Exclamation!™ London Planetree (*Platanus* × *acerifolia* 'Morton Circle' is a good, disease-resistant selection ideal for urban canopies, maturing to 40–50 feet wide and 55–65 feet tall.

PHOTO COURTESY OF J. FRANK SCHMIDT & SON CO.

The replacements

Overreliance on certain trees often prompts the need to turn to newer varieties in place of faltering favorites

BY ERICA BROWNE GRIVAS

WHEN IT COMES TO CHOOSING TREES, there's a tendency to opt for reliable favorites. But what happens when a tree falls victim to its success?

Whether a borer, fungus, or weather brings it down, or the tree is bringing down paving and buildings, nurseries need new options. Let's look at some replacements for some of the more challenging popular trees out there, from shade trees and flowering fruit trees to conifers for strong replacements and planting strategies.

If there's one thing nature abhors nearly as much as a vacuum, it's homogeneity. When single varieties are planted en masse, whether as gracious street allées, groves in developments, parks and college campuses or nursery growing fields, it creates a monoculture. Lacking diversity, monocultures are extremely vulnerable to disease, pest, and environmental pressure.

Probably the most well-known example of a monoculture collapsing is the deadly Irish Potato Famine in the 1840s, but among trees, it's the fall of the American Elm.

Beloved for their welcoming umbrella-like canopies, American elms (*Ulmus americana*) once lined Elm Streets in cities big and small.

Sometime in the early 1900s, two species of fungi, *Ophiostoma ulmi* and *Ophiostoma novo-ulmi*, abetted by two different bark beetles, hijacked on some imported European logs meant for furniture. Carrying Dutch elm disease, which was first seen in the Netherlands in 1921, the fungi can travel along adjacent tree roots to rapidly spread to an entire row. By 1970, several epidemics had felled the king of American street trees, having killed hundreds of millions of them.

While both native American elm and European elms are susceptible, Asian species (*U.pumila* and *U.parviflora*) are resistant. Thanks to years of breeding work, clonal varieties of American elms like 'American Liberty', 'Independence', 'Princeton', 'New Harmony' and 'Valley Forge' are available today.

https://tinyurl.com/Dutch-Elm-Wisc

The replacements

The catalog of wholesale grower **J. Frank Schmidt & Son Co.** (Boring, Oregon) recommends using stock grown on its own roots or grafted onto Asian elms to prevent Dutch elm disease.

When the default disappears

Elm, of course, isn't the only staple tree to suddenly or gradually require a replacement.

Dr. Bert Cregg, now professor of horticulture at Michigan State University, had a front-line seat at the arrival of emerald ash borer (*Agrilus plagripennis*), often abbreviated as EAB. The insect likely arrived in North America sometime in the late 80s or early 90s, and attacks green ash (*Fraxinus pennsylvanica*).

"Michigan is the home of emerald ash borer if we want to claim that," Cregg said. "The epicenter was near the airport. It was probably here about 10 years before it was discovered."

