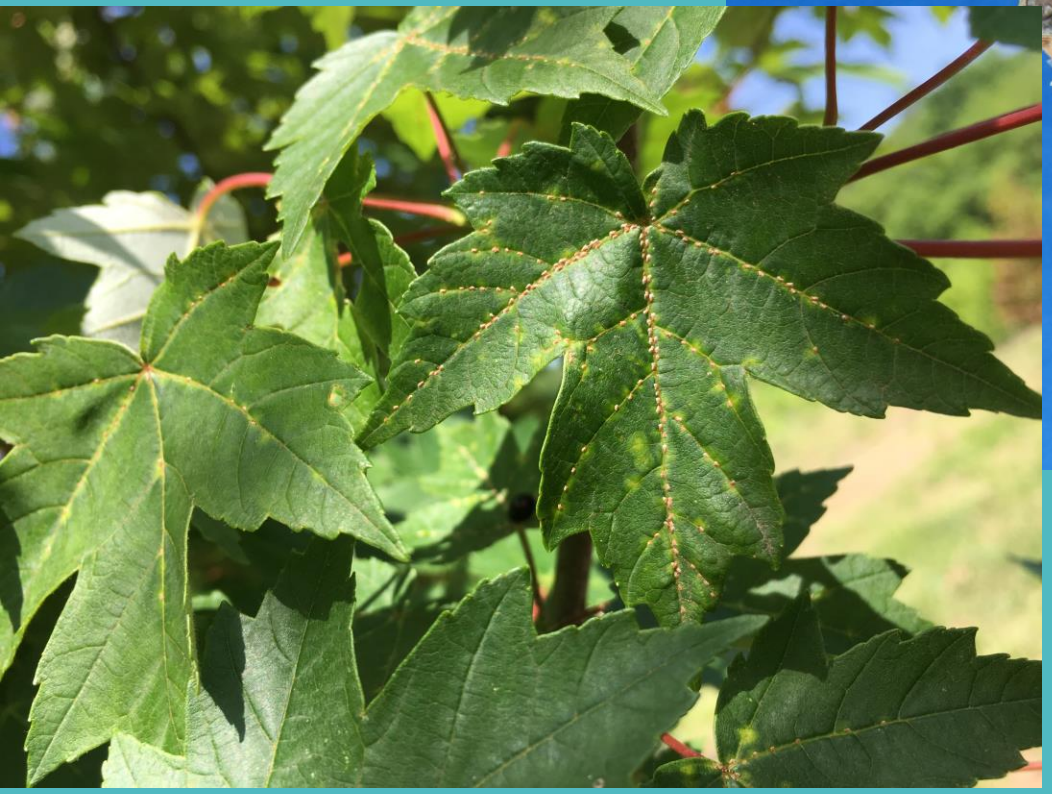
Photo 13 – Oak flake gall

Mites on Honey Locust, Bald Cypress, Maples, others,

Use magnification to check plants for eggs and infestations, ask your sources what they do to control, look for stipling, bronzing,



