



# Tree Choices:

***Native? Non-native? Invasive? The terms can be relative.***

You, a city resident, have decided to plant a tree. How do you decide what kind of tree to plant? Or perhaps, you — walking down a city street or strolling through a park — have wondered, why did the city choose to plant a row of non-native maple trees, instead of trees native to Oregon?

This article will help you better understand how to choose trees for your yard, and the tree choices facing cities.

In the OSU Extension gardening guide, ***GardenSmart Oregon: A Guide to Non-invasive Plants***, a native or indigenous plant is defined as “one that was present in the Pacific Northwest (PNW) historically prior to European-American settlement.” In contrast, non-native plants, sometimes termed “exotic,” “alien” or “introduced,” are those brought to the PNW by humans either deliberately or by accident.

Trees native to a particular region have evolved to take advantage of soil types, annual rainfall patterns, availability of light, seed dispersal mechanisms, such as passing through the gut of a bird, and various other environmental attributes. In their native environment, these trees may provide cover, food, or habitat for birds, amphibians, insects and mammals.

From our viewpoint as humans, native trees can be a big part of making one region of the country quite distinctive from another. Here in Oregon, they make “our PNW” look and feel much different than, say, southern California or Wisconsin.



photo by Cynthia Orlando, ODF

What tree can confer a greater “sense of place” than Oregon’s state tree, the Douglas-fir? First-rate growing conditions for this native tree are often difficult to find in cities, so trees like these on the University of Oregon campus often need extra care, space, and protection to thrive.

Native trees define the look of Oregon’s coastal communities as much as they shape the appearance of Oregon’s east side ponderosa pine forests.

An often overlooked benefit of older native tree stands? They help retain areas of minimally disturbed native soils — an important, and disappearing, natural resource in cities.

### **Native or non-native: fact and fiction**

For some people, native trees seem to belong to the realm of our innocent past before it was tainted by our natural human inclination to experiment with growing new plants we find in other parts of the world. In fact,

the introduction of new plants was a celebrated activity in the days of Queen Victoria, a common hobby of sea captains, and still delights many gardeners.

Recently, however, the use of non-native trees in cities is often harshly — but perhaps unfairly — judged. Some people think that simply by being native to a particular area, a native tree is more adaptable to whatever growing conditions it encounters, and more resistant to disease.



Not so. Non-native tree species and tree cultivars, the latter of which are usually asexually produced (see sidebar), are frequently more adaptable to urban conditions than native species. In fact, non-native trees often require fewer public resources to maintain them than native trees. For example, trees that have evolved in swampy areas without much air around their roots, (like red maples), tolerate the compacted soil conditions found in cities better than many native Oregon trees.

## Some terminology: “cultivars” and “species”

What is the difference between a cultivated tree variety, or “**cultivar**,” and a **tree species**? The answer includes the concepts of “genetic diversity” and “performance predictability.” A **cultivar** of a given tree is **asexually** produced, typically through grafting or budding, to perpetuate one or several specific attributes. It is genetically identical to all other trees of the same named variety.

When trees are genetically identical, they can be relied upon to display specific qualities, such as certain flowering or coloring characteristics, disease or drought resistances, and/or similar structural forms (columnar or weeping). How they will look and grow is **predictable**.

A tree **species**, whether native or introduced, relies on nature to reproduce. It is genetically slightly different from all the other of its species. This **genetic diversity** can aid in a tree’s disease resistance or drought tolerance. However, street trees of the same species — but which are not cultivars — may have different fall leaf color times, variable canopy shapes, or rooting characteristics which could lead to infrastructure problems. Maybe the best question to ask when choosing trees for cities is, “do we need this tree to have predictable attributes, or are we open to seeing what genetic variation can do?”

Finally, many of Oregon’s smaller native trees are known as “understory species” — accustomed to dappled light or shade under taller forest trees. These native trees suffer in a hot, concrete city environment like malls and parking lots.

## Insects and disease

Some insects are very particular as to types of trees they’ll eat or breed in. For example, beetles that target American elms for their breeding grounds carry Dutch elm