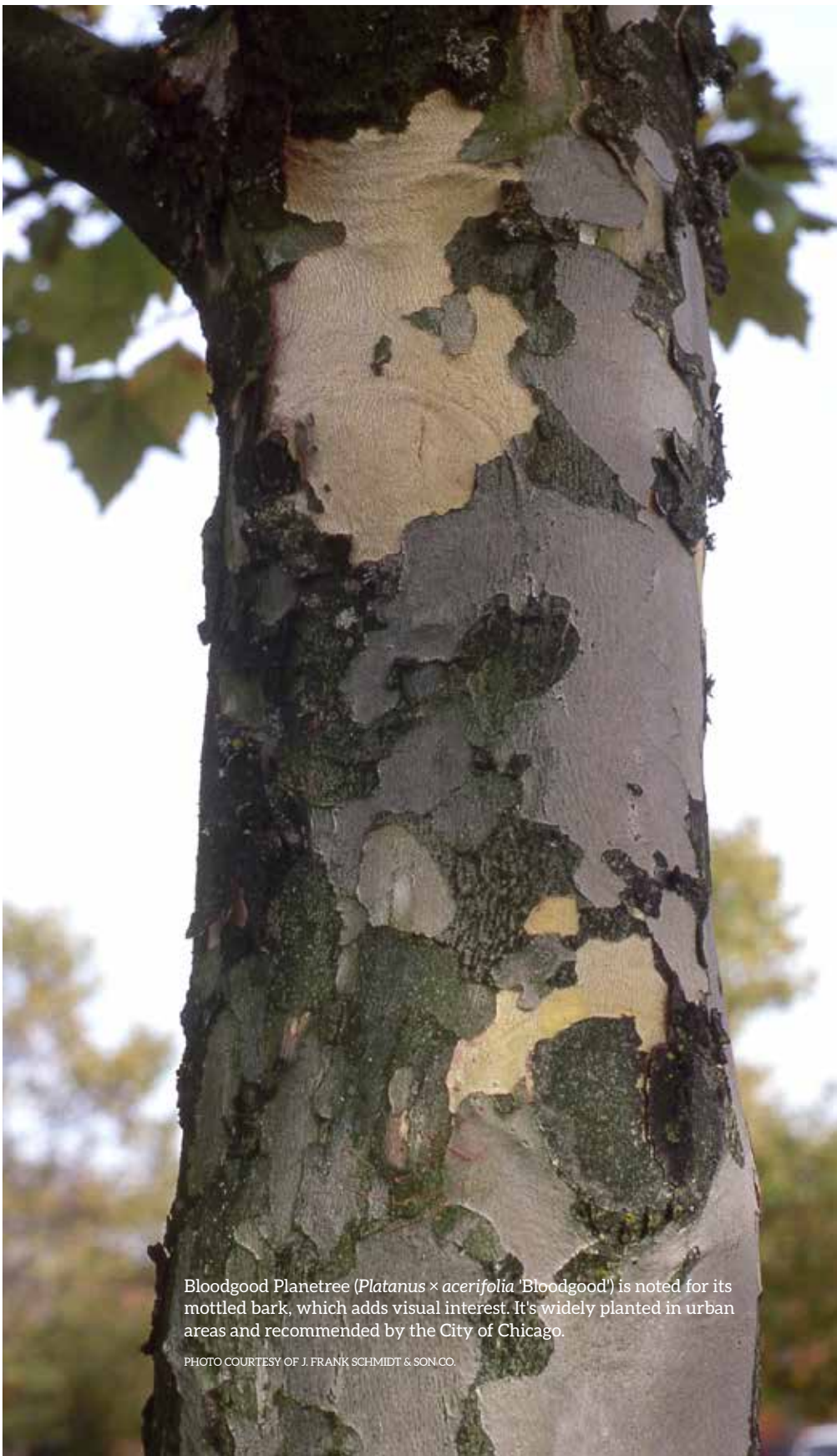
The larvae hijacked in on some packing material. Soon it seemed like the dark nursery song "Ring Around the Rosie" had come to life, only the ashes were the ones falling down. "Overnight our nurseries had to cut down and burn up trees," he said.

Such cuts were felt deeply since green ash was the "bread and butter" for many growers.

"The moving target is always the exotic pests," Cregg said. Globalization brings both pests and people together, accelerating the introduction of pests, he said. "I think I the nursery trade needs to be self-reflective and look at the extent they can be proactive. The regulators are always going to be slower."

He says the best nurseries are already training employees for scouting for pests, vetting their sources, and paying attention to where their material is going.

Working with colleagues in the horticulture and forestry departments as well as the local extension office, Cregg helped create a dedicated arboretum **https://tinyurl.com/MSU-arbor** showcasing 40 green ash alternatives in 2003 at MSU.



Bloodgood Planetree (*Platanus* × *acerifolia* 'Bloodgood') is noted for its mottled bark, which adds visual interest. It's widely planted in urban areas and recommended by the City of Chicago.