Armored Scales such as: Oystershell Scale & Japanese Maple Scale

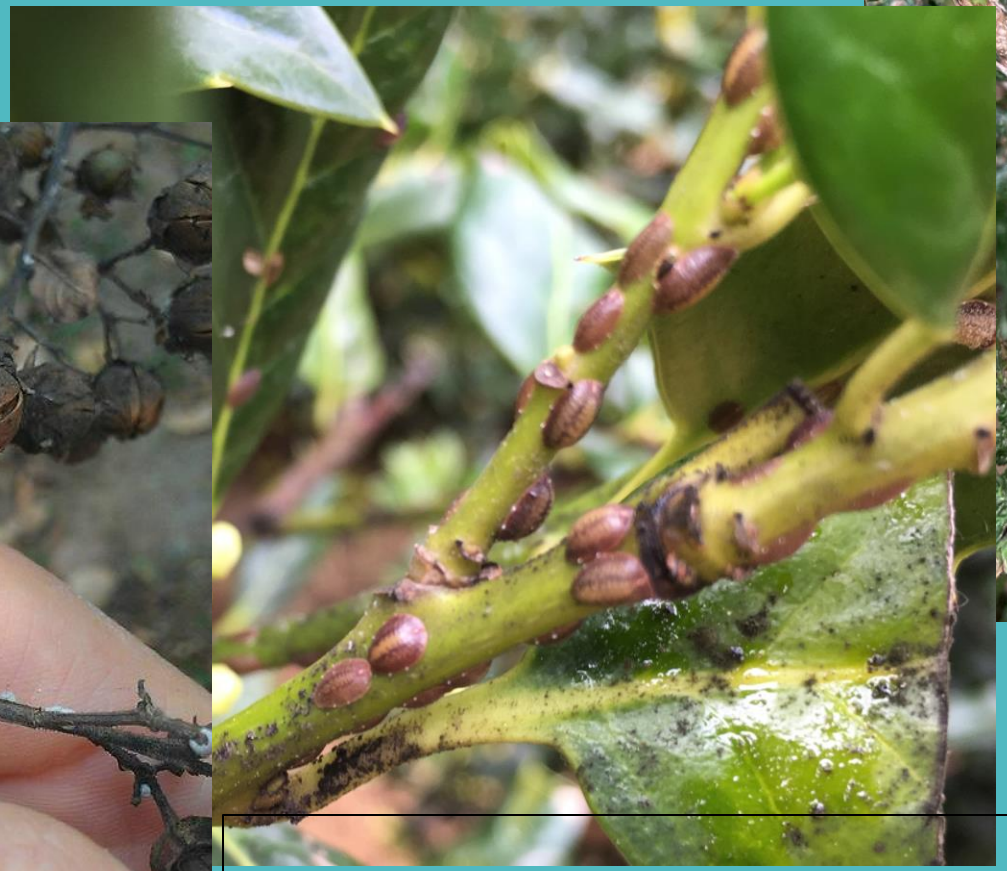


Trees from other states are coming in infested

-ask your growers what they are doing to prevent moving pests to you!

When 1st instar crawlers are present and at peak activity, one of the two insect growth regulators (IGRs), pyriproxyfen (Distance) or buprofezin (Talus) can be applied., systemic neonicotinoid insecticides, dinotefuran (Safari, Transtect) and clothianidin Dormant Oil can be applied during winter months (careful with Maples and drought-stressed plants!). Imidachloprid helps, but is better for soft scales that are phloem feeders

Crepe Myrtle Bark Scale, Wax Scale, Juniper Scale



Contact chemical control works best at crawler stage.
Dormant Oil can be applied during winter months (careful with Maples and drought-stressed plants!). Imidachloprid (contact or systemic), works on soft scales that are phloem feeders.
Predatory insects can help on some species of scale.

Red Headed FleaBeetle

•Soil drench or granular applications of neonicotinoids like Dinotefuran (Safari), Clothianidin, or Imidacloprid (Marathon) provide the longest-lasting control. (Early spring) **Rotate active ingredients to avoid resistance!**

