THE SHADE TREE

A BI-MONTHLY BULLETIN DEVOTED TO NEW JERSEY'S SHADE TREES

Volume 96 — May - June 2023 – Issue 5 & 6

This Issue Presents…

DIRECTOR'S DISCOURSE

With the US Forest Service making up to $1 billion of federal funds available in Urban & Community Forestry Inflation Reduction Act (IRA) grants this April the topic of tree planting has been thrust to the front page of the newspapers for the first time in recent history. With all the buzz and excitement surrounding potential projects, education has never been more important.

Trees are investments, and proper planting ensures that the next generation reaps the full benefits of a beautiful shade tree-lined street. Unfortunately, tree planting is frequently oversimplified, and the tree stresses caused by improper planting can be invisible to the untrained eye.

Planting & establishment is the most critical point in a tree's lifetime. Incorrect planting can make your new tree fail to thrive and inflict future headaches and costs on the people you were attempting to aid. Planting the right tree - in the right place - the right way is the most effective way to keep your trees thriving, so they grow to their fullest, healthiest, safest potential.

NJ Shade Tree Federation is calling on you, our membership, to spread the word that the time to educate ourselves about proper tree planning, planting, and maintenance is now. Building an informed workforce and expanding New Jersey's tree-informed community has never been more important as we use this opportunity to invest in tree-lined streets for future generations.

Learn the Basics

NJ Shade Tree Federation provides our members with free pdf versions of our publications. The Trees for New Jersey Streets booklet can help you choose the right tree for the right place, and as a member you also receive discounts on all paper publication orders. Utilize our community outreach publications to teach your residents how to plant their trees the right way with Proper Tree Planting brochures and Volcanoes Killing Trees in New Jersey: Proper Mulching Techniques English or Spanish brochures. Outreach Brochures are available to order in units of 25. Browse all our publications and download your free PDF versions of our booklets from the NJ Shade Tree Federation website: https://www.njstf.org/publications.php

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BULLETIN OF THE NEW JERSEY SHADE TREE FEDERATION
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Meet the Folks on the Cutting Edge of Tree Care & Management at NJ Shade Tree Federation's 98th Annual Conference, October 26 & 27, 2023

With nearly a century of experience assisting individuals and agencies entrusted with the selection, planting, and care of trees, NJ Shade Tree Federation proudly holds the doors of our 98th Annual Conference open to all the shade tree commissions, environmental and green teams, DPW tree & roads crews, non-profits, tree experts, and arboricultural professionals who seek to help our state take a bite of this tree-focused federal funding.

Speakers will discuss tree species selection, smart planting, caring for big trees, pests and disease threats, municipal tree project success, the role of trees in stormwater management, and more at our 2023 venue, the DoubleTree by Hilton, Cherry Hill Philadelphia.

Look for Our Official Conference Program Booklet in the Mail this Summer!

Above all, we thank you for your continuing interest and work caring for New Jersey's shade tree resources. We look forward to celebrating our upcoming 100th Anniversary with all of you.

For information on the federal Urban & Community Forestry Inflation Reduction Act Grants visit: https://www.fs.usda.gov/managing-land/urban-forests

REMINDER: WILLIAM J. PORTER AWARD AND SCHOLARSHIP APPLICATIONS ARE DUE BY JUNE 30TH, 2023

The NJ Shade Tree Federation is pleased to open the annual application period for the William J. Porter Community Tree Project Award and Arboriculture Scholarship. Application deadline is June 30th, 2023. Submissions may be emailed to us at TREES@NJSTF.ORG

The William J. Porter Community Tree Project Award is intended to provide up-front funding for a small project to benefit the tree resource in your community.