PHOTO COURTESY OF J. FRANK SCHMIDT & SON CO.

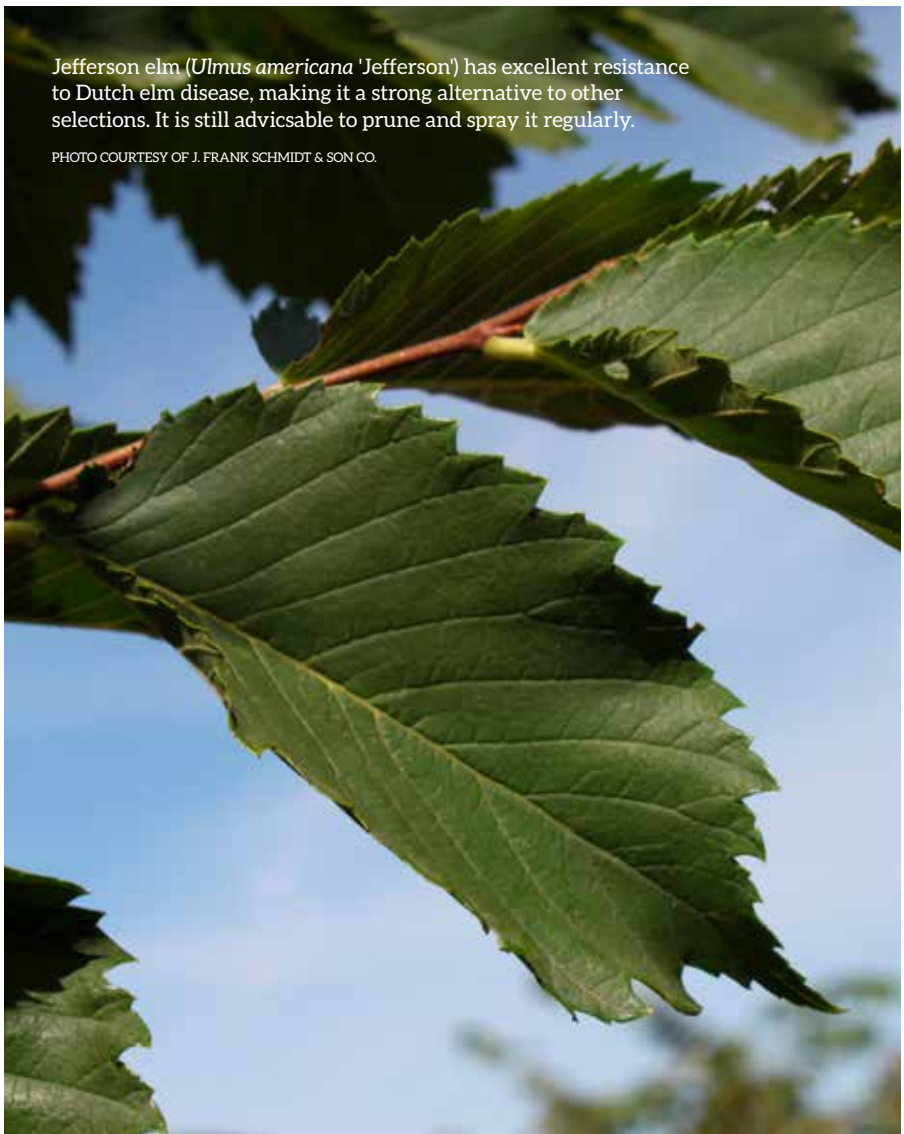
While looking for alternatives, "The thought process is, 'What did ash do for us?'" Cregg said. "In a lot of ways even for the Northwest, but especially the Midwest and the Northeast, green ash was sort of the default. It was the tried-and-true, tough-as-nails tree to pick if nothing else is going to grow there. In terms of size, it's kind of a medium-to-large shade tree. What's going to fill that void?"