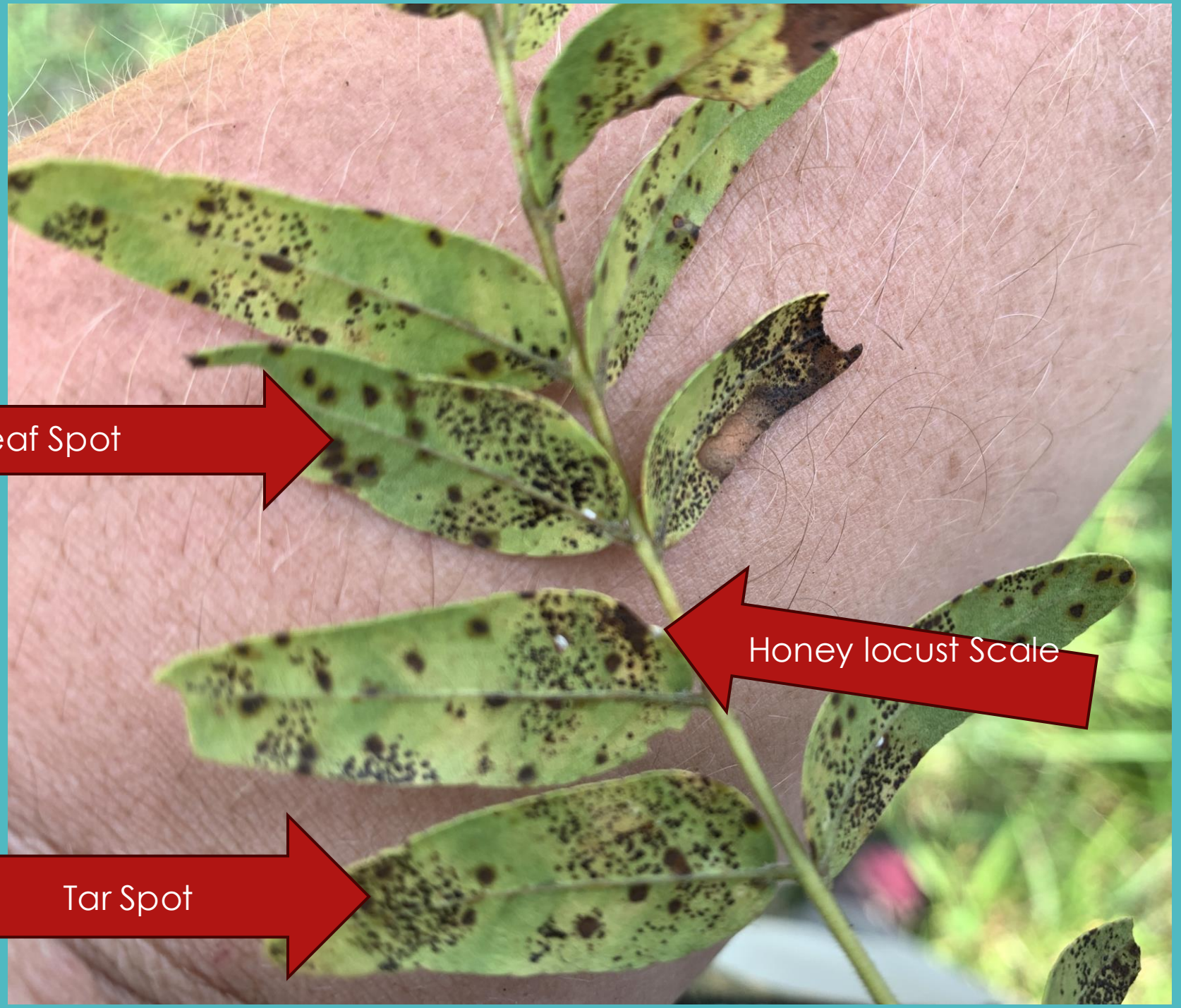
•**Foliar Insecticides (Adult Control):** Spray foliage with insecticides such as Bifenthrin, Carbaryl, Cyfluthrin, or Acetamiprid. (late May-early June-ish)

•**Biological Controls:** Beneficial nematodes (*Steinernema carpocapsae*) and entomopathogenic fungi (*Isaria fumosorosea*) can be used to target **larvae** in the container substrate. (timing depends if in-house or grown outdoors)

•**Scouting & Sanitation:** Regularly scout plants, including root balls, for larvae and adults. Remove weeds (e.g., pigweed, lamb's quarters) that host the beetles.

Red Headed Flea Beetle Can be a Beast to Manage in the Nursery (purduelandscapereport.org)

