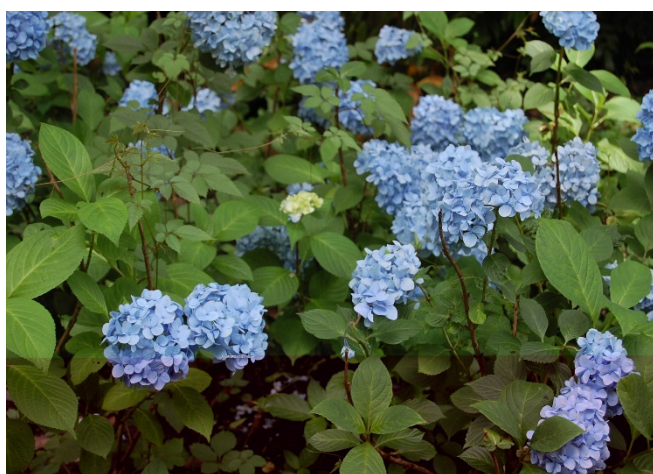


PLANT HEALTH CARE REPORT



Bigleaf Hydrangea

Bigleaf hydrangea (*Hydrangea macrophylla*) is one of the showiest and most spectacular flowering woody plants in the landscape and is successfully grown in climates ranging from plant hardiness zones 6 through 9. This plant has the added feature of being one of the few that can be manipulated culturally to produce different-colored blooms. This is true for both flower forms—hortensia and lacecap. The following information applies only to the bigleaf hydrangea, referred to as the garden, French, or common hydrangea. Other common species, such as the oakleaf or panicle/tree hydrangeas, have different growth habits and cultural requirements.



Bigleaf hydrangea grows best in well-drained soil that is high in organic matter. It requires ample soil moisture; however, it is subject to root rots and other problems if the soil stays saturated for extended periods. It thrives in full sun when it is well established but can also grow in partial shade. Fully shaded plants may not bloom as prolifically and are more affected by leaf spot and powdery mildew diseases. Nitrogen fertilizers will encourage growth of this plant, but excess nitrogen can inhibit blooms. Bigleaf hydrangea prefers slightly acidic soils in the pH range of 4.5 to 6.5.

Bigleaf hydrangea produces blooms on one-year-old growth. The best time to prune is just after blooms fade in mid-July to August, depending on your location. This allows the plant to produce new vegetative growth before winter dormancy, and it will be on this new growth that flower buds are produced. Pruning too late in the season will expose the new vegetative growth to winter injury and waiting until the spring to prune will remove the flower buds that were produced on last year's growth. On older plants, about one third of the oldest woody stems should be pruned to ground level in order to encourage the growth of new vegetative shoots that will bloom more prolifically than woody growth. Dead-heading or removing faded flowers will promote production of foliage.

The color of bigleaf hydrangea flowers, which is dependent on a variety of chemical factors, ranges from blue to pink, with the possibility of all shades in between (see lacecap form pictured at right). The color of white varieties of bigleaf hydrangea, however, cannot be altered. The cause of color variation in hydrangea blooms is the amount of aluminum found in the flower tissue. This element binds with certain pigment complexes causing them to appear blue in the presence of aluminum and pink in its absence. Changing bloom color is not as simple as adding aluminum to the soil because the plant's ability to take up aluminum is largely dependent upon the soil pH, and to a lesser extent, the presence of phosphorous.



Lacecap form with in-between color
Photo courtesy of Gary Wade

Blue flowers are common because most soils have some aluminum present and have the appropriate pH for uptake of that element. The ideal pH for blue flowers is 4.5 to 5.5. The presence of excessive amounts of phosphorous can bind aluminum, preventing blue color even when ample aluminum is present in the soil. This should be a consideration when choosing fertilizer formulations. If a soil test shows that pH is in the correct range but aluminum is lacking, it can be added to the soil in the form of dissolved aluminum sulfate. This will add aluminum and acidify the soil, but care must be taken because aluminum can become toxic at high levels. Also, direct contact of this solution with foliage will cause foliage to burn.

Pink flowers can be produced on hydrangea by inhibiting the uptake of aluminum through raising the pH to 5.7 to 6.2. Exact pH levels will vary and intermediate colors will result from pH levels in the middle

of these ranges. Soil pH can be raised by applying lime. Raising the pH too high will lead to iron deficiency because uptake of this element is reduced under basic (high pH) conditions.

Exact rates of aluminum sulfate or lime will vary depending on existing pH, aluminum levels, and the buffering capacity of the soil. The only way to determine the pH and nutrient needs of a soil is to submit a sample for analysis. Bigleaf hydrangea responds well when fertilized three times (early spring, mid-spring, midsummer) over the course of the growing season using 1/3 of the annual amount of fertilizer at each application.

The main disease affecting hydrangea is fungal leaf spots which develop if the foliage remains moist for extended periods, especially overnight when the temperature cools. Common foliar diseases include Botrytis blight (*Botrytis cinerea*), Cercospora leaf spot (*Cercospora* spp.), and powdery mildew (*Erysiphe polygoni*). All of these diseases can be reduced through cultural methods and controlled with various chemical options. Hydrangea is also susceptible to root rot caused by *Phytophthora nicotianae*. This is most common in container-grown plants and is only a problem in the landscape on overwatered and poorly drained sites.

The main insect pests of hydrangea are sucking insects that cause yellowing and distortion of developing leaves. These include aphids, mites, scales, and plant bugs.

Monitoring and Treatment Considerations for Bigleaf Hydrangea

Early spring

Apply fungicide treatment to prevent leaf spot if there is a history of this disease. Apply dormant treatment to suppress overwintering aphids, mites, and scales. Remove winter-damaged terminal shoot tips. Sample soil for nutrient and pH levels. Fertilize and adjust pH according to soil analysis (first application of 1/3 of annual recommended amount). Monitor irrigation and soil moisture to minimize water stress and prevent root disease.

Mid-spring

Repeat fungicide treatment to prevent leaf spot disease as needed. Monitor for aphids, mites, plant bugs, and scale crawlers; treat as needed. Fertilize and adjust pH according to soil analysis (second application of 1/3 of annual recommended amount). Monitor irrigation and soil moisture to minimize water stress and prevent root disease.

Early summer

Repeat fungicide treatment to prevent leaf spot disease and powdery mildew as needed. Monitor for aphids, mites, plant bugs, and scale crawlers; treat as needed. Monitor irrigation and soil moisture to minimize water stress and prevent root disease.

Midsummer

Repeat fungicide treatment to prevent powdery mildew as needed. Monitor for aphids, mites, plant bugs and scale; treat as needed. Reduce or remove branches after flowering to promote appropriate shape. Fertilize and adjust pH according to soil analysis (third application of 1/3 of annual recommended amount). Monitor irrigation and soil moisture to minimize water stress and prevent root disease.

Late summer

Repeat fungicide treatment to prevent powdery mildew as needed. Monitor for aphids and mites; treat as needed. Monitor irrigation and soil moisture to minimize water stress and prevent root disease.

Fall

If sucking insects were problematic this past growing season, consider treating with an appropriately timed systemic product. Monitor irrigation and soil moisture to minimize winter injury and prevent root disease.