Cregg recommends swamp white oak (*Quercus bicolor*), which is right up there in the "tough-as-nails" department. Cregg notes when New York City's 911 Memorial at the site of the former World Trade Center was planted, swamp white oaks were chosen because "failure was not an option." It tolerates dry and wet soils, as well as the salt and compaction that come with city living.

Another top choice is tulip poplar (*Liriodendron tulipifera*), which Cregg used in a street planting for Greening of Detroit (**www.greeningofdetroit.com**), installing Emerald City tulip poplars (*L.t.* 'JFS-Oz'). "We planted them literally with a pickaxe," he said. "They really took off and did fantastic."

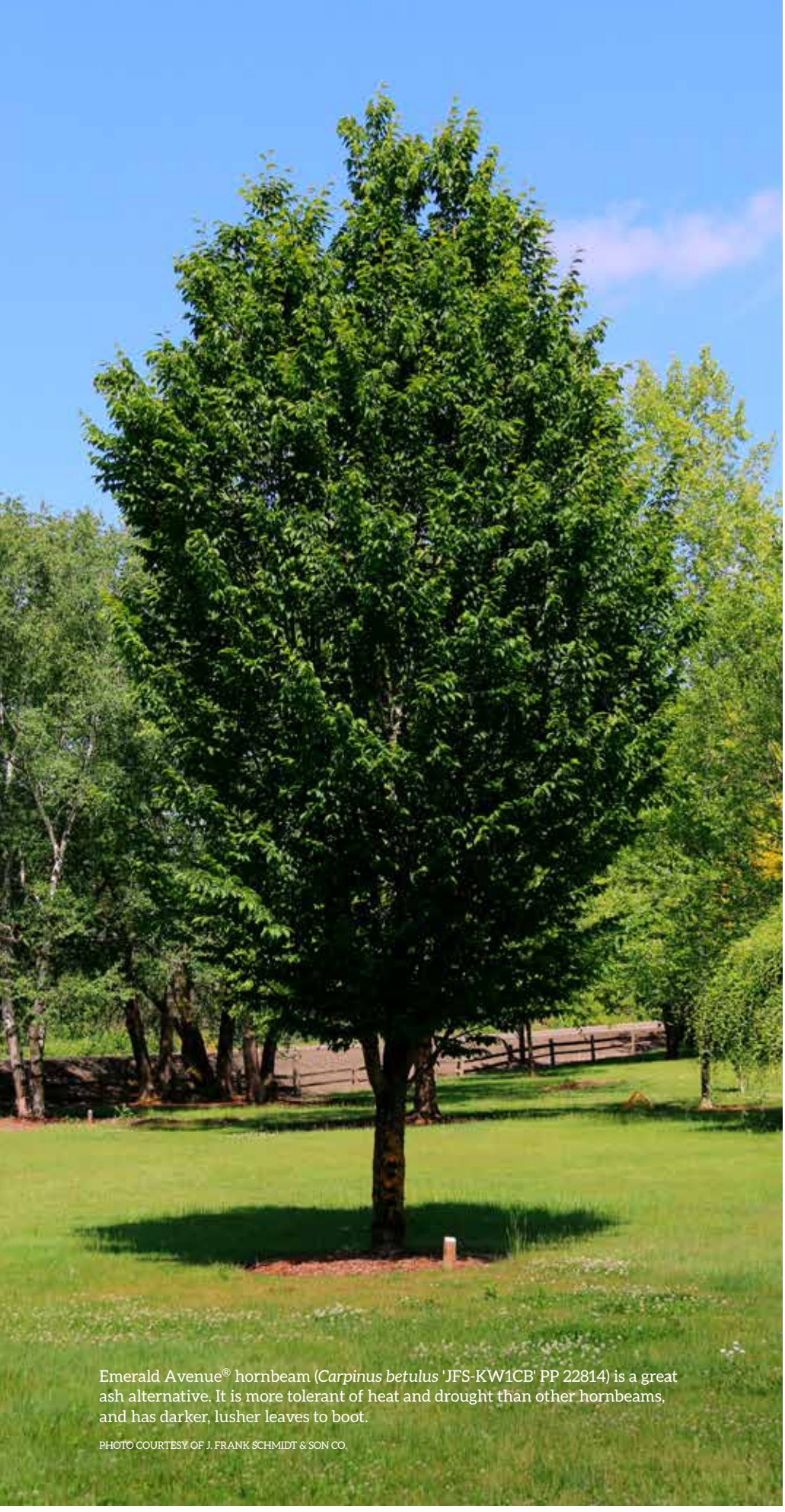
Other ash alternatives Cregg suggests are bald cypress (*Taxodium distichum*) and dawn redwood (*Metasequoia glyptostroboides*).