Multiple issues



Weevil Injury on a plant stressed by Phytohophthora Root Rot

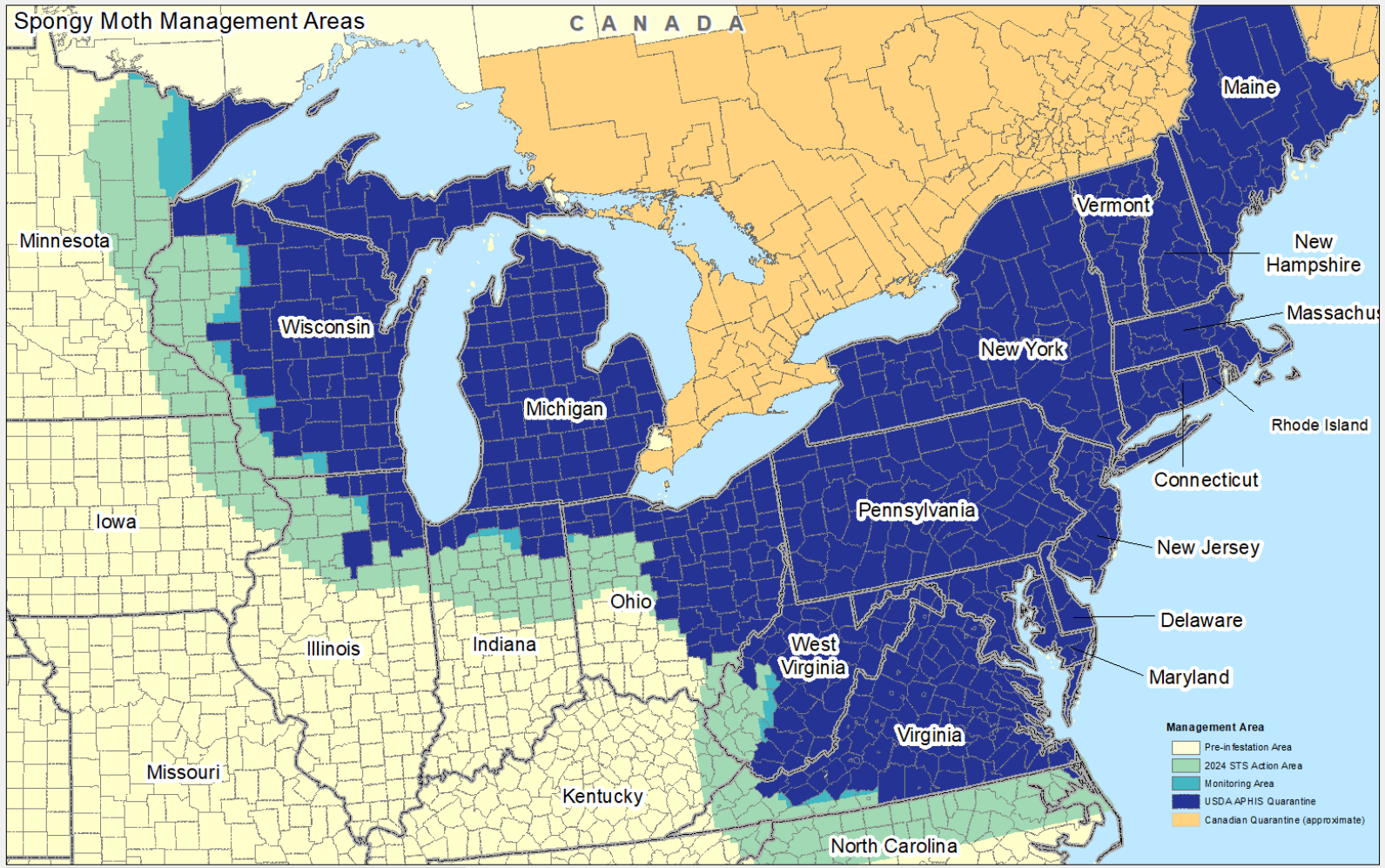
Future- Constant Risks of new pest Introductions

LYMANTRA DISPAR (FORMERLY KNOWN AS GYPSY MOTH- NOW CALLED SPONGY MOTH)

-1 Caterpillar may eat 9 sq. ft. of leaves in one season

-Few hundred species of plants eaten, esp. hardwood trees

-European strain in Northeast USA



Quarantine Information Source: https://www.aphis.usda.gov/aphis/maps/plant-health/europeangypsy-moth-quarantine
https://inspection.canada.ca/plant-health/invasive-species/directives/forest-products/d-98-09/appendix-1/eng/1343632991660/1343834043533

Minnesota Department of Agriculture - Plant Protection Division (Updated: 1/12/2024)

GYPSY MOTH INSPECTION GUIDELINES

All PODS locations are required to inspect and clean IF containers prior to departure from their origin market.

RISKS:

- Gypsy moths are an invasive species and pose a significant environmental threat.
- Gypsy-moth-infested containers are required to be transported back to the origin market or a quarantined area, negatively impacting customer service and adding significant costs.
- There is the possibility of a fine for each container found to have a gypsy moth infestation.

WHAT TO LOOK FOR

- Visually inspect all areas of the container's exterior surface, including the lip of the roof and under the container between the skids.
- Egg masses are covered with buff-colored or yellowish hair.
- They average about 1 1/2 inches long and about 3/4 of an inch wide.

CLEANING TOOLS AND PROCESS

RECOMMENDED TOOLS

The recommended cleaning tools (pictured left) can be purchased locally or online from a home improvement retailer.

- Extension Pole *(Recommended model: Sherlock GT Convertible 8ft - 16ft Adjustable Extension Pole model #00809600000)*
- Outdoor Scrub Brush *(Recommended model: Unger model #967840)*
- Stainless Steel Twisted Wire Bristle Brushes

Use Outdoor Scrub Brush to clean the perimeter and undercarriage of the container.

A stainless steel spiral brush should be used to reach the area between the outer skid and angle iron at the nose/tail of the container.

Lift the container off the bed 18 inches and use Extension Pole to clean under the container.

