

Brief summary of minutes of annual meeting:

Monday, December 11th was devoted to state reports. Brief highlights of the reports follow.

Gerry Adams, Nebraska pathologist

Bud blight of spruce – *Gemmamyces piceae* was discovered in Alaska in 2016 (paper Cerny et al 2016) on blue spruce which is not native to Alaska. *G. piceae* is native to China. A new canker disease of aspen (*Populus tremuloides*) – appears to be killing aspen in Alaska in a single year. No success so far in isolating the pathogen.

Karla Adesso, Tennessee entomologist

Karla is currently working on use of a virus (SINV) for biocontrol of fire ants, and cover crops to mitigate damage from flat headed apple borer. Fulya Baysal-Gurl is training growers on boxwood blight and how to handle the quarantine.

Ahmed Ali, Florida entomologist/pathologist

Some of the most important problems that Davey Tree is dealing with in Florida are Magnolia algal leaf spot on Magnolia and Avocado, Jasmine virus, Awabuki viburnum downy mildew, pitch pine canker, laurel wilt on redbay, Texas phoenix palm decline, and *Sphaeropsis* knot on oleander.

Enrico Bonello, Ohio pathologist

A new beech leaf disease, first detected in Lake County Metro Parks in 2012, appears to be developing into a serious problem. Symptoms are dark green leaf tissue between the veins, thick, leathery leaves, bud dessication, and decline of big trees often leading to death of understory trees. It has also been reported in western PA and Ontario. American and European beech can be infected. The causal agent is not known at this point.

Doug Caldwell, Florida entomologist

Florida has a large set of UTube videos for education on insects and diseases. Rugose whitefly populations declining in some places. The Sri Lanka weevil is expanding in range with and is known to feed on at least 68 plant species.

Gary Chastagner, Washington pathologist

Phytophthora ramorum

- Plants infected with *Phytophthora ramorum* were found in a total of 14 sites within a 150 acre botanical researve in Kitsap County, WA in 2015.
- Mitigation efforts have included the removal and destruction of plants, soil steaming, application of *Trichoderma* to soil, fungicide applications, and the implementation of SOP and IPM to reduce the potential spread of the pathogen.
- No *P. ramorum* has been detected since early 2016

Slugs on Christmas trees

- Postharvest hot water treatments were evaluated for their effectiveness in killing slugs on exported Christmas trees. The shortest exposure duration/temperature that resulted in 100% mortality of all the slugs was 30 seconds at 47.7C.

Botrytis gray mold

- *Botrytis cinerea* was the only *Botrytis* species recovered from a number of conifer hosts at 5 nurseries in WA and OR.
- A total of 77 isolates were screened in vitro for resistance to 7 fungicides. Overall, all of the isolates were very sensitive to fenhexamid with EC50 values of <1.0 ppm. The level of resistance to the other fungicides was very high. The percentage of isolates with EC50s >10 ppm for fenhexamid, iprodione, boscalid, pyraclostrobin, cyprodinil, and thiophanate-methyl was 46.8, 59.7, 64.9, 64.9, 93.5, and 100%, respectively.

Madrone common garden project

Pacific madrone (*Arbutus menziesii*) is a wide ranging evergreen hardwood species in western North America, covering a large latitudinal gradient from California to British Columbia. A series of common garden plantings consisting of 119 families were planted at seven locations in California (1), Oregon (2), Washington (2), and British Columbia (2) in 2011-2013. Assessments have been made of growth, disease incidence and severity, cold damage, and phenology for each site on a yearly basis.

Pathogens of peonies

- Surveys of peonies in 12 states revealed five genera of fungal pathogens on peonies that have never been reported before in the United States: *Mycocentrospora acerina*, three *Colletotrichum* spp., *Pilidium concavum*, a *Botryosphaeria* sp., and a *Phoma* sp. New host-pathogen-state combinations were also revealed for fungal pathogens *Graphiopsis chlorocephala*, *Sclerotinia sclerotiorum*, *Sclerotium rolfsii*, *Phytophthora cactorum*, and at least one *Alternaria* sp.

JC Chang, South Carolina entomologist

The 'Southeast Pest Control Guide for Nursery Crops', a key resource for nursery growers, will be expanded to include efficacy of herbicides and fungicides in 2018. Emerald ash borer was detected for the first time in 2017. Chili thrips is becoming a big problem in nursery production. Efficacy trials are planned.

Whitney Cranshaw, Colorado entomologist

Early release of the 2018 publication 'Garden Insects of North America', an extensive reference and guide book (704 pages) packed with color photographs. Coauthored by Cranshaw and Shetlar. Also, Insects and Diseases of Woody Plants in CO, Bulletin 506A, is now available.

New research and education efforts underway on insect pests of hemp. European elm scale appears to be resistant to the most commonly used insecticides in Colorado. Efforts are underway to develop scale-resistant cultivars.

David Held, Alabama entomologist

Boxwood blight was found on holiday wreathes grown elsewhere. They are now mapping the distribution of rose rosette in Alabama. Other pest and disease problems of note include *Hypoxyton* canker on oak, *Loropetalum* gall, crepe myrtle bark scale, and European pepper moth on mums (girdling prior to shipment).

Hayk Khachatryan, Florida agriculture economist

Research is continuing on the preferences of consumers for pollinator-attractive plants relative to other factors, such as color, plant type, organic, and pesticide-free. Because some of the major retail stores have banned the use of neonicotinoid pesticides for growers, a new survey is underway to determine the extent of the economic burden this places on growers. Consumers will be surveyed to determine if they like or dislike the use of neonicotinoids, as well as the importance of blemish-free and insect-free flowers. Eye-tracking is used to collect data on several issues, including which type of plant labeling is most effective.