Cregg noted that while you might think of drought-tolerant



Jefferson elm (*Ulmus americana* 'Jefferson') has excellent resistance to Dutch elm disease, making it a strong alternative to other selections. It is still advicsable to prune and spray it regularly.

PHOTO COURTESY OF J. FRANK SCHMIDT & SON CO.



Emerald Avenue® hornbeam (*Carpinus betulus* 'JFS-KW1CB' PP 22814) is a great ash alternative. It is more tolerant of heat and drought than other hornbeams, and has darker, lusher leaves to boot.

PHOTO COURTESY OF J. FRANK SCHMIDT & SON CO.

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species first for urban sites, studies have shown that bottomland trees adapted to poor aeration make the best street trees, and that if trees can't withstand compaction and poor aeration, they won't survive drought.

Although there are no borer-proof elms, Nancy Buley of **J. Frank Schmidt & Son** recommends the new Summer Elixir® elm (*Ulmus chenmoui* 'JAB Morton'). Alternative choices include Emerald Avenue® Hornbeam (*Carpinus betulus* 'JFS-KW1CB' PP22814); 'Wichita' and 'White Shield', two fruitless and thornless selections of native Osage Orange (*Maclura pomifera*); and several native Kentucky Coffee Trees (*Gymnocladus dioicus*) she recommends for urban and landscape use.

Finding the weak links

As both a Bartlett Consulting arborist and co-owner of **Urban Forest Nursery**, in Mount Vernon, Washington, Jim Barborinas sees all the vectors affecting trees first-hand. After seeing so many fast-growing trees like red maples, pears and plane trees planted only to develop issues, he began seeking alternatives.

"Just about the time they were developing a beneficial canopy, they began pushing up sidewalks," he said.

Barborinas looked for disease and insect resistance, good structure, branch flexibility, nice fall color and/or seasonal flowering in a perhaps slower-growing package. "What I started to move towards were cultivars of *Carpinus carolinia, Parrotia, Nyssa sylvatica*, finding better gingkos and finding out how to grow them faster."

One of the biggest factors he notes in ultimate performance is the soil. If a tree is failing without a known pest cause, he looks there first to confirm the tree has sufficient depth, drainage, and volume of soil.

"If the soils are no good, I don't care what you put in, it's not going to thrive," Barborinas said. "We've had some great examples of putting in replacement

Like Jefferson elm, Accolade® Japanese elm (*Ulmus davidiana* var *japonmica* 'Morton') has strong resistance to Dutch elm disease.

PHOTO COURTESY OF J. FRANK SCHMIDT & SON CO.

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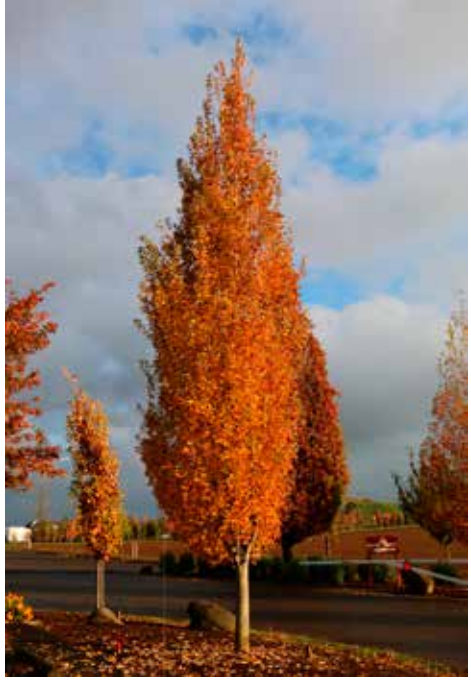