DO NOT PUT ANY PART OF YOUR BODY UNDER THE CONTAINER OR FORKLIFT.

IMPORTANT: DO NOT PUT ANY PART OF YOUR BODY UNDER CONTAINER OR UNDER FORKLIFT

Slow the Spread Program:
Spongy moth caterpillars infected with Entomaphaga spp.

- Education
- Mass trapping in newly infested areas
- Sprays to control the larvae, and Gypcheck (a virus that only kills this species)
- Spread of the Entomaphaga fungi (intentionally and naturally), looking for other predators
- Pheremone flakes to confuse the males (females don't fly)
- Inspections and regulations to control the spread

Spotted Lantern Fly

-Tree of Heaven, Grapes, Fruit Trees, Walnuts, others

-first found in PA- Now found in 17 states

Planthopper that exudes LOTS of Honeydew!

-moves on products, trucks, rocks- many found along Railroads


Fresh Holiday Decor
DELIVERED FARM FRESH
Fresh Holiday Decor
DELIVERED FARM FRESH
Fresh Holiday Decor
Juniper Bunch
Frasier Fir Bunch


Technology Trees


BONFIRE

Laurel Wilt

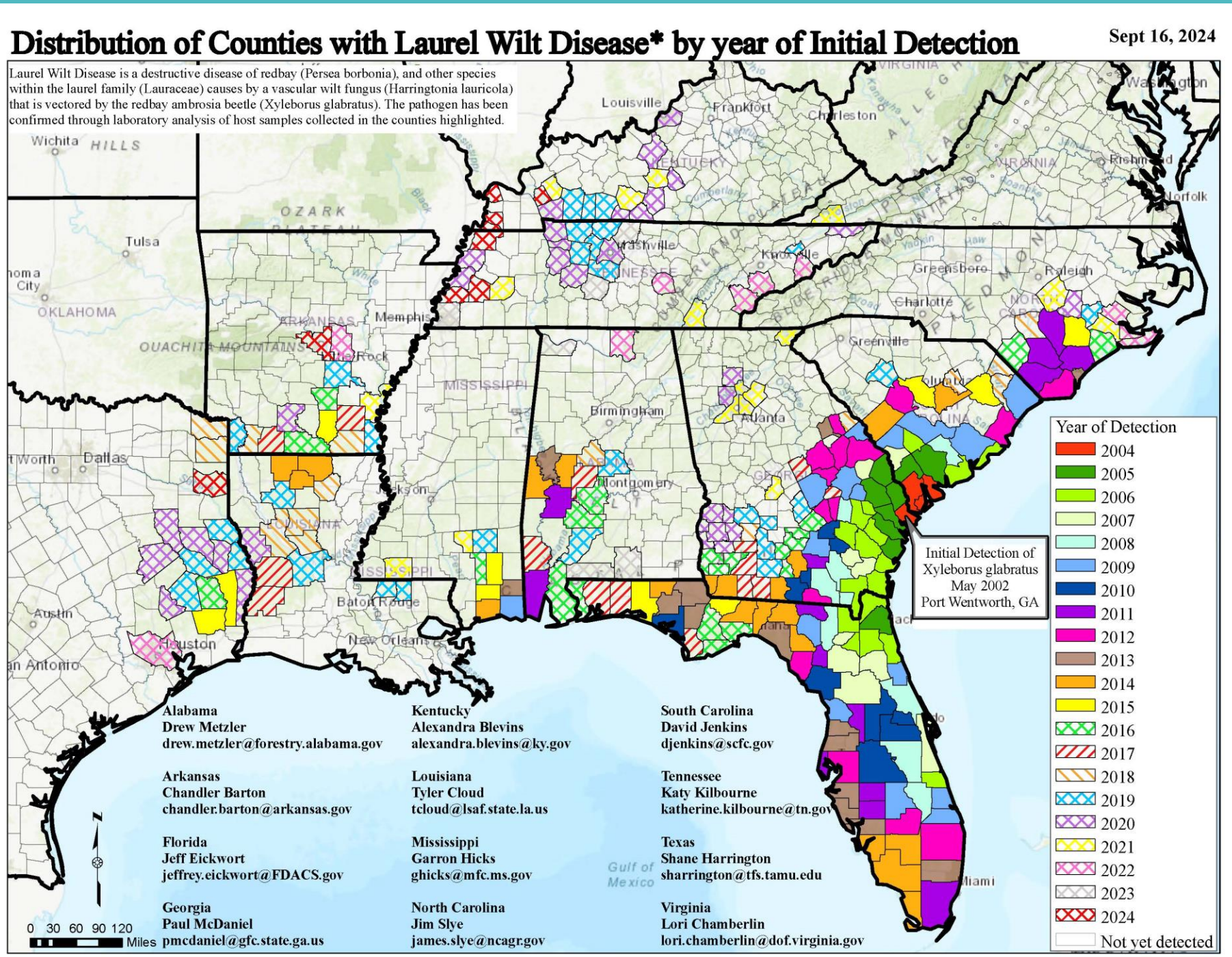
-Affects Laurel family– Redbay Laurel, Sassafras, Spicebush

