Great Places Green Spaces

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Key topics:

Foliar damage by leaving dormancy too early | Selecting the right species as well as cultivar | How maples are great, but biodiversity is even better!

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By Hunter Pecard

Trees Can Be Confused Too!

Due to the several weeks of unseasonably warm weather throughout this winter, some trees may have been coaxed out of their winter dormancy much too early. This can result in damage to the tree in the form of the fresh, fleshy budding of the branches being frozen in the return of winter weather, leading to stalled growth as well as reduced health and vigor of the tree. Although trees in South Dakota are adapted to the cold, budbreak occurring entire months before the usual time of year leaves the otherwise protected shoots vulnerable to receive freezing damage as the temperature drops. This leads to the rupturing and ultimate death of the new cells as the water within them freezes and expands, potentially resulting in dieback within the affected tree.

Damage that occurs this way often leaves the otherwise healthy buds discolored, hardened, and stunted. Damage to foliage that managed to expand from the bud has a wilted, discolored appearance. This is a common symptom of many afflictions, especially ones involving a lack of water. However, it is quite telling of frost damage if the conditions have occurred in the characteristic plentiful moisture and cooler temperatures of spring.

Since we don't control the weather, the ability to practically prevent or treat the issue is limited. Fortunately, most mature, healthy trees have the ability to put out another flush of budding which allows prompt recovery upon the growing season. However, ensuring young or stressed trees hit hard by winter kill receive extra care in the coming spring season is the best means of ensuring your tree remains healthy and can recover from the loss of its initial buds. This includes supplying smaller trees with plenty of water come late April - early May (dependent on weather conditions). Especially if there is less than the usual amount of snow present during the onset of spring to provide a generous flush of moisture in the form of snow melt.

In addition to any supplemental watering, applying/ renewing the mulch around younger trees also promotes health and recovery. The mulch provides extra, residual nutrition to the tree over time and also help insulate the tree roots as well as retain moisture. The best mulch is composed of woodchips from hardwood species, due to its makeup and its resistance to being blown away.

"You can't get too much winter in the winter." - Robert Frost

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Get the Best Cultivar!

2

Not Just Species, Cultivars Matter Too!

Spring brings prime planting weather. However, before a tree can be planted, it must first be picked out. The selection of the optimal tree for a particular site not only involves an understanding of species, but potentially being wary of cultivars as well in finding the perfect tree.

The term cultivar describes an often cultivated variation of a base species to induce or amplify certain characteristics within the tree. Examples include an extensive change in growing behavior in comparison to natural individuals within the species, or an altered and/or intensified foliage color, especially in the fall. Changes can also include increased general performance such as growth speed or enhanced drought or soil tolerance, often through use of an altered root stock. Some others can bring about a resistance to disease, or even dramatic changes in lifespan in comparison to the natural counterpart.

As mentioned before, cultivars can impact the growing habit or structure of a tree. However some cultivations can alter the growth habit so much that it fundamentally changes the use case of the tree entirely. For example, many species of oak, a family of trees known for their robust, sprawling growing habits, have a variety of "columnar" cultivars. These trees have been cultivated to essentially be the total opposite of the natural growth form in straight, narrow canopies, enabling them to be planted in much more compact growing scenarios for the signature shape and color of their leaves.

These photos are to compare the difference between a natural swamp white oak (right), and a hybridized cultivar by the name of Regal Prince oak (left) that is a cross between swamp white and fastigiate English oak.

Although cultivars can open up a vast array of options to best suit your needs, they also can lead to more opportunities in making a poor selection. In addition to the potential of selecting a tree with less than perfect growing habit for the site, cultivars can also alter the root stock in comparison to the original species. Although altered root stocks are more often beneficial to the tree than not, they can still have a significant impact on the trees performance if planted outside the intended conditions for that specific cultivar.

Cultivated varieties of trees can come not just in selectively bred variants of a species, but as hybridizations of two or more natural species as well. These often have either desirable aesthetic features, or utilize their varied linage in acquiring resistances to certain afflictions. This makes them more resilient options as well as providing a potent boost to the biodiversity in an area while maintaining familiarity.

Be aware, some tree species have more cultivars or general variety than others. Availability within local nurseries may impact your number of choices, especially if its later in the season and many offerings have sold out. Being careful to select the right tree is worth it. A well chosen tree will pay dividends far into the future, while careless choices often yield more than their share of issues and headaches.

"In every wood, in every spring, there is a different green." - J.R.R. Tolkein

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Maples are great! *But so is biodiversity!*

3

Slow Down on the Maples!

Being on the topic of choices in selecting trees to plant this coming spring, there are plenty of solid ones to make. From manageable yet showy lindens and basswoods to grand bur oaks, and dependable hackberries to hardy honey locusts, communities are not left without choices despite the conditional limitations of the state.