Armstrong Gold® maple (*Acer rubrum* 'JFS-KW78' PP 25301), Crimson Sunset maple (*Acer truncatum* × *Acer platanoides* 'JFS-KW202' PP 21838) and Wichita osage orange (*Maclura pomifera* 'Wichita') are all survivors of tough conditions, and good for diversifying the urban forest.

PHOTO COURTESY OF J. FRANK SCHMIDT & SON CO.

trees and very quickly the replacement is outperforming other trees that have been in the ground 20 years."

"We try to grow trees that are near bulletproof," Barborinas said.

Another critical benefit in selecting trees is the option to support a stronger ecosystem and environment with every planting.

"Trees are crucial for lots of different reasons, but they are also crucial for the wildlife on the planet," said Nicholas Staddon, a spokesman for large grower **Everde Growers**, which is based in Texas and has farms in California, Oregon and other states.

One might choose a tree based on the number of caterpillars it supports. Ecologist Douglas Tallamy consulted with the National Wildlife Federation to create a search tool **www.nwf.org/nativeplantfinder/about.**

Our native species are a rich resource, said Staddon. "I think there are enormous opportunities within our indigenous tree group in America to step back and look at those trees that are proven longtime performers. They may not necessarily have all the bells and whistles of new varieties, but they are good disease-resistant well-behaved plants."

Redbud (*Cercis spp.*), hackberries (*Celtis spp.*), and golden rain-tree (*Koelreuteria paniculata*) are some native trees for which he sees potential for greater use in the landscape. Redbuds have a great diversity of form, flower and leaf, and grow across the U.S., he has seen hackberries take a lot of abuse in urban plantings, and golden rain-tree shrug off stretches of 118-degree weather in Bakersfield, California.

Barborinas sees a significant demand for Garry oak (*Quercus garryana*), for instance, because of the increased interest in pollinator support and native plants.

A beloved native plant with issues is our native dogwood (*Cornus florida*). Because it falls prey to anthracnose, he recommends crosses like 'Eddie's White Wonder' and 'Starlight'. Sometimes, he notes, governments will accept those as "native"-approved because of their heritage and resistance.

Diversity is stability

Ecologists call it the portfolio effect — the idea that as diversity rises in a plant community, stability does too, thanks to the greater average of variable inputs. The experts agreed that diversity is our strongest weapon against the fluctuations of climate, insect and disease stresses.

"The theme of all this is risk and uncertainty, and really your only hedge is diversity," said Cregg.

"We need safeguards to prevent wholesale destruction, and diversity is the way to do that," said Scott Altenhoff, manager of the Oregon Department of Forestry, in Salem's urban and community forestry assistance program.

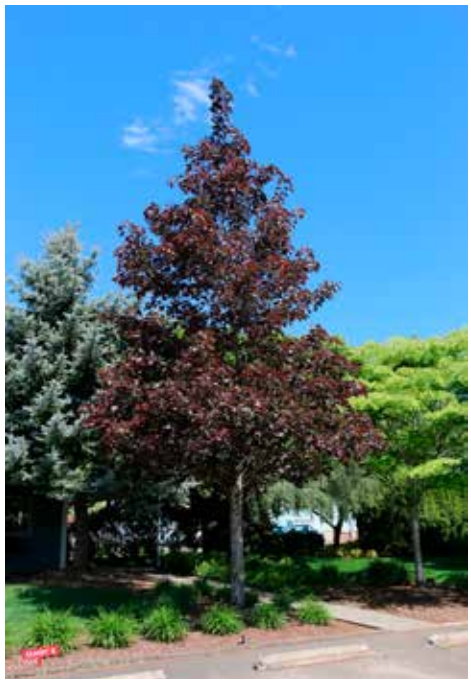
"More than just species diversity there is intraspecific diversity," he said. "You might have a species of tree from different elevations, aspects or latitudes that has a different genetic response towards a part pest or pathogen."

