



# NURSERY NEWS

## NDSU Woody Plant Improvement Program 2019 Woody Plant Introduction

Provided by Dr. Todd West & Kamie Beeson

A new woody plant selection, Hyland Splendor™ Mugo Pine (*Pinus mugo* 'HyDak'), was introduced by the North Dakota Woody Plant Improvement Program, the North Dakota Agricultural Experiment Station and the North Dakota State University Research Foundation.

Hyland Splendor™ (photo at right) is a Mugo pine selection that has high quality dark green foliage and maintains its dark green needle color (photo 2) during the winter months. It is fully hardy to USDA plant hardiness zone 3a.

This slow to medium growing selection reaches 15 ft. tall with an 8 ft. canopy spread at maturity. It prefers full sun to part shade and well drained soils. It is pH adaptable and tolerant of higher pH soils.

Nursery trials have shown Hyland Splendor™ to grow 20% faster in a controlled commercial nursery production setting as compared to the prominent cultivar 'Tannenbaum', which also often develops an undesirable yellow-green winter needle color. These factors may potentially increase the profitability of growing Hyland Splendor™.

This selection has been in development by the NDSU Woody Plant Improvement program for over 28 years. Retired program leader Dr. Dale Herman purchased the original plant material from a nursery and began plant evaluations. Current project leader Dr. Todd West and research specialist Greg Morgenson continued the plant evaluation and prepared the selection for release.



### About the NDSU Woody Plant Improvement Program

The NDSU Woody Plant Improvement Program has been serving the Northern Great Plains for over 60 years, beginning germplasm trial evaluations in 1954. In 1974, NDSU purchased an 80-acre farm near Absaraka, ND, to be established as the NDSU Horticulture Research Farm and began trial plantings that fall. This research farm pro-

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Photo 2: Mugo foliage comparison—standard mugo pine on left, Hyland Splendor™ on the right.

vides ideal horticultural soil for evaluation and breeding projects for North Dakota. Approximately 45 acres of this farm is used for evaluation, selection and breeding of woody ornamental plants.

The main portion of the research farm is the center 35-acre plot known as the Dale E. Herman Research Arboretum. Named after NDSU Professor Emeritus Dale E. Herman, who developed the program for nearly 40 years, the research arboretum is the most extensive collection of woody ornamental plants in North Dakota and the northern Great Plains. It is a valuable resource for teaching, research and educational use.

NDSU woody plant introductions are currently being propagated for sale by commercial wholesale firms in four countries: Australia, Canada, England, and the United States (14 states, including 35 nurseries). This project has introduced 59 superior woody plants for production and sale with increased disease tolerance and winter hardiness for landscapes. The first introduction from the program (1986) was a flower bud hardy Forsythia hybrid, 'Meadowlark'. This was a collaborative release with South Dakota State University, Arnold Arboretum of Harvard University and the USDA North Central Regional Plant Introduction Station.

In 2012, several breeding programs were initiated focusing on magnolia, lilac, maple hybridizing and mutagenic breeding of several shrub species. There are several potential new releases in the future including *Acer truncatum* hybrids (see photo three below, crossed with *A. platanoides* – Finland source and *A. truncatum*, none of the currently available cultivars in the nursery trade are hardy in ND) and a hardy katsuratree (*Cercidiphyllum japonicum*) which is marginal in zone 5 and NDSU has one that is performing beautifully in a zone 3b.

The goals of the NDSU Woody Plant Improvement Program are selection, evaluation and introduction of hardy superior woody plants for the landscape industry. For more information about the program, visit [www.ag.ndsu.edu/plantsciences/research/woody-plants/](http://www.ag.ndsu.edu/plantsciences/research/woody-plants/).



Photo 3: Exciting *Acer truncatum* hybrids



## 2019 NURSERY PROGRAM IN SUMMARY

By Charles Elhard, NDDA

In 2019, 283 nursery licenses were issued, an increase of 8 from 2018. This number includes 42 grower locations covering approximately 980 acres of field-grown nursery stock. North Dakota Department of Agriculture (NDDA) nursery staff inspected about 35 percent of these nurseries during the season. All growers were inspected and certified as required by North Dakota Century Code. The most common violations at dealer locations were non-hardy plants not having been labeled as required. Overall it was a fairly quiet year. The most notable pest problems found at nurseries are shown in table below, not listed in any order of occurrence.

