

# A Tennessee Landscape Contractor's Guide to Hydrangeas

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## Introduction

Hydrangeas are some of the most popular plants in the green industry. As a professional landscape contractor, you are likely planting or maintaining many types of hydrangeas on your clients' properties. This publication is designed to provide basic information on hydrangea selection and care for Tennessee landscape professionals. For more in-depth information or for guidelines on producing hydrangeas commercially, please see the IPM for Shrub Production Manual listed in the References and Resources section.

## Landscape Use

Hydrangea species exhibit a range of foliage, flower and growth characteristics as well as tolerance to environmental conditions. They are found in every size and shape from small trees and shrubs to vines. Some species have striking fall color. All hydrangeas in cultivation have large, ornamental flowers. They are virtually pest free and easy to grow when planted in the proper place. Hydrangeas can be found throughout the United States from U.S. Department of Agriculture plant hardiness zone 3 to zone 9. For these reasons, hydrangeas are versatile plants and can be used in several areas of the landscape, including a shrub or perennial border, foundation or mass planting, or as a climbing vine or specimen plant (Figures 1a, 1b and 1c).

## Species Overview

*Hydrangea anomala* subsp. *petiolaris*, climbing hydrangea

Climbing hydrangea is slow to establish but can cover large areas once it has matured. Climbing hydrangea creates visual interest with its branch structure (Figure 2a). White flowers bloom from late June to early July and have a sweet fragrance (Figure 2b). Fall color is usually nonexistent, but the peeling bark provides winter interest. Climbing hydrangea is hardy from zones 4 to 8. While beautiful specimens occasionally can be found in the upper South, climbing hydrangea is not very common in Tennessee due to its slow growth rate in our warmer climate. Consider



Figure 1a, Photo Credit Amy Fulcher  
Bigleaf hydrangea as a shrub border, defining a patio area.



Figure 1b, Photo Credit Amy Fulcher  
Mass planting of oakleaf hydrangea in full sun.



Figure 1c, Photo Credit Andrew Pulte  
Mass planting of *hydrangea* spp.



Figure 2a, Photo Credit Jason Reeves  
Climbing hydrangea covering brick wall.

Japanese climbing hydrangea, *Schizophragma hydrangeoides*, as a faster growing alternative. While not a hydrangea botanically, it resembles climbing hydrangea. It has an abundance of white flowers, blooms from a young age, and quickly establishes and fills an area. ‘Moonlight’ is a popular cultivar with attractive silver foliage.



Figure 2b, Photo Credit Jason Reeves  
Climbing hydrangea blooms.

### *Hydrangea arborescens*, smooth hydrangea

Smooth hydrangea is a native hydrangea that can be grown in zones 3 to 9. Typically, smooth hydrangeas grow into symmetrical clumps approximately 4 feet by 4 feet. Flowers can be extremely large (up to 1 foot across), globular and bloom en masse in early to mid-June (Figures 3a and 3b). Bloom time can last two months, and blooms can be so large that their weight may cause the branches to flop. Many notable smooth hydrangea selections currently are available in the trade. ‘Grandiflora’ was the smooth hydrangea standard for many years, but it has since been replaced by ‘Annabelle.’ ‘Annabelle’ features somewhat stronger stems than ‘Grandiflora,’ but they can still be floppy. A new selection, Incrediball, has bigger flowers than both ‘Grandiflora’ and ‘Annabelle.’ ‘Ryan Gainey’ is a popular cultivar notable for strong stems. Invincibelle Spirit is a new release with pink flowers, a novelty for this species.

### *Hydrangea macrophylla*, bigleaf hydrangea\*

Bigleaf hydrangea typically grows 4 to 6 feet tall and wide. Flowers of certain selections of bigleaf hydrangea change

\*Bigleaf hydrangea and the closely related *H. serrata*, mountain hydrangea, are discussed together in this section and the “Pests” section.



Figure 3a, Photo Credit Andy Pulte  
*'Annabelle,'* smooth hydrangea.