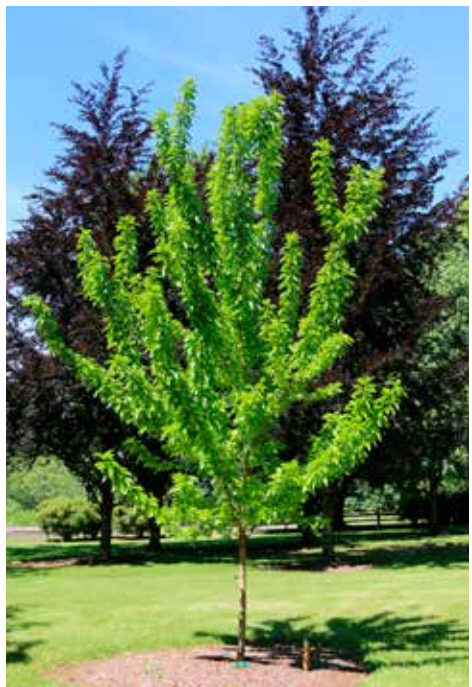
Not to mention size diversity. Because older trees become more susceptible with age, it's important to include youthful specimens in any given planting, he said.

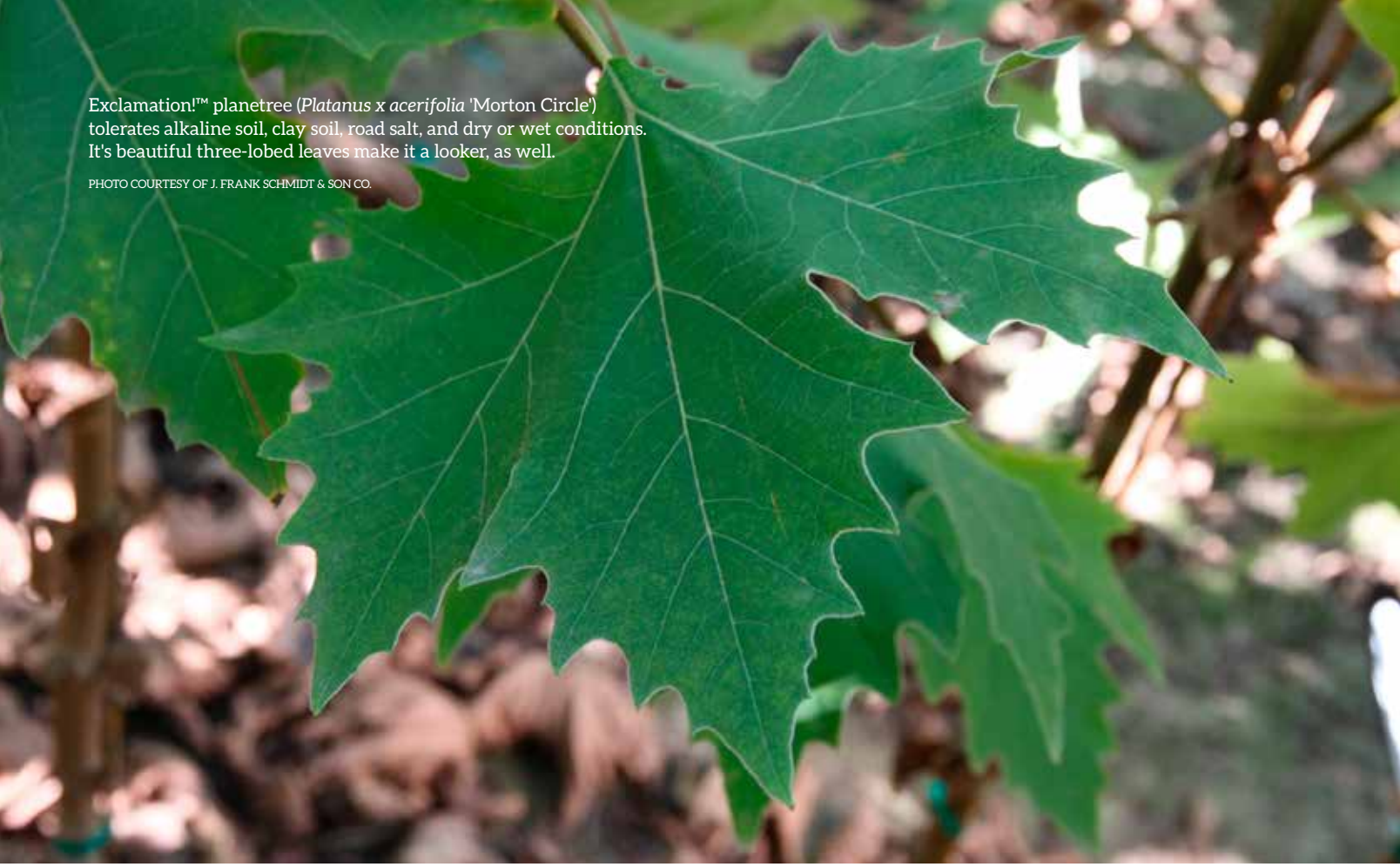
Appreciating the benefits of getting trees to market (and planted) quickly, he said "hopefully we can strike a balance bet high production methods and safeguarding diversity."