Notable Insects	Pathogens
Gall-forming insects, mites, aphids	Stigmata/Rhizosphaera needlecast
Bronze birch borer	Lots of fungal leaf diseases due to wet year
Pine tip moth	<b>Other</b>
Borer in Kentucky coffee-tree	Weed control issues
<b>Other</b>	Herbicide damage
North Dakota's first boxwood blight positive at a multi-national chain store. Boxwood blight is not known to occur in North Dakota.	Iron chlorosis especially in maples and oaks

## WALNUT TWIG BEETLE

By Amy Mesman, USDA-APHIS-PPQ, State Plant Health Director for ND & SD

In May 2008, walnut mortality observed in Colorado as early as 2003 was attributed to numerous cankers developing in association with insect galleries. The new disease complex is referred to as thousand cankers disease (TCD) and is considered to be native to the United States. TCD results from the combined activity of *Geosmithia morbida* fungus and the walnut twig beetle (WTB, *Pityophthorus juglandis*). The WTB has expanded both its geographical and host range over the past two decades, and coupled with *G. morbida*, walnut mortality has occurred in California, Oregon, Washington, Idaho, Utah, Arizona, New Mexico and Colorado. In July 2010, TCD was first reported in Knoxville, Tennessee. Black walnut is a significant economic, social and environmental resource, and appears to be highly susceptible to

TCD. Black walnuts exhibit little to no resistance to the pathogen and its vector. Various states conducted surveys in 2011, resulting in the detection of TCD in Pennsylvania and Virginia. Surveys in 2012 revealed TCD in North Carolina. There is no federal regulation in place for TCD. There have been trapping efforts conducted for the beetle in South Dakota, Minnesota and Nebraska. To date, no positive finds have been reported.



Photo shows TCD cankers and damage by WTB.

## EMERALD ASH BORER UPDATES

### **Emerald Ash Borer in South Dakota**

By Amy Mesman, USDA-APHIS-PPQ, State Plant Health Director for ND & SD

Emerald Ash Borer (EAB) was first detected in South Dakota in 2018. The infestation was reported in northern Sioux Falls by a tree care company and confirmed by USDA-APHIS-PPQ. Since the initial report, a quarantine was established by the South Dakota Department of Agriculture and USDA for all of Minnehaha County, along with portions of two adjacent counties, Lincoln and Turner.

Trapping efforts continue inside the quarantine area as well as along the boundaries to monitor movement of the insect. The city of Sioux Falls has begun an ash reduction program removing unwanted ash trees and replacing them with non-ash species using diversity planting. USDA-APHIS-PPQ has implemented a biological control program as well. The bio-control program is in its second year of beneficial release. In 2020 they will begin recovery efforts of the beneficial insects to determine if they have established in the quarantine area.

USDA is in the process of reviewing comments for the deregulation of Emerald Ash Borer. The Federal quarantine could be removed in the spring of 2020.

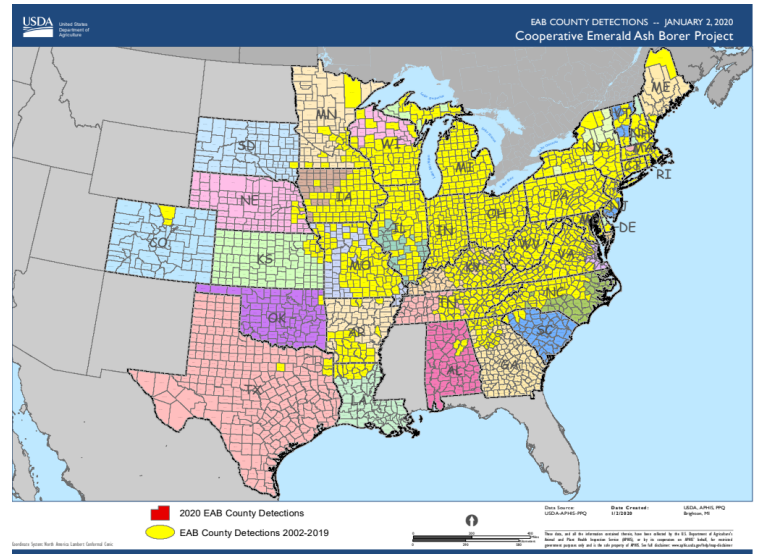


Various sizes of Emerald Ash Borer larvae, photo by Gerald Fauske, North Dakota State University

### **Emerald Ash Borer in North Dakota**

By Charles Elhard, NDDA

Emerald Ash Borer (EAB) has NOT been found in North Dakota. In 2019, North Dakota again placed traps across the state. Nearly 300 traps were placed in May/June, serviced in July, and removed in Au-



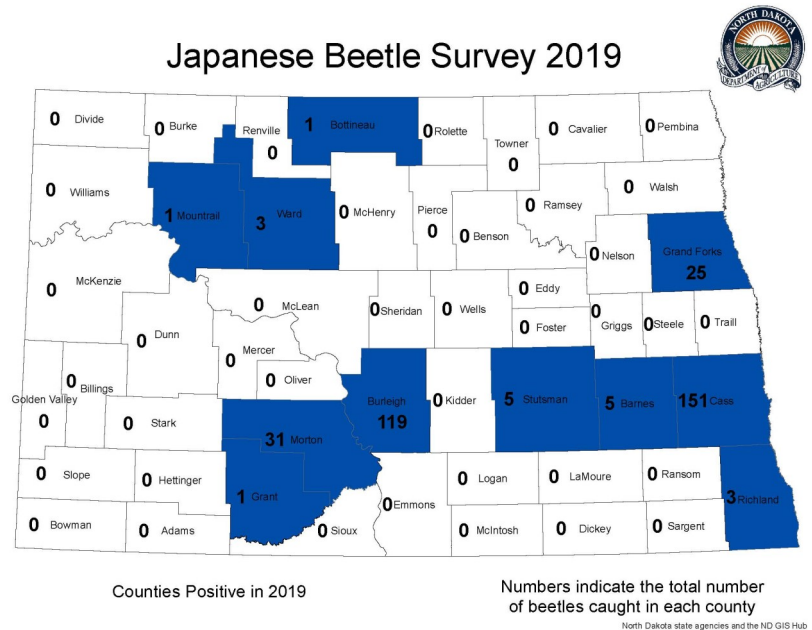
Current EAB detections in the US.