Figure 3b, Photo Credit Andy Pulte  
Dinner plate-sized inflorescence, *'Annabelle,'*  
smooth hydrangea.

color depending on aluminum availability, which is affected by soil pH. However, some cultivars will bloom white regardless of aluminum levels. Plants typically bloom in Tennessee beginning in late May through June. Aging blooms persist into the fall when they dry but remain attractive. Bigleaf hydrangea does best in a moist but well-drained soil, and numerous selections can be grown in zones 6 to 9. Bigleaf hydrangea cultivars are separated into two groups: lacecaps (Figure 4a) and hortensias, commonly called mopheads (Figure 4b). Lacecaps have smaller, less showy fertile flowers surrounded by large sterile flowers, while mopheads have essentially all sterile flowers in solid masses borne in round corymbs. Some of the top performing mopheads (not including remnant selections) out of 250 selections evaluated by Plant Introductions Inc. in Watkinsville, Ga., are *'All Summer Beauty,'* *'Ami Pasquier,'* *'Frillibet,'* *'Générale Vicomtesse de Vibraye,'* *'Mme. Emile Mouillère,'* *'Mousseline'* and *'Nikko Blue.'* Top performing lacecap selections are *'Blue Wave,'* *'Lanarth White,'* *'Lilacina,'* *'Veitchii'* and *'White Wave.'*

### Remontant Hydrangeas

Remontant means that a plant flowers more than once in a single season. This type of plant is often referred to as a "repeat bloomer." Top mophead remnant selections include *'Blushing Bride,'* *'David Ramsey,'* *'Decatur Blue,'* *'Endless Summer ('Bailmer),'* *'Mini Penny,'* *'Nantucket Blue,'* *'Oak Hill'* and *'Penny Mac.'* *Twist-n-Shout* is the only remnant lacecap type. Some bigleaf hydrangea cultivars are more strongly remnant than others. The "less remnant" cultivars will rebloom best if pruned after the first flush of flowers. Fertilizing remnant hydrangea selections also helps support repeat blooming.



Figure 4a, Photo Credit Amy Fulcher  
Pink example of lacecap group, *H. macrophylla.*



Figure 4b, Photo Credit Amy Fulcher  
Blue example of hortensia group, *H. macrophylla.*

### *Hydrangea paniculata*, panicle or hardy hydrangea

Panicle hydrangea is a fast-growing species that can reach 20 feet in height and spread and be trained as a small tree, but many newer cultivars remain small and compact. Panicle hydrangea is a tough, adaptable hydrangea that grows best in zones 4 to 8. Unlike most other hydrangeas, it can tolerate urban environments and drier soil conditions. The flowers (panicles) are generally borne on strong, upright stems; however, several cultivars, such as Little Lime, can be floppy when in bloom. Flowering occurs from mid-July to September depending on your location in Tennessee. Flowers begin white and, depending on the cultivar, can age to a light green or change to a pinkish-rose color. However, it is important to note that even selections that claim to have pink flowers may remain white in Tennessee and farther south. 'Grandiflora' has panicles that can reach 18 inches in length and 12 inches in width, although typically the flowers will be only 6-8 inches long. 'Limelight' is a large cultivar, reaching 10 feet in height (Figure 5). Little Lime is the dwarf version of 'Limelight,' growing to just 5 feet tall. Both 'Limelight' and Little Lime have abundant flowers that can age to an attractive pink. 'Phantom' is a new cultivar with strong stems and exceptionally large flowers that open earlier than 'Limelight.' Pinky Winky bears large, white flowers from mid- to late summer; sepals turn from white to pink as they age. Then, as new white florets develop at the tip of the panicle, the flower becomes multicolored. Quick Fire is a newer selection that blooms earlier than most panicle hydrangeas, from mid- to late May through late June in Middle Tennessee. Flowers age to a bright reddish color.

### *Hydrangea quercifolia*, oakleaf hydrangea

A native of the southeastern United States, oakleaf hydrangea grows well in zones 5 to 8. Oakleaf hydrangea can grow at least 6 feet tall, and typically is at least as wide as tall. Flowers start white and often change to pink (depending on the cultivar and weather) and then brown as they age (Figure 6). Oakleaf hydrangea blooms from late May through July. Fall color is exquisite, especially when compared to other hydrangea types, with a mixture of red, orangish-brown and maroon colored leaves (Figure 7). However, like most plants, fall color can vary from year to year. Oakleaf hydrangea has attractive exfoliating bark (Figure 8), which contributes to visual interest throughout the year. Plants perform best when the roots are kept cool and moist but not wet. Popular cultivars of oakleaf hydrangea include 'Snowflake,' which has 12- to 15-inch-long, draping panicles made of stacked sepals (Figure 9) that create a unique double-flowered appearance. 'Alice' is a large, vigorous cultivar (12 feet tall by 12 feet wide) with 10- to 14-inch-long panicles that age to a rose color. 'Snow Queen' has larger, upright and more abundant panicles than the straight species in such that they blanket the shrub with



Figure 5, Photo Credit Amy Fulcher  
'Limelight' panicle hydrangea in bloom.