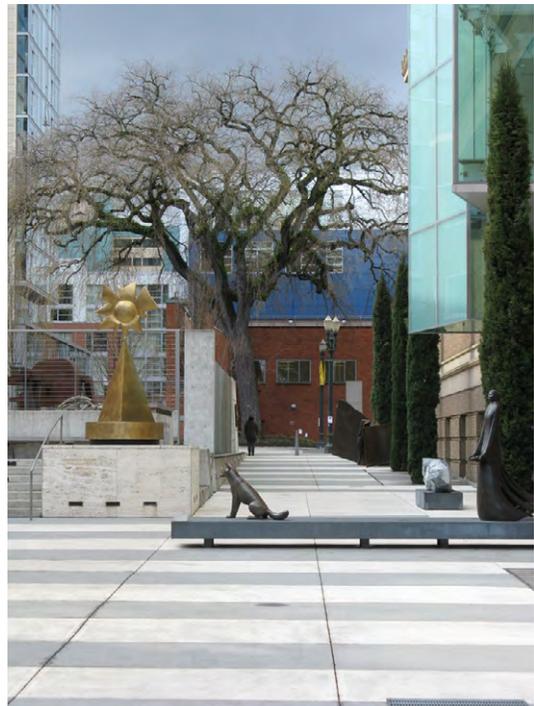


photo by Kristin Remstad, ODF

Portland, Oregon is known for its stately American elms, especially those planted along its Park Blocks. Though not native to Oregon, elms like this one gracing a museum courtyard create a “sense of place” specific to this city.

disease. Some beetles prefer to lay eggs in certain conifers, as opposed to deciduous trees. Other insects are even less specific. The recently introduced pests — Asian Longhorn Beetle and Emerald Ash Borer — attack native and non-native deciduous trees with equal gusto. Because of this, it is hard to make a case for native trees having superior pest resistance to non-native trees or vice-versa.

On the other hand, many tree *diseases* are specific to the trees or plant family they infect. Native and non-native cherries, crabapples, and dogwoods are susceptible to infection by myriad fungi, bacteria, and viruses. Many cultivars of these species have been developed to resist these diseases. Just a few years ago, for example, it was believed that the native Port Orford-cedar would be wiped out by the *Phytophthora* fungus. Researchers at Oregon State University have discovered and propagated a disease resistant rootstock that can now be used to propagate this lovely native tree without the fear of this devastating root disease. If trees are given a healthy head



Wildness, or less intensively managed areas with native trees, is important for natural ecological processes within cities too. These areas are usually found in green spaces, along streams and in designated natural areas within cities.

start in cities by using disease resistant cultivars in certain situations, fewer public funds will be used for sprays and tree replacements.

## Wildlife

Another common notion is that native trees are better for native wildlife. **It is true that some native wildlife have specific relationships with and preferences for some native trees.** However, native wildlife can use non-native trees, as well. If all the trees in a city were fruitless and seedless, food for birds could be limited. If all the trees in the city are cut down before they are mature or dead, habitat could be in short supply. However, many non-native trees provide food for native animal species and, if they have branch structure and other characteristics similar to native trees, they are used for habitat as well.

The main concept here is that canopy age and tree species diversity are key to supporting diverse wildlife — both with native trees and non-native ones.

## A word about invasive trees

Invasive species are those that are not native to a given ecosystem and that cause, or are likely to cause, economic or environmental harm. Generally speaking, invasiveness

is usually more of a tendency with tree species than with tree cultivars. Many tree cultivars — especially newer introductions — do not produce viable seed. Also, many cultivars are grafted or budded onto rootstocks, which limits their ability to spread by root suckers. That said, there are significant exceptions to this rule.

*“Should trees (with invasive tendencies) be completely banned from use in cities, or simply restricted to sites where they can be monitored or their spread limited?”*

Norway maple cultivars (*Acer platanoides* cvs) and, more recently, Bradford pear cultivars (*Pyrus calleryana* cvs), are among several stalwart urban trees that have exhibited invasive tendencies in woodlands. The larger question is, should these trees be completely banned from use in cities, or simply restricted to sites where they can be monitored or their spread limited?

### Characteristics of species that have the potential to become invasive:

- Ability to reproduce themselves both asexually and sexually
- Fast growth
- Rapid reproduction
- High dispersal ability
- Phenotypic plasticity (ability to alter one's growth form to suit current conditions)
- Tolerance of a wide range of environmental conditions
- Ability to live off of a wide range of food types
- Other successful invasions

Source: Wikipedia

Finally, consider the problems associated with western juniper, a tree native throughout the West. In many places this tree is quickly encroaching into shrub and grasslands, sucking up groundwater, changing the ecosystem, and creating a tremendous fire hazard.

It would seem, then, that invasiveness is not limited to non-native species, but rather, is a function of both opportunity and ability.

# Tree Choices, cont.



## Global climate change

Many of us hope that the environment we enjoy in this region is more or less stabilized with its current climate patterns that favor native species. Unfortunately, the data suggest otherwise. Although they may disagree on the reasons for it, most scientists agree that our earth's climate is changing.

Climate change may result in greater stress on our native trees, making them more susceptible to disease and insect attack. With global climate change, native trees may not carry a genetic advantage to meet the changes that come to cities, or to the wilder parts of our state. Other tree species, those that are native to other areas of Oregon or non-native to Oregon, may be able thrive in these conditions.