Vera Krischik, Minnesota entomologist

25ppb imidacloprid Minn Dept Ag level is NOEL . Recent research addresses the following questions: Do sub-lethal effects of neonicotinoids impact queen production and colony performance? What is relation between levels of neonics in foliage, petals, pollen, and nectar? Levels detected in foliage of trees with soil drench were higher than levels in flowers. Injecting trees increases levels in all tissue. Dogwoods growing under target tree with soil drench also had very high levels – high enough to kill bees . Only 10% of product in soil drench is taken up by the target tree.

Brian Kunkel, Delaware Entomologist

Spotted lanternfly must feed on tree of heaven to be successful with reproduction. Now that it is being found on apple trees there is increased concern about the economic impact. Egg masses are deposited on all sorts of surfaces, rocks, wheel wells, trees, etc.

Fredric Miller, Illinois entomologist

Five years of research on soil drenches and trunk injection to protect trees from emerald ash borer is now in press with Arboriculture and Urban Forestry. New research is underway with EAB parasitoids. *Geosmithia* is present throughout the state, but so far lacking the walnut twig beetle that vectors the pathogen has not been found, and therefore no confirmed cases of Thousand Cankers Disease. Burr oak blight was detected in 20 counties.

Lina Rodriguez-Salamanca, Iowa pathologist

The most problematic diseases in 2017 were pine wilt, *Diplodia* tip blight, and burr oak blight. Some phytotoxicity was documented when chlorothalonil was applied with high pressure sprayers.

Cliff Sadof, Indiana entomologist

The arborist-friendly model for evaluating the cost of removal versus treatment of ash street trees developed at Purdue has been widely used around the country, with many cities now adopting a treatment program to allow a more gradual removal of ash trees or to keep a proportion of the trees indefinitely. A new injection method which may be faster than standard methods is being evaluated.

David Smitley, Michigan entomologist

Hemlock woolly adelgid is now established, but highly localized, in 6 counties along Lake Michigan in the southern half of the lower peninsula. A new publication is in press with Biocontrol that documents a strong inverse relationship between the population density of Japanese beetle and percent infection by *Ovavesicula popilliae* over a 17-year period at 10 golf courses in Michigan. Cooperative work is underway with Colorado State University and USDA APHIS to introduce the pathogen to Colorado and to major cargo airports in the eastern USA that may be key sources of beetles that have been found around airports in Washington, Oregon and California. New experiments are underway to evaluate virulence of the pathogen to Japanese beetle, directly or indirectly, following the inoculation of field plots.

Chris Williamson, Wisconsin entomologist

Work is continuing on insecticide treatments to protect trees from emerald ash borer. Several new extension publications are now available on protecting pollinators. An invasive earthworm, *Amyntas agrestis*, sometimes referred to 'jumping worm' or the 'green stinkworm' has become a problem on some golf courses. Forest ecologists are worried about its potential to consume large amounts of leaf litter, and therefore change the decomposition cycle.

Tuesday morning, Dec. 12th, discussion of group projects and NCERA 224 business

The next steps in our joint research project, the national elm trial, were discussed, and three committee members (Gerry Adams, Lina_Rodriquez-Salamanca and Whitney Cranshaw) agreed to lead our efforts this coming year. Vera Krischik and David Held are organizing the 2018 meeting. They will start by exploring a potential meeting site in Cuba. Cuban entomologists and pathologists will be contacted for establishing better communications about invasive insects and diseases of concern to Cuba and the USA. New partnerships and joint projects between our countries will be explored. JC Chong will be the Chair of NCERA 224 in 2018. We have a solid core of scientists for this group, but we need to continue to recruit nursery and landscape entomologists and plant pathologists for future meetings. A maximum of two (one pathologist and one entomologist) can be funded by each state Experiment Station. Funding levels vary among experiment stations, but all of them can fund representatives to this meeting if they want to because some CSRS money goes to all Experiment Stations for this purpose. The

Experiment Station director decides. Our advisor, Tom Payne, can help document and justify travel for people that are having trouble getting travel funds.

Accomplishments:

Short-term and long-term Outcomes: Research by Dave Smitley, Cliff Sadof, Chris Williamson, Fred Miller and Dan Herms strongly supported the development and adoption of the highly successful and most widely used treatment by arborists, landscapers and city foresters for saving ash trees following emerald ash borer invasion: trunk injection with emamectin benzoate. The same researchers also tested and supported development of the only effective product readily available to homeowners at garden center: basal soil drenches with imidacloprid or clothianidin. In addition, Cliff Sadof built the most heavily used decision-making tool for city foresters when calculating costs of treating ash trees versus tree removal. Research by Gary Chastagner in Washington state has been critical for providing state agencies in the northwest and USDA enough information to write guidelines for nurseries to allow production of clean nursery stock in areas where sudden oak death has been detected.

Milestones: The recent publication of our 'national elm trial' results hit a key benchmark for our joint committee projects. This publication provides arborists, landscapers, city foresters and others the best available data on the survival and vigor of twenty cultivars of elms bred to be resistant to Dutch elm disease. In our meeting we discussed the next stage of this project. Stands of elm trees in replicated plots are still in good condition in NJ, MI, KY, WA, KS, CO, MN. We have an excellent opportunity to evaluate them for relative levels of resistance to Dutch elm disease. Gerry Adams and Lina_Rodriquez-Salamanca are developing standardized methods for all of us to use. Gerry will contact Dr. Blanchette about collaboration of research at one of our sites. Whitney Cranshaw is developing standard bark beetle sampling methods for all of us to use. He is willing to isolate the pathogen from beetles that we collect and send to his lab.