gust. No suspect beetles were submitted. NDDA has worked closely with Lezlee Johnson, North Dakota Forest Service; and Joe Zeleznik, North Dakota State University Extension Forester, to conduct EAB detector training in 2019 for NRCS, soil conservation districts and city forestry personnel. Training sessions and trapping are expected to continue in 2020. We anticipate EAB to be federally deregulated in the spring of 2020 and as we await USDA's decision, NDDA has drafted state regulations to prevent the introduction of EAB. Once these are prepared, there will be a public comment period and opportunity for folks to provide feedback on EAB regulations.

# JAPANESE BEETLE UPDATE

By Charles Elhard, NDDA

The winter of 2018-2019 was harsh and cold with stretches of -30F air temperature, so many people asked and were hopeful that this would knock back any Japanese beetle populations trying to overwinter. NDDA continued to survey for Japanese beetles in 2019, focusing on locations that were positive in 2018 as well as a broad survey extending to most counties in the state. In 2019, 62 volunteers participated as well as several nurseries. Traps were placed beginning in May and June. All traps were removed by November 25. Traps were in place for an average of 117 days. A total of 778 traps were placed across the state and 765 of those were retrieved at the end of the season. After all traps were removed, the data was collected from all trappers. In all traps, 345 beetles were caught across the state, 176 in nurseries. Eleven counties had positive traps. Beetle counts and positive counties decreased. All counties trapped less than 50 beetles total, except for Cass and Burleigh counties.



# PHYTOPHTHORA RAMORUM (SUDDEN OAK DEATH)

Phytophthora ramorum also known as sudden oak death (SOD) is a federal quarantined pathogen that was first discovered in California coastal regions in the early 1990s. This pathogen can cause severe dieback and mortality in oak species, but it can also affect hundreds of other plant species including lilac, rhododendron, viburnums and roses. USDA-APHIS-PPQ, in partnership with state agriculture departments, conduct surveys annually to determine the pathogen’s distribution and to prevent movement via nursery stock or other assisted pathways. The pathogen appears to prefer cool and wet climates, but nurseries may also offer a suitable environment. 2019 was an eventful year for regulators as potential affected nursery stock was shipped to many

states in the Midwest and eastern U.S. Many tracing activities were conducted across the country to investigate and possibly destroy infested nursery stock. In North Dakota, no infested plants were found. In the spring when nursery is being received, nurseries should pay attention to new stock being unloaded from trucks. Is it healthy? Are there any unusual symptoms on the leaves? Black cankers on the stems? These might not be signs/symptoms of SOD but could be symptoms of another pathogen. Taking note of issues on incoming nursery stock before comingling with nursery stock currently in your nursery could prevent potential spread. For more information about SOD, visit <https://www.aphis.usda.gov/aphis/resources/pests-diseases/hungry-pests/The-Threat>.

## New Pest Alert: Tomato Brown Rugose Fruit Virus

By Amy Mesman

Tomato brown rugose fruit virus (ToBRFV) was detected in the United States in late 2019. USDA APHIS has taken immediate action to protect the U.S. tomato and pepper industry worth more than \$2.3 billion annually. The disease caused by ToBRFV was first reported in 2014 in tomatoes in Israel. Since then, ToBRFV has been reported in China, Mexico, Germany (eradicated), Italy, Jordan, Turkey, Greece, the United Kingdom and the Netherlands. Tomato and pepper are the two main hosts. It is easily spread through the use of contaminated tools, hands, and plant-to-plant contact. This virus genus also contains other economically important pathogens that infect vegetable crops, including Tobacco mosaic virus (TMV), Tomato mosaic virus (ToMV), and Cucumber green mottle mosaic virus (CGMMV). Symptoms caused by ToBRFV include bubbling and mosaic on leaves of susceptible plants. On fruit, symptoms include smaller size with a rough surface, fruit drop, delay in ripening, and fruit discoloration resulting in the inability to market the product.

To safeguard against the introduction of ToBRFV into the United States, APHIS has issued a Federal Order restricting the importation of tomato and pepper fruit, seed lots and transplants by requiring imported plants and plant products to be free of any evidence of ToBRFV; this includes propagative material and fruit from various countries including the re-export of products from Canada. These requirements will remain in place until APHIS completes its risk analysis of the fruit pathway for ToBRFV introduction into the United States and determines appropriate regulatory action. Surveys are underway in states with tomato production to determine if these detections are isolated incidents.



Symptomatic tomato fruit; Photo from EPPO.int, Prof. Salvatore Davino

Symptomatic tomato leaves; Photo from EPPO.int, Diana Godinez

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