Figure 6, Photo Credit Amy Fulcher  
Oakleaf hydrangea in bloom in woodland garden.



Figure 7, Photo Credit Amy Fulcher  
Range of fall color within one oakleaf hydrangea plant.



Figure 8, Photo Credit Amy Fulcher  
Exfoliating bark, oakleaf hydrangea.



Figure 9, Photo Credit Amy Fulcher  
'Snowflake' oakleaf hydrangea has a novel double flowered appearance.

blooms. 'Munchkin' and 'Ruby Slippers' are compact oakleaf hydrangeas, approximately 3.5 feet tall and 5 feet wide, making them ideal for small landscapes. They produce many flowers held above their foliage that open white but turn pink with age. 'Ruby Slippers' has flowers that are larger than 'Munchkin' and turn deeper pink in color. 'Little Honey' is another small hydrangea (4 feet tall by 4 feet wide) from which golden foliage emerges, changing to chartreuse by midsummer and becoming a rich scarlet color in the fall if it receives adequate sun exposure (Figure 10).

## Pruning and How It Affects Blooming

Hydrangeas generally require little pruning. When they do need to be pruned, it is usually to reduce or reshape plant size, remove unsightly or dead stems, or rejuvenate older plants. To decide when to prune — as with all flowering



Figure 10, Photo Credit Jason Reeves  
'Little Honey' oakleaf hydrangea.

shrubs — first determine if the plant blooms on last year's growth or the current season's growth. **Smooth hydrangea**, which blooms on the current year's growth, should be pruned back by early March so the plants have plenty of time to grow stems and form flower buds. For **bigleaf hydrangea**, once plants are mature prune a few (no more than one-third) of the older branches to the base of the plant in early spring. This pruning will rejuvenate the plant without a large loss of flowers. If major pruning (size reduction or shaping) is needed, it is best to prune after blooms fade but no later than the end of July. Pruning isn't necessary for **panicle hydrangea**. However, cutting the plants back hard, to approximately two buds, can create a more tidy appearance and increase the size and number of blooms. Blooms will form on the new stems, so this pruning can be done once plants go dormant through early March. Unlike other hydrangeas, panicle hydrangeas can be trained to a tree form. This training should begin at an early age in the nursery and will often require a stake. To maintain the tree form, remove branches that develop from the trunk several times throughout the year. **Oakleaf hydrangea** should be allowed to grow in its natural form and pruned as little as possible. Oakleaf hydrangea flowers are produced on old wood. If pruning is necessary, finish by the end of July so there is time for next year's flower buds to form. **Climbing hydrangea** rarely requires pruning; stray branches can be removed as needed.

Be aware that severely pruning an established, healthy hydrangea that has become overgrown will only temporarily solve the problem. It likely will be just as large within a couple of growing seasons. To avoid this issue, it is important to know the mature size of the hydrangea desired and to select the appropriate cultivar for the location.

## Care of Hydrangeas

Hydrangeas can be grown in relatively poor soil; however, they grow best in fertile soil with a high percentage of organic matter. Soil should be moist but well drained. Use mulch to help retain soil moisture. Location is also very important, as too much shade will decrease flowering and too much sun will cause plants to wilt. The exception is the panicle hydrangea, which needs at least six hours of sun to flower. For best results, plant hydrangeas where they receive morning sun and afternoon shade or dappled shade throughout the day. Fertilize and adjust pH based on the results of a soil test. Too much nitrogen can lead to excessive foliage at the expense of flower production. When planting hydrangeas, dig the hole at least twice as wide as the size of the plant container but no deeper. Plant “at grade” so the plant is not deeper nor shallower than when in the container. Mulch and water thoroughly at planting.

## Watering

Hydrangea roughly translates to “water lover” in Greek (“hydra” meaning “water” and “angeon” meaning “vessel”). Once planted, hydrangeas should be watered consistently throughout their first year. Even after establishment, most hydrangeas need at least 1 inch of water per week either by rainfall or by irrigation. More water may be needed in a sunny or windy location. Proper location and ample mulching reduce the amount of irrigation that is needed.