The William J. Porter Community Tree Project Award Details are as follows:

- Up to $2,500.00 per award depending on availability of funds.
- Project funds provided upfront upon receipt of the award (this is not a reimbursement grant)
- Project funds can be awarded to a municipality or tree organization working within their municipality (organization must have capability to

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REMINDER: WILLIAM J. PORTER AWARD AND SCHOLARSHIP APPLICATIONS ARE DUE BY JUNE 30TH, 2023

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accept funds — no checks to individuals)

• Awardee must be a current member of the NJ Shade Tree Federation

To apply for the William J. Porter Community Tree Project Award, please visit our website's, Wm J Porter - Community Tree Project Award page. https://www.njstf.org/wjp-community-tree-project-award.php

The William J. Porter Arboriculture Scholarship is intended to encourage studies and careers in Arboriculture and Urban Forestry.

The award goes to a Rutgers student meeting the following criteria:

Recipient

A Rutgers Student (up to $2,500) — Application submission deadline is June 30th. The recipient must be a full-time student enrolled in a program of studies representing a demonstrated interest in Arboriculture or Urban Forestry. The student must be in at least sophomore standing with a minimum GPA of at least 2.5. The ideal candidates would include: those majoring in Ecology and Natural Resources, Plant Biology and Pathology, Environmental Planning and Design, or Landscape Architecture, but others may apply.

Awards

Awards will be up to $2,500.

Amount may be adjusted annually depending on available funds. Award Recipient(s) will be notified in September and the award will be presented at the October NJ Shade Tree Federation Annual Conference.

For details on applying for this Scholarship please visit our website's Wm J Porter – Arboriculture Scholarship page. https://www.njstf.org/wjp-scholarship.php

ONCE THE CALLERY PEAR TREE WAS LANDSCAPERS' FAVORITE – NOW STATES ARE BANNING THIS INVASIVE SPECIES AND URGING HOMEOWNERS TO CUT IT DOWN

By Ryan McEwan, The Conversation, March 8, 2023

When people think of spring, they often picture flowers and trees blooming. And if you live in the U.S. Northeast, Midwest or South, you have probably seen a medium-sized tree with long branches, covered with small white blooms – the Callery pear (Pyrus calleryana).

For decades, Callery pear – which comes in many varieties, including "Bradford" pear, "Aristocrat" and "Cleveland Select" – was among the most popular

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trees in the U.S. for ornamental plantings. Today, however, it's widely recognized as an invasive species. Land managers and plant ecologists like me are working to eradicate it to preserve biodiversity in natural habitats.

As of 2023, it is illegal to sell, plant or grow Callery pear in Ohio. Similar bans will take effect in South Carolina and Pennsylvania in 2024. North Carolina and Missouri will give residents free native trees if they cut down Callery pear trees on their property.

How did this tree, once in high demand, become designated by the U.S. Forest Service as "Weed of the Week"? The devil is in the biological details. A Kentucky extension specialist explains why Callery pears initially seemed like a solution, but have proved to be a major problem.

A Quasi-perfect Tree

Botanists brought the Callery pear to the U.S. from Asia in the early 1900s. They intentionally bred the horticultural variety to enhance its ornamental qualities. In doing so, they created an arboricultural wunderkind. As The New York Times observed in 1964: "Few trees possess every desired attribute, but the Bradford ornamental pear comes unusually to close to the ideal."

Modern varieties of Callery pear produce an explosion of white flowers in springtime, followed by deep green summer foliage that turns deep red and maroon in autumn. They also are very tolerant of urban soils, which can be highly compacted and hard for roots to penetrate. The trees grow quickly and have a rounded shape, which made them suitable for planting in rows along driveways and roadsides.

During the post-World War II suburban development boom, Callery pear trees became extremely popular in residential settings. In 2005 the Society of Municipal Arborists named the "Chanticleer" variety the urban street tree of the year. But the breeding process that created this and other varieties of Callery pear was producing unexpected results.

Cloning to Produce an American Original

To ensure that each Callery pear tree had bright blooms, red foliage and other desired traits, horticulturists created identical clones through a process known as grafting: creating seedlings from cuttings of trees with the desired characteristics.