In addition to seeking diversity in the main varieties, it's important to diversify grafting material too, he said. "We've come a long way — some of the commercial growers have 5–10 times the diversity they had 20-30 years ago."

"We have long embraced the principle that diversity of species is the best weapon against invasive pests and diseases, and have been, for 40 years, striving to offer a broad range of genus and species," says Buley. "Our initial effort was spurred by the lessons learned from the earlier devastation of American Elms by Dutch elm disease. Back in 1982, we offered 109 species and cultivars derived from 19 genera. *Acer, Betula, Fraxinus, Malus* »







Exclamation!™ planetree (*Platanus x acerifolia* 'Morton Circle') tolerates alkaline soil, clay soil, road salt, and dry or wet conditions. It's beautiful three-lobed leaves make it a looker, as well.

PHOTO COURTESY OF J. FRANK SCHMIDT & SON CO.

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and *Prunus* were big sellers. Our 1982-83 catalog lists just four oak species, one dogwood and no elms. Forty years later, our 2023 catalog presents 450 species and cultivars derived from 64 genera."

It's a challenge that needs addressing in all aspects of the industry, from growers and designers to scientists, academics, policymakers, customers and homeowners.

"These are no doubt wickedly complex problems," Altenhoff said. "There are so many feedback loops that a single solution doesn't exist. We are going to have to rely on a whole host of endeavors. It's going to take all hands on deck."

For example, Barborinas says about consulting on a large-scale landscape design, "If we see 40-50-60 of the same tree, we say 'Why don't you plant three varieties?'"

"We can't rely or expect the commercial sector to bear this burden," said Altenhoff. "The private sector is the engine driving what we do but academic and extensions can play a role and the government and some municipalities need to recognize their role to help incentivize and highlight best management practices."

Pertaining to a given planting, it's very crucial everyone thinks in a broad sense, whether it's a home owner or commercial landscaper," said Staddon.

"We need to really be challenging ourselves as to the best plant for that application." If we work together, he said, "we should be able to come up with a beautiful, resilient landscape."

Erica Browne Grivas is an award-winning journalist and gardener pushing some boundaries in Seattle, Washington. She can be reached at EBGrivas@Gmail.com.