However one type of tree in particular has enjoyed a steady, overwhelming popularity in being the pick for empty yards and boulevards decade after decade, the maples. The Maple family offers a wide variety of species with dozens of cultivars of curated growth habits and striking fall colors, making the charismatic tree a popular choice.

Its common to believe any tree planting is a positive one, though the phrase "loved to death" comes to mind when one family of tree makes the majority of new plantings. This has the eerie resemblance to a narrative that has played out several times in the United States. A particular tree becomes extremely popular in urban plantings, slowly and surely comprising the majority of the urban forest. From there, an exotic or enabled disease begins to take ahold of the tree and, thanks to its prolific planting, disease sweeps across the country in a devastating wave of dangerous, costly removals and empty, uncanny streets remain. Such was the cautionary tale of the American chestnut and elm, with its most recent chapter the ubiquitous ash tree, which currently has the infamous Emerald Ash Borer (EAB) thinning their numbers. Adding to the concern is that the maple family has more than ten times the number of individual species native in Asia than North America, of which the majority of exotic pests have their origin. Consider the combination of sheer volume of international traffic with goods originating in countries within eastern Asia. This makes the eventual introduction of an exotic pest devastating to the streets and boulevards homogenized in native maples and their genetic derivatives a real possibility.

In fact, the United States is already home to such a pest, that being the Asian longhorn beetle.

Much like EAB, Asian longhorn beetle mostly likely found its way into the states via wood packaging material used in international trade, with maples being among its favorite trees to target with its destructive boring.

However, unlike EAB, containment efforts for the longhorn beetle have been successful, with populations discovered throughout the United States being greatly diminished in their number and ability to spread, with even entire eradications being reported throughout the country. (USDA, 2023).

Though this is welcome news, success stories in the containment efforts of an invasive species are vastly outnumbered in historical precedent of their ineffectiveness, especially in regards to insects. Extermination is rarely possible once a pest is established without constant vigilance and effort. Short of being in a position to keep the pest from entering the country in the first place, the best course of action is to reduce the damage a future pest can potentially inflict. Even though the Asian longhorn beetle has proved uniquely manageable, the possibility of a maple-based EAB equivalent in terms of its proliferation potential is possible, given more time.

A component of limiting damage potential is ensuring our urban forests have sufficient diversity and don't lean too heavily into one family or even species of tree. This is because most pest and diseases that target trees are specialized for the biology of a specific tree, meaning you're not going to find EAB in an oak tree. Therefore, ensuring the robust variety of an urban forest is the best hedge against empty, treeless streets and expensive, dangerous removals. Variety is the spice of life!

"Maple may be a staple, but diversity quells adversity!" - ME! *(Hunter Pecard)*

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So What Do I Plant Instead?

4

You Have Plenty of Options!

With maple being overplanted, it is common to ask what to plant instead.

South Dakota is often considered lacking in its biodiversity in trees. Harsh, windy winters, temperamental seasonal transitions, and soils that lean heavily into the alkaline side of the pH spectrum filter out many species that flourish elsewhere in the country. Options are available, especially in regards to urban environments where more wind protection and residual care can be expected. A breakdown covering each notable aspect of maple will be provided in guiding decisions.

Most notable is the fall color. Maples are famous for their vibrant oranges and reds, which are especially a standout amongst most trees being yellow in the fall. Unfortunately, most of the potential replacement species here in South Dakota are yellow as well. An exception to this is the native bur oak, featuring a more orange color. Like most oaks, bur oak requires plenty of clearance from buildings, lines, and other trees to avoid conflicts due to its spreading habit. Tatarian and Amur maple are genetically different enough to offer a bit of diversity from our native maples on top of having their origins in Asia, therefore would likely have residual resistances to any exotic pests from the continent. They both feature brilliant reds, and have more of the growing habit of a tall shrub than a proper shade tree.

On the topic of shade, maples are a decent provider of such. American basswood and little leaf linden are the best alternative in this regard. Possessing dense crowns of foliage, these trees offer the most complete shade in the state. They also have the benefit of fragrant blooms that are a favorite among pollinators, and have growing habits suitable for boulevards and road islands.

A close analogue to the growing structure of maple is a common hackberry. Sporting a similar branching structure and canopy height, common hackberry also has the added benefit of providing both pollinators and wildlife with a significant food source in the form of its small, clustered flowers and crunchy berries. The species also has relatively few relatives in Asia, making the introduction of an exotic pest targeting them less likely than other families.

However, oaks and hackberries are favorites among browsers like rabbits and deer. Therefore with these two options protective tubes or fencing is a must to ensure a passing browser doesn't kill or disfigure them when young.

Photo Credits:

1. https://phys.org/news/2018-08-global-frost-trees.html
2. www.hoffmanestates.org/government/public-works/forestry/tree-care
3. https://www.thetreefarm.com/oak-regal-prince
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"Life is about using the whole box of crayons" - Ru Paul