This approach eliminated the messy complexity of mixing genes during sexual reproduction and ensured that when each tree matured, it would have the characteristics that homeowners desire. Every tree of a specific variety was a genetically identical clone.

Grafting also meant Callery pear trees could not make fruits. Some fruit trees, such as peaches and tart cherries, can fertilize their flowers with their own pollen. In contrast, Callery pear is self-incompatible: pollen on an individual tree cannot fertilize

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flowers on that tree. And since all Callery pears of a specific variety planted in a neighborhood would be identical clones, they would effectively be the same tree.

If a tree can't produce fruits, it can't disperse into natural habitats. Gardeners and landscapers thought it was perfectly safe to plant Callery pear near natural habitats, such as prairies, because the species was trapped in place by its reproductive biology. But the tree would break free from its isolation and spread seeds far and wide.

The Great Escape

University of Cincinnati botanist Theresa Culley and colleagues have found that as horticulturalists tinkered with Callery pears to produce new versions, they made the individuals different enough to escape the fertilization barrier. If a neighborhood had only "Bradford" pear trees, then no fruits could be produced – but once someone added an "Aristocrat" pear to their yard, then these two varieties could fertilize each other and produce fruits.

When Callery pear trees in gardens and parks started depositing seeds in nearby areas, wild populations of the trees became established. Those wild trees could pollinate one another, as well as neighborhood trees.

In today's landscape, Callery pear is astonishingly fertile. The prolific flowering that horticulturists intentionally bred into these varieties now yields tremendous crops of pears each year. Although these little pears are generally not edible by humans, birds feed on the fruit, then fly away and excrete the seeds into natural habitats. Callery pear has become one of the most problematic invasive species in the eastern United States.

A Thorny Problem

Like other invasives, Callery pears crowd out native species. Once Callery pear seedlings spread from habitat edges into grasslands, they have advantages that allow them to dominate the site.

In my research lab, we have found that Callery pear leafs out very early in spring and drops its leaves late in fall. This enables it to soak up more sun than native species. We also have discovered that during invasion, these trees alter the soil and release chemicals that suppress the germination of native plants.

Callery pear is highly resistant to natural disturbances. In fact, when my graduate student Meg Maloney tried to kill the trees by using prescribed fires or applying liquid nitrogen directly to stumps after cutting the trees down, her efforts failed. Instead, the trees sprouted aggressively and seemingly gained strength.

Once Callery pear has escaped into natural areas, its seedlings produce very sharp, stiff thorns that can puncture shoes or even tires. This makes the trees a menace to people working in the area, as well as to native plants. Another nuisance factor is that when Callery pears bloom, they produce a strong odor that many people find

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DOGGETT . . . Liquid asset for trees and tree care companies.

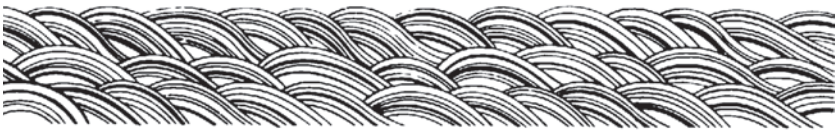
The fastest growing segment of the tree care industry is liquid tree fertilization and Doggett is leading the way. The spectacular growth in this field has come from the fact that the fertilizing method that helps trees the most also helps tree care companies the most.

Liquid fertilizing is right for trees because the fertilizer is injected into the soil. This fractures and aerates the soil so that water, oxygen and fertilizers are made available to the feeder roots. Doggett's forty years of experience have resulted in XL Injecto Feed—a solid in a liquid—suspended particles of concentrated nutrition which you mix with water. Its slow release formula provides nourishment for up to two years and is available in five formulations for varying fertilizing situations.

Liquid tree fertilizing is a liquid asset for tree care companies because it lets you do a thorough and professional job in very little time with hardly any investment in equipment. It requires about one fourth the labor of the dry granular application.