Although hydrangeas are “water loving,” overwatering can be a problem, causing root issues and stunting growth. It is important to note that a bigleaf hydrangea — even one that is irrigated — can wilt midday in the summer, especially when it is windy and dry. This wilting often indicates that the plant can’t take up water as fast as it is being lost from the leaves to the environment, not that the soil is too dry. Be careful not to overwater in this situation.

## Why Hydrangeas Don’t Bloom

If a hydrangea is not blooming, it could be due to too much nitrogen, too much shade, pruning at the wrong time (removing the wood containing the flower buds), or winter injury to flower buds. Too much nitrogen stimulates excessive vegetative growth at the expense of flower development. Heavy shade reduces flower production. Hydrangeas bloom best with three to four hours of morning sun (See the “Care of Hydrangeas” section). Bigleaf and oakleaf hydrangeas form flower buds in late summer and fall, so pruning during winter or spring and severe winter temperatures can prevent flowering (See “Pruning and How it Affects Blooming”). Homeowners sometimes plant florist bigleaf hydrangeas received as gifts in the landscape. These bigleaf cultivars do not have winter hardy flower buds and aren’t suited for landscape use in Tennessee.

## Hydrangeas for Cut Flowers

For clients who are interested in cut flowers, planting hydrangeas can offer months of floral display. Almost any hydrangea can be used as a cut flower. However, the best cut flower hydrangeas are those that have few or no fertile flowers as fertile flowers tend to shed. The average cut flower has a vase life of about seven days, but some panicle hydrangea selections and ‘Annabelle’ smooth hydrangea have a vase life of 18 and 10 days, respectively, when no preservative is used. Vase life of these hydrangeas can be extended up to 25 days if a preservative is used. In the fall, hydrangea flowers dry nicely if left on the plant and can be used in dry flower arrangements.

## Pests

Hydrangeas tend to be problem-free in the landscape, but they are not immune to insects and diseases. The most common disease problem is powdery mildew (Figure 11), which can be severe when 1) environmental conditions are conducive to infection and 2) a susceptible selection is used. In addition, bigleaf and oakleaf hydrangeas can get bacterial and fungal-borne leaf spots.

Keeping the leaves dry and the humidity low within the plant canopy can help reduce the occurrence of both powdery mildew and leaf spots. Good air circulation and sunlight penetration into the canopy will help keep leaves dry and reduce humidity in the canopy. Begin managing diseases at the time of design and installation by planting in a location with a desirable amount of sunlight, spacing plants an appropriate distance apart, and accounting for the mature size of the plant. In addition, careful pruning can increase air circulation and light penetration.



Figure 11, Photo Credit Alan Windham  
Powdery mildew, a disease of hydrangeas.

In some cases, fungicides may be necessary to prevent extreme plant stunting and disfiguring of leaves from powdery mildew. They also can be used to prevent infection or stop the spread of leaf spots. However, taking no action

## How to Adjust Bigleaf Hydrangea Flower Color

Bigleaf hydrangea selections have pink, blue or white flowers. For those that can be pink or blue, how pink or blue they will be is controlled both by the genetic capability of the selection and by aluminum availability in the soil. The more aluminum a bigleaf hydrangea takes up from the soil, the bluer the flower color will turn, deepening until it reaches its maximum genetic color potential (Figure 12a). Likewise, less aluminum means pinker flowers to the extent that the genetics of that selection allow (Figure 12b).

The availability of aluminum for uptake by plants is affected by 1) the amount of aluminum present in the soil, 2) the soil pH, which controls how accessible aluminum present in the soil is, and 3) phosphorus levels. In soils with a high pH, most of the aluminum present in the soil is not available to plants. However, at a pH of 4.5-5.5, aluminum that is present is readily available. Therefore, a high soil pH will create pink flowers despite the amount of aluminum present in the soil. Too much phosphorus can make aluminum unavailable to plants. Conduct a soil test to determine pH, aluminum and phosphorus levels prior to planting and approximately every two years thereafter during landscape maintenance. Apply sulfur or aluminum sulfate according to soil test recommendations. To lower pH, incorporate sulfur several months before flowering occurs, but take care that the pH does not fall below 4.0 as it can be damaging to roots. Applications made after planting should be raked into the soil. As hydrangeas have become more popular, specialty hydrangea fertilizers have been developed including those that are low in phosphorus.

is a viable option as the spots, while unattractive, do not generally threaten plant health.

