Trees for the Hosta Garden—summary
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What makes a good hosta garden tree?

Root anatomy - Monocots vs. Dicots
  Dicots have "taproot" system, monocots have "fibrous"
  In dicots, most feeder roots are in the top 6" of soil
  Rooting depth depends on soil conditions

"The Vegetation of Wisconsin"
  Written by John T. Curtis, published in 1959
  Gives insight into the adaptability of tree roots and the tree's suitability for use in the hosta garden

Riverbottom Trees: Greater proportion of roots at the surface of the soil.
  More competition for the hostas

Upland Trees: More suitable; less competition with the hosta roots

Small Trees for the Hosta Garden: Mature at less than 25 feet

- *Acer japonicum* 'Green Cascade'
- *Acer japonicum* 'Aconitifolium'
- *Acer cissifolium*
- *Acer griseum*
- *Acer maximowiczianum*
- *Acer 'White Tigress'*
- *Acer triflorum*
- *Carpinus caroliniana*
- *Magnolia virginiana*

Medium Trees for the Hosta Garden: Mature between 25 and 40 feet

- *Ostrya virginiana*
- *Magnolia 'Butterflies'*
- *Sorbus alnifolia*

Tall Trees for the Hosta Garden: Mature over 40 feet

- *Carya cordiformis*
- *Fagus grandifolia*
- *Ginkgo biloba*
- *Gymnocladus dioica*
- *Liquidambar styraciflua*
It's a well-known fact that in order to grow hostas successfully, you need to have some shade. Part shade is considered the ideal amount for most hostas. Too much shade restricts growth and too little increases the water requirements and risks scorching the leaves of the hostas. But the below ground characteristics of trees also play a role in the successful hosta garden. It is this feature that we will consider.

What characteristics are ideal for the hosta garden tree? As mentioned above, dappled shade is most desirable. Also, minimal twig and fruit drop keeps the ground clean and reduces maintenance. Strong wood is a must. The tree roots should provide minimal competition with the hostas for water and nutrients, and provide adequate space for both to develop. Let’s examine that root system further.

The first root that comes from the embryo of a seed is the primary root, also called the radicle. In gymnosperms, such as pines, spruces, and dicotyledonous plants (most deciduous trees and shrubs), it forms the taproot. Lateral roots develop from the primary, both near the root tip and near where the root and stem meet. In gymnosperms and dicots, the taproot continues to survive and functions in taking up water and nutrients.

In a monocot, such as grasses, daylilies, and hostas, the taproot is short lived. New roots come from adventitious root buds that develop on stem tissue near the soil surface. The root system that develops is fibrous, and generally shallower than the root system of dicots. It is because of this that monocots are generally more sensitive to soil moisture stress than dicots.

The depth of the tree's roots depends on many factors, such as soil structure, soil texture, and moisture content. All affect the oxygen present in the soil. It is important to remember that roots grow between soil particles. This is the space in the soil taken up by air and water. Like the top of the plant, roots also need oxygen to grow and survive. Roots do not search for oxygen and water. If both are present to their satisfaction the roots will grow. So the depth of rooting or the extent of a root system is entirely dependent on the oxygen and moisture levels. In most trees the vast majority of the feeder roots, those that take up water and nutrients, are within 15 cm (6 in) of the soil surface, though some may penetrate to a meter (3 ft.) or more. The spread of a root system usually extends well beyond the drip line of the tree. In other words, the root system of a tree is shaped more like a pancake than a carrot. Prairie plants, which include both monocots and dicots, are well known for their deep root systems. They have evolved in an environment that often includes extended periods of drought, necessitating their need to take up moisture from deeper regions of the soil. Though prairie soils typically are of a silt loam or clay loam texture, excellent structure allows the roots, and oxygen, to penetrate to depths uncharacteristic of most plants.
In order to predict the suitability of tree species for the hosta garden, I turned to a book that I first used during my graduate days at the University of Wisconsin - Madison: *The Vegetation of Wisconsin, an Ordination of Plant Communities* by John T. Curtis, University of Wisconsin Press, 1959. In my graduate studies, Dr. Ed Hasselkus often referred to trees as "riverbottom trees" or "timber trees." Riverbottom trees are native on floodplains and subject to periodic flooding or high water tables. Timber trees are on soils that rarely stay saturated for extended periods. Communities of Dr. Curtis’ book that would be considered riverbottom include trees such as Willow, Cottonwood, River Birch, Swamp White Oak, American Elm, Green Ash, Silver Maple, and trees that have followed the river systems north such as Honeylocust, Ohio Buckeye, and Sycamore. Timber trees include many oak species (White, Red, Chinkapin, Bur, etc.), Basswood, Hickory, Sugar Maple, Beech, White and Blue Ash, Kentucky Coffeetree, Black Walnut, and Black Cherry. Curtis also includes Red Maple in the timber tree category. This may be true of those native to Wisconsin, but in other areas of its native range it grows in the wetlands and thus would be classified as a riverbottom tree.