It's no surprise that the leading tree care professionals in the country come to Doggett for tree fertilizer. From Central Park in New York, where XL Injecto Feed is the fertilizer of choice for dependable results, to the highly respected Shade Tree Laboratories at the University of Massachusetts, XL Injecto Feed is demonstrating its value and proving that it really is a liquid asset for trees and tree care companies.

Doggett Corporation, Lebanon, NJ 08833 Tel: 908-236-6335



ONCE THE CALLERY PEAR TREE WAS LANDSCAPERS' FAVORITE – NOW STATES ARE BANNING THIS INVASIVE SPECIES AND URGING HOMEOWNERS TO CUT IT DOWN

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unpleasant.

Currently, directly applying herbicides is the only known control for a Callery pear invasion. But the trees are so successful at spreading that poisoning their seedlings may simply create space for other Callery pear seedlings to establish. It is unclear how habitat managers can escape a confounding ecological cycle of invasion, herbicide application and re-invasion.

Banned but Not Gone

In response to work by the Ohio Invasive Plants Council and other experts, Ohio has taken the extraordinary step of banning Callery pear to thwart its ecological invasion into natural habitats. But the trees are common in residential areas across the state and have established vigorous populations in natural habitats. Ecologists will be working well into the future to maintain openness and biodiversity in areas where Callery pear is invading.

In the meantime, homeowners can help. Horticulturists recommend that people who have a Callery pear on their property should remove it and replace it with something that is not an invasive species. Few trees possess every desired attribute, but many native trees have visually attractive features and will not threaten ecosystems in your region.

A MIXTURE OF TREES PURIFIES URBAN AIR BEST, SHOWS STUDY

University of Gothenburg, March 6, 2023

Conifers are generally better than broadleaved trees at purifying air from pollutants. But deciduous trees may be better at capturing particle-bound pollution. A new study led by the University of Gothenburg shows that the best trees for air purification depend on the type of pollutant involved.

Trees and other greenery in cities provide many benefits that are important for the well-being of residents. Leaves and needles on trees filter air pollutants and reduce exposure to hazardous substances in the air. But which trees purify the air most effectively? Researchers from the University of Gothenburg have collected leaves and needles from eleven different trees growing in the same place in the Gothenburg Botanical Garden's arboretum (tree collection) to analyze which substances they have captured.

"This tree collection provides a unique opportunity to test many different tree-species with similar environmental conditions and exposure to air pollutants," says Jenny Klingberg, a researcher at the Gothenburg Botanical Garden.

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Harmful Pollutants

A total of 32 different pollutants were analyzed, some of which are bound to particles of various sizes. Others are gaseous. There is a proven connection between exposure to air pollutants and increased risk of cardiovascular diseases and airway problems. This project has focused on polycyclic aromatic hydrocarbons (PAHs). In cities, traffic is the biggest source of these pollutants, which are released due to incomplete combustion in engines.

"Our analyses show that different tree species have different abilities to absorb air pollutants. Conifers generally absorbed more gaseous PAHs than broadleaved trees. Another advantage of conifers is that they also act as air purifiers in winter, when air pollution is usually at its highest," says Jenny Klingberg.

Needles Clean Air for Many Years

The researchers also saw that needles continued to absorb air pollutants for several years, which leaves cannot do for obvious reasons. But broadleaved trees had other advantages. They were more efficient at cleaning the air of particles, which is thought to be due to the leaves having a larger surface area to which particles can attach.

"The various species differed more than we expected. Larch, which is a conifer that sheds its needles each autumn, was best in test. Larch trees absorbed the most particle-bound pollutants, but were also good at capturing gaseous PAHs," says Jenny Klingberg.

Needles and leaves do not, however, break down pollutants to any greater extent, even if sunlight can start that process. Thus, there is a risk that the soil beneath the trees will be contaminated by pollutants when the leaves and needles shed and decompose. This places the ecosystem in the soil at risk of being affected, though this has not been investigated in the current study published in the journal Ecological Indicators.