In addition to powdery mildew and leaf spots, hydrangeas are susceptible to several ring spot viruses and other viruses, but they are not common. Root rot also can be a concern. If plants are properly sited in well-drained soils and are not over-irrigated or subjected to excessive runoff, root rots often can be prevented. Oakleaf hydrangea is the least water-loving hydrangea. Take extra care to ensure that this species will not be too wet.

Arthropod pests of hydrangea include aphids, Japanese beetles, leaf tiers, spider mites and rose chafers, but insect and mite pests are rarely serious. Hydrangeas can be sensitive to herbicides; so, use herbicides carefully, if at all, around hydrangeas. Always read the product label before applying a pesticide!

Using resistant selections is a great way to reduce pest problems and minimize or even eliminate the need for pesticides. It is also a key component of Integrated Pest Management, or IPM. Selecting for pest resistance is a major objective of hydrangea breeding and evaluation programs. Some of the more disease-resistant bigleaf hydrangea selections include 'Amagi Amacha,' 'Lilacina,' 'Lady in Red,' 'Shirofuji,' 'Veitchii' and 'White Wave.' 'Veitchii' is resistant to both powdery mildew and bacterial leaf spot. Follow the University of Tennessee Institute of Agriculture's current research to identify disease-resistant selections.



Figure 12a, Photo Credit Amy Fulcher  
A lower pH (4.5-5.5) will cause blue flowers on bigleaf hydrangea.



Figure 12b, Photo Credit Amy Fulcher  
A higher pH will cause pink flowers on bigleaf hydrangea.

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## References and Resources

- Damm, C. and M. Miller. 2003. Hydrangeas in the landscape. Extension Factsheet HYG-1063-03. <http://ohioline.osu.edu/hyg-fact/1000/pdf/1063.pdf>.
- Dirr, M.A. 2004. Hydrangeas for American gardens. Timber Press, Portland, OR.
- Dirr, M. 2009. Manual of woody landscape plants: their identification, ornamental characteristics, culture, propagation and uses. Stipes Pub., Champaign, IL.
- Dirr, M.A., 2012. Hydrangeas: Breeding, selection, and marketing. Plant Introductions, Inc. Watkinsville, GA. <http://www.plantintroductions.com/hydrangeasbreedingselectionandmarketing.html>.
- Dunwell, W., D. Wolfe, and J. Johnson. 2001a. Hydrangeas for cut flowers: Two years of bloom data observations. University of Kentucky Nursery and Landscape research report. PR450. Lexington, KY. <http://www.ca.uky.edu/agc/pubs/pr/pr450/PR450.PDF>.
- Halcomb, M., S. Reed, and A. Fulcher. 2013. Hydrangeas. UT-UK IPM for shrub production manual. A Fulcher, ed. Knoxville, TN. <http://plantsciences.utk.edu/tnsustainablenurserycrops.htm>.
- Leeson, T., R.E. McNeil, J.S. Snyder, S. Bale, and W.C. Dunwell. 2008. Post-harvest vase life evaluation on two cultivars of *Hydrangea paniculata*. 2007 UK Nursery and Landscape Program research report. PR 554. Lexington, KY. <http://www.ca.uky.edu/agc/pubs/pr/pr554/pr554.pdf>.
- Leeson, T., R.E. McNeil, J.S. Snyder, S. Bale, and W.C. Dunwell. 2008. Post-harvest vase life evaluation on *Hydrangea arborescens* 'Annabelle'. 2007 UK Nursery and Landscape Program research report. PR 554. Lexington, KY. <http://www.ca.uky.edu/agc/pubs/pr/pr554/pr554.pdf>.
- Reese, C. and J. Reeves. No date. Hydrangeas pruning fertilizing! UT Extension Handout.
- USDA. 2010. 2009 Census of horticulture specialties. Washington, DC. [http://www.agcensus.usda.gov/Publications/2007/Online\\_Highlights/Census\\_of\\_Horticulture\\_Specialties/](http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/Census_of_Horticulture_Specialties/).
- Windham, M.T., S.M. Reed, M.T. Mmbaga, A.S. Windham, Y. Li, and T.A. Rinehart. Evaluation of powdery mildew resistance in *Hydrangea macrophylla*. 2011. Journal of Environmental Horticulture. 29(2):60-64. <http://www.hriresearch.org/index.cfm?page=Content&categoryID=174>.

## Associations

- American Hydrangea Society <http://www.americanhydrangeasociety.org>  
Mid-South Hydrangea Society <http://www.midsouthhydrangeasociety.com>

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