Riverbottom trees must be able to survive under a wide range of conditions, including flooding and drought. The soil is often low in oxygen, or has poor structure. The trees have adapted by developing a shallow, dense root system. They are often used as street trees because of their ease of transplant and ability to survive under harsh conditions. Though we see a lot of them in our neighborhoods, and they can survive where other trees fail, they are not always ideal candidates for the hosta garden because of their aggressive, dense roots, which compete with the hosta roots.

Though Curtis examines only trees native to Wisconsin, we have the luxury of using trees from around the world. Let’s examine some of those that I have successfully used or seen being used in the hosta garden, starting with trees in the small (below 25 feet) category.

Small maples make excellent companions for hostas in the shade garden. Unlike their tall relatives, small maples are native upland understory trees, mainly found in the Orient. They have evolved with other plants in close proximity and thus do not present the root competition that their taller American and European natives do. Some of my favorites are cultivars of the *Fullmoon Maple (Acer japonicum)* such as 'Green Cascade' and 'Aconitifolium', the Ivy-leaved Maple (*Acer cissifolium*), Paperbark Maple (*Acer griseum*), Nikko Maple (*Acer maximowiczianum*), Three-flowered Maple (*Acer triflorum*), and most of all a hybrid between *Acer pensylvanicum* and *Acer tegmentosum* called 'White Tigress'. Most of these have outstanding foliage, fall color, and bark interest.

Another small tree worthy of incorporating into the hosta garden is the northern US species Blue Beech (*Carpinus caroliniana*, also known as American Hornbeam or Musclewood.) This birch relative has sinewy bark interest and may have excellent fall foliage color.
Sweet Bay Magnolia (*Magnolia virginiana*) is native to the Southern US, where it becomes a tall tree, but is hardy to the north where it stays in the small range. Flowers are borne sporadically through the summer and provide outstanding fragrance for the garden. I have planted herbaceous plants, including hostas, right up to the trunk without any problems.

Trees in the medium (maturing at 25 to 40 feet) category are rare compared to the other size classes. One of the best is our native **Hop Hornbeam (Ostrya virginiana)**. Related to both birches and hornbeams, it has fine bark texture and interesting hop-like fruit. Problems are rare with this tough upland tree. Another group of medium trees is the yellow-flowered Magnolia hybrids that include the **Cucumbertree Magnolia (Magnolia acuminate)** as one of their parents. 'Butterflies' is an outstanding cultivar. Some references rate these as small trees, but with the tall Cucumbertree in its blood, it is likely to reach over 25 feet. A third medium-sized tree to consider is the **Korean Mountainash (Sorbus alnifolia)**. Unlike the European Mountainash, this one has few problems with diseases. Flowers, fruit, and an interesting bark pattern will have you wondering why we don't see this tree used more often. Eventually, it may get into the tall category.

Tall trees (over 40 feet at maturity) are the backbone of the shady hosta garden. As mentioned earlier, those of upland origin provide the least root competition and most drought tolerance. Hickories (*Carya*) are excellent trees, but many are difficult to transplant and slow growing. Bitternut Hickory (*Carya cordiformis*) is one of the easier species to transplant and grows at a medium rate on good soil. American Beech (*Fagus grandifolia*) is one of the dominant trees of the Eastern deciduous forest. Its bronze fall color and smooth gray bark provide off-season interest. Maidenhair Tree (*Ginkgo biloba*) is known by all but shied away from by many because of its perceived slow growth rate. However, on decent soil it grows at a moderate rate and has no insect or disease problems. Another underutilized native tree is the **Kentucky Coffeetree (Gymnocladus dioica)**. In its infancy it is a hard sell because of sparse branching, but develops into a fine moderately-dense tree. Plant the cultivar 'Stately Manor' if you don’t want to take chances on fruit developing in middle age.

A couple of excellent trees that may not be hardy in the far north are Sweetgum (*Liquidambar styraciflua*) and Tuliptree (*Liriodendron tulipifera*). Both are hardy in southeast Wisconsin, but may not make it further north. Sweetgum is known for its outstanding fall color and star-shaped leaves, while Tuliptree also has an interesting leaf shape. Tuliptree flowers resemble those of magnolias, to which it is closely related.
I mentioned Cucumbertree Magnolia (*Magnolia acuminata*) earlier as a parent of the yellow-flowered magnolia hybrids, but it is a fine tree in and of itself. Though it doesn't have notable flowers or fall color, its large leaves provide a bold texture, which matches well with hostas, and it is disease free. Native to the Alleghenies, it has excellent hardiness in the Midwest.

Many oaks provide excellent shade for the hosta garden. White Oak (*Quercus alba*), Chinkapin Oak (*Quercus muehlenbergii*), Red Oak (*Quercus rubra*), and Bur Oak (*Quercus macrocarpa*) are all notable upland trees. Even the riverbottom species, Swamp White Oak (*Quercus bicolor*), is compatible with understory plants. Chinkapin Oak was named the 2009 urban tree of the year.

Though I haven't had much experience working with the many elm hybrids now on the market, I will end this article by mentioning the two that are considered the best of the bunch. They are 'Accolade,' a cross between *Ulmus japonica* and *Ulmus wilsonii*, and Triumph™ ('Morton Glossy'), a cross between 'Accolade' and 'Vanguard.' I would appreciate any feedback you have on using these plants in the hosta garden, or with any others that you deem worthy.