"The pollutants do not appear to impact the trees' photosynthesis; leaf chlorophyll content is just as high in the most polluted areas of Gothenburg compared with trees that grow in less polluted environments. "But this likely looks different in cities with even worse air quality," says project leader Håkan Pleijel, professor of applied environmental science at the University of Gothenburg.

Careful Urban Planning is Needed

However, you should not simply start filling city streets with trees to improve air quality for residents. Several factors determine the benefit. An alley of trees in a narrow street canyon can reduce air flow, negatively affecting dispersion and dilution of the air pollutants and therefore increase concentrations of contaminants locally on busy streets. This means that on narrow streets sheltered from wind, lower-growing vegetation, like hedges, may be preferable. Careful urban planning is necessary, combining different tree species to optimize air purification and to take into account other functions and benefits of trees, according to the researchers.

"This study contributes to improving our understanding of the ability of trees to clean the air and which species are best at absorbing air pollutants," says Håkan

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Pleijel. This knowledge is important for urban planning when designing sustainable cities. While trees and greenery can contribute to better air quality in cities, at the end of the day the most important measure is to reduce emissions.

WORSE THAN THE SPOTTED LANTERNFLY? A NEW DISEASE IS KILLING BEECH TREES IN PA AND NJ

By Frank Kummer, The Philadelphia Inquirer, April 17, 2023

This could be a much worse threat than the spotted lanternfly, experts say. The beech is one of the prevalent trees in forests throughout the Mid-Atlantic, and the disease is spreading rapidly.

The iconic American beech tree has been prized for centuries by people for its dense, shady canopy — and by animals that gorge on its nuts.

But a newly emerging menace has forestry experts worried: beech leaf disease (BLD), which causes leaves to darken, pucker, crinkle and thicken. The crown of the trees thins and branches die, preventing photosynthesis and leading to death.

"This is one that has me concerned," said Emelie Swackhamer, a Penn State Extension educator with a background in plant pathology. "It has already spread throughout most of the state."

Swackhamer, based in the extension's Montgomery County office, lives in Berks County and has seen the damage up close. She was alerted last June to a site in Berks County and could see canopy thinning on some beech trees. The disease also attacks the European and other beech varieties.

"This is an emerging threat," Swackhamer said, "and if people have an ornamental beech tree that's high value, I would be watching for this."

Researchers know little about the disease, she said, and there is no widely accepted treatment. It might take years of research — and funding — before scientists have a firm understanding.

This could pose a bigger threat than the spotted lanternfly, experts say.

The beech is one of the prevalent trees in forests throughout the Mid-Atlantic and New England, and the disease is spreading rapidly. The species is a feature of local forests, parks, and college campuses, with leaves turning a golden yellow in fall.

What Causes It?

The chief suspect in BLD is Litylenchus crenatae ssp. mccannii, a newly recognized subspecies of a nematode thought to have originated in Japan. The nematodes — microscopic worms — have been detected in diseased trees. Bacteria and a fungus have also been found and might also be contributing to the disease.

BLD was first discovered in the United States in Ohio in 2012. It first appeared in Crawford County, Pa., in 2016. It's now present in 65 of 67 Pennsylvania

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counties, including Philadelphia in 2022. Experts have stopped short of calling the nematode an invasive species, but they are treating it as one.

The disease was first detected in New Jersey in Bergen and Essex Counties in 2020. By last September, the state's Department of Environmental Protection began urging residents to check trees on their property for signs of BLD and report any findings to the Forest Service. The disease was then present in 12 of the state's 21 counties. The DEP called the disease "an emerging forest health threat."

The disease is particularly hard on small trees three to five years old. It is new enough that experts are still unsure how it will impact large, mature, hardy trees. The first sign of BLD are dark bands that appear between leaf veins. As the disease progresses, leaf edges brown and begin to curl. Their texture becomes leathery.

BLD comes as beech trees already face a number of threats, including beech bark disease, bagworm, root rot, and the spotted lanternfly, which hasn't proven as deadly to most trees as originally feared. And that has captured the attention of the Pennsylvania Department of Conservation and Natural Resources.