-Spread by Red Bay Ambrosia *(Xyleborus glabratus)* Beetle that introduces the fungus *(Raffaella lauricola)* to the plant (MOVES ON PLANTS & FIREWOOD)

Been detected in all southeastern states, all of Florida

Known Laurel Wilt Distribution

- Please contact us if you suspect this disease on nursery stock or in the landscape

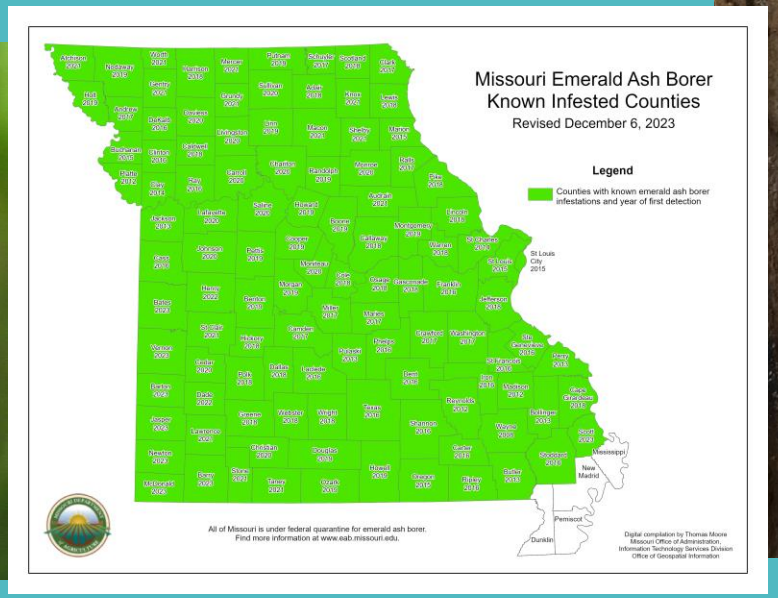


EMERALD ASH BORER

-First detected in 2008, now found in all but 2 MO Counties

-Releases of Parasitic wasps in 29 Counties, so far have determined established population in 7 Co's (ongoing)

- =no ash being sold in MO due to lack of demand, education towards more diversification of Genus in plantings



Graft incompatibility

Herbicide Injury & Nickel Deficiency in container plants

Weather Events causing Plant Health issues

- Dec 2023- Drought, very warm
- Jan 2024 and 2025—negative temps
- Extreme drought and rain events early 2024 and rain/high winds in 2025
- -pay attention to weather in states you get your plants from!

Are you preventing these injuries?
Girdling with tree webbing, herbicide injury, poor planting depth

What can our industry prevent?

New Invasive Plant Law

Plants on List of New Law:	Last Date of Sale
Callery Pear (including Bradford Pear)	January 1, 2029
Dwarf Burning Bush (*Euonymous elatus 'Compatus'*)	January 1, 2029
_____	_____
Beefsteak Plant (*Perilla spp*)	January 1, 2027
Lespedeza sericea	January 1, 2027
Climbing Wintercreeper (*Euonymous fortunii coloratus*)	January 1, 2027
Japanese Honeysuckle (and all hybrids)	January 1, 2027

- Nursery operators must sign affidavit upon license renewal not to sell plants.

SANC-SYSTEMS APPROACH TO NURSERY CERTIFICATION

- Forrest Keeling is a "Pilot Nursery" #2 of the first 16
- *A voluntary program looking at Best Management Practices of the facility to avoid shipping pests and improve plant health.

You can use the Risk Asessment Tool found at Horticulture Research Institute Website
hriresearch,org

Any Questions?

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Red Imported Fire Ant

Can be moved on plants, hay bales, other products from infested areas. (Southern US)