Some of these species may become invasive. Cultivars, though genetically limited, may be used judiciously to meet the needs of changing city climates. With this in mind, it becomes all the more important to think “right tree, right place.”

## Cities need trees

Trees contribute mightily to making our cities more livable. Trees soften the look of concrete, help lower city heat on



Although not native, this elm tree contributes both valuable shade in summer, and enhanced aesthetics — even in winter — to this city street.



Not native to Oregon, these hornbeams (genus *Carpinus*) in Salem perform remarkably well as street trees under even the harshest of conditions.

Despite limited root space in the setting, they provide shade, filter pollutants, lower stormwater runoff and provide an economic boost to local businesses.

a hot summer day, and intercept pollutants and rainfall run-off. Yet, how do you define what species are native to an urban area where the built environment has erased the native soil, understory plants, and wildlife that characterize a native ecosystem? How do we preserve existing native trees in cities that can be so stressed by the urban life around them? How do we monitor non-native trees so that they do not become invasive pests, displacing native species in parks and greenspace? How can we as homeowners and city decision makers take advantage of city-resilient tree cultivars yet maintain the character of our region by planting and preserving its native trees?

## Choose well

So far, we've talked about the differences between native and non-native tree species and cultivars, and we've discussed some of the problems with invasive tree species. Here are some general guidelines to consider when choosing trees for your home or along a street or in a park.

- Analyze your site. If there is enough rooting and canopy space for a large tree, would a native tree fit your needs? Would you prefer a non-native tree species, or cultivar, that has specific flowering or fall color attributes?



## Choose well (cont.)

- Use sites such as [www.invasive.org](http://www.invasive.org) to determine if your desired tree could be invasive. If it could be invasive, and you still feel you must have it, please don't plant it near a natural area or stream corridor, or other areas where it may "escape." Understand that birds that feast on the tree's seeds can spread the tree to areas beyond imagination.
- Think about maintenance needs; try to choose a tree that does not require chemicals to stay disease and pest free.
- Be prepared to mulch and water the tree for the first three to five years after planting. Mulch and consistent dry season watering when the trees are young are key for the long term health of all trees.
- From the city tree manager perspective: remember to balance order with chaos. Cities need areas that are "wild," or less intensively managed, in addition to some orderly trees along streets. Native trees, shrubs and flowers encourage ecological relationships between insects, mammals and birds that are important to a city's ecosystem. And, native vegetation is important along urban streams for fish habitat.
- Buy high quality trees, with good branch structure, undamaged bark, and healthy roots, and take good care of them — regardless of whether they are native or non-native.
- Online, try [www.greatplantpicks.org](http://www.greatplantpicks.org) for ideas and [www.nurseryguide.com](http://www.nurseryguide.com) to locate a seller for the trees you are seeking.



This columnar maple cultivar was chosen to fit into this special space requirement. It's not encroaching on buildings, nor does its canopy conflict with vehicles — a good example of "right tree, right place."

## Summary

Clearly the "native vs. non-native" tree debate has many nuances. Some circumstances do lend themselves perfectly to the planting and care of native trees. Others favor planting non-native tree species, or cultivars.

As James Urban, authority on urban trees and soil and author of "Up By Roots - Healthy Soils and Trees in the Built Environment" asks, "Is a (tree) that is native to a particular region's well-drained organic soil still considered 'native' when planted in a complicated, poorly-drained urban soil?"

For these reasons it is best to keep an open mind when choosing trees to plant in your yard, on city streets or in urban parks. Please think before you plant.

## Useful resources

- **Checklist: Planting trees in community landscapes**  
[www.na.fs.fed.us/spfo/pubs/uf/plant\\_trees/planting\\_trees.htm](http://www.na.fs.fed.us/spfo/pubs/uf/plant_trees/planting_trees.htm)
- **Trees for cities: about conifers**  
[www.oregon.gov/ODF/URBAN\\_FORESTS/docs/Other\\_Publications/TreesForOregonCities.pdf](http://www.oregon.gov/ODF/URBAN_FORESTS/docs/Other_Publications/TreesForOregonCities.pdf)
- **Invasive plant atlas for the USA**  
Here you can view maps to see which

trees are potentially invasive in Oregon:

[www.invasive.org/weedus/](http://www.invasive.org/weedus/)

- **GardenSmart Oregon: A Guide to Non-invasive Plants**  
[www.opb.org/programs/invasives/extras/gardensmartguide.pdf](http://www.opb.org/programs/invasives/extras/gardensmartguide.pdf)

By Kristin Ramstad, Cynthia Orlando, ODF

Published by the Oregon Department of Forestry Urban and Community Forestry Assistance Program

[www.oregon.gov/ODF](http://www.oregon.gov/ODF)

[urbanforestry@odf.state.or.us](mailto:urbanforestry@odf.state.or.us)