"It's causing a fair amount of mortality in the younger age cohort," said Jill Rose, a forest pathologist for the the department's Bureau of Forestry. "Mature trees take a little longer."

Beech accounts for a significant amount of Pennsylvania's tree canopy and is highly valuable to animals. Beechnuts, high in fat, are prized by squirrels, deer, and bear. Birds feed not only on the nuts, but also on insects that live in the trees. Birds make homes in the natural cavities that form in the trees.

"There's real concern with the onset of this disease," Rose said. "It's relatively new enough that we don't know the long-term impact."

Is There a Cure?

This nematode infests leaf tissue and does not attack the wood or roots. The eggs hatch in late spring and into summer. Emerging nematodes penetrate the buds. They move about in films of water from rain, irrigation or snow. But it is still unclear how they are spreading so rapidly. It's possible they are hitching rides on spider mites.

The U.S. Forest Service says there are no current treatments, though several are being studied. A way to fight the disease right now is to try to stop it from moving. That means destroying infected plants, avoiding transporting the trees, including branches, twigs, soil, leaves, and seedlings. Pruning might also decrease severity of an outbreak.

Because it can take six years for the disease to kill a mature tree, it's unknown how lethal a threat BLD is to Pennsylvania and New Jersey because it was discovered in the region only within the last few years. But there's little doubt it is spreading rapidly, said Matt Borden, a plant pathologist with Bartlett Tree Experts.

"It is absolutely out there," Borden said. "It's affecting people's properties, the landscape, and the forest. It's a big priority for us."

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WORSE THAN THE SPOTTED LANTERNFLY? A NEW DISEASE IS KILLING BEECH TREES IN PA AND NJ

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No Accepted Treatment

Bartlett has 100 offices nationwide and overseas, including many in the Philly region. Borden said the company is experimenting with a nematicide, or chemical that kills parasitic worms, in five states and has seen success. But any treatment won't be widely used until testing is complete.

Borden said the disease has proved difficult to manage, especially in forests. "There's virtually no way to easily combat it," he said. "And it is affecting a species that is really crucial to not only our landscapes but our eastern forest ecosystems. So based on all of those criteria, it's a far higher threat than spotted lantern fly."
For now, the best defense is a healthy tree. "We try to be as proactive as possible, encouraging people to pay attention to the soil and root care of the trees, assess their nutrient needs," Borden said. "We advise on irrigation and mulching. A healthy plant can withstand things better than a sick plant."

Editor's Comment: NJ DEP published a news release in September 2022 urging NJ residents to check their beech trees for Beech Leaf Disease. It was acknowledged that Beech Leaf Disease had been observed in 12 NJ Counties: Bergen, Burlington, Essex, Hunterdon, Mercer, Monmouth, Morris, Passaic, Somerset, Sussex, Union and Warren. Report any suspected Beech Leaf Disease found outside the aforementioned counties to the New Jersey Forest Service's Forest Health Program by emailing foresthealth@dep.nj.gov or calling (609) 292-2532.

To read the NJ DEP's news release visit: https://www.nj.gov/dep/newsrel/2022/22_0037.htm

The NJ DEP Forest Service Forest Health Program Webpage is: https://www.nj.gov/dep/parksandforests/forest/foresthealth/index.html

CALENDAR OF EVENTS 2023

June 9-10th	2023 NJ Tree Climbing Competition – Newark, NJ
June 30th	William J. Porter Award and Scholarship Application Period Closes
September 13th	NJSTF Tree Talk – 7:00-8:30pmZoom link to be sent to member email list in September.
October 26th-27th	NJ Shade Tree Federation 98th Annual Conference — Cherry Hill, NJ
November 14th-16th	League of Municipalities 108th Annual Conference — Atlantic City, NJ
December 6th	NJSTF Tree Talk – 7:00-8:30 pm, Zoom link to be sent to member email list in December.

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