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Growing Peonies in the Indiana Landscape

Known for their vibrant colors, fragrant flowers and winter hardiness, peonies have been cultivated in China, Siberia, and Japan for more than 2,500 years. The first peonies were brought to Europe, and later to the United States, around 1800. Some of the early varieties brought to the U.S. have descendants that continue to thrive in Indiana. Peonies are long-lived perennials, with plants continuing to grow and bloom for more than 50 years. In recognition of its beauty and resilience, the peony was designated as the state flower of Indiana in 1957.

Peonies make an excellent addition to the garden due to their reliability, winter hardiness, and low maintenance requirements. They develop large, fragrant flowers that are beautiful both in the garden and as cut flowers. Additionally, their glossy, dark green foliage remains attractive even when the plants are not in bloom.

Types of Peonies

This publication discusses herbaceous or garden peonies, Paeonia lactiflora and its hybrids. For many years, these hybrids were known as P. chinensis, P. sinensis, or P. albiflora, but plants by any of those names are from this same group. Peonies are classified, and typically marketed, according to their flower type, which is a continuum from Single to Full Double as the flower stamens and carpels become indistinguishable from the flower petals.

Single: Five or more guard petals with many pollen-bearing stamens in the middle. Flowers often stand erect without additional support.

Japanese: A transition type between the single and double. Five or more petals, and the stamens are partially transformed into short, narrow petals called staminodes. May require support to hold flowers erect.

Anemone: Japanese and anemone types are similar. In the anemones, however, the stamens are fully developed into narrow petals called petaloids without any residual pollen-bearing stamens. May require support to hold flowers erect. (Figure 1)

Semi-double: No clear distinction between the guard petals and many of the petaloids. Petaloids may

be in all stages of development, and a few residual pollen-bearing stamens may be scattered among the petaloids. The heavy flowers will likely droop to the ground without support. (Figure 2)

Full Double: Fully double flowers in which carpels and stamens are fully changed to petaloids and the guard petals are not distinguished from them. The heavy flowers will likely droop to the ground without additional support.

Figure 1. Anemone peony, variety unknown. (Photo by Karen Mitchell)

Figure 2. Semi-double peony, Bowl of Beauty. (Photo by Pam Fisher)

Herbaceous peonies vs. tree peonies

Though similar to herbaceous peonies, tree peonies (*Paeonia suffruticosa*) are a deciduous shrub. Tree peonies can grow 3 to 5 feet tall and do not typically require staking once mature because their woody branches provide more support for the large flowers. Tree peonies tend to bloom earlier and are larger than herbaceous peonies. Tree peonies can thrive in full sun to partial shade; herbaceous peonies grow better in full sun.

Acquiring plant stock

There are hundreds of named cultivars, but often plants are sold simply as "double pink" or "single white," etc. Such plants may perform well, but acquiring recognized named cultivars provides more assurance of the plant hardiness and quality. A list of cultivars voted as most popular by members of the American Peony Society is available on the group's website. To extend the flowering season, choose both early- and late-blooming cultivars.

It is important to secure high-quality plants, properly labeled, packed and delivered to ensure your satisfaction with growing peonies. Whenever possible, buy from a grower with an established reputation.

Decisions before planting

Where to plant: Plant peonies in a location providing unrestricted air circulation, full sunlight and some protection from strong winds. Peonies are seldom winter-killed, but the flower buds are susceptible to late frosts and wind damage. Do not crowd peonies together or close to other trees or shrubs that compete for water, light and nutrients. Peonies thrive on a wide range of soils, but a clay loam is best. The planting site must be well drained yet should hold moisture.

Distance between plants: Plant peonies 3 to 4 feet apart to allow ample room for development. This spacing also allows for easy cultivation and good air circulation around the plant, which reduces disease pressure.

Time to plant: Planting or dividing and transplanting of bare root stock should be done in October because 1) plants are dormant and therefore less sensitive to injury; 2) plants are freshly dug, so there is less risk of damage during storage and handling; and 3) plants that become well-established in the fall will grow more

vigorously in the first growing season. Spring planting is less desirable due to reduced flowering but can be successful if done early in the season.

Soil preparation and planting

Soil preparation: The planting site should be prepared as far in advance of planting as possible (i.e.: spring for fall planting). Prepare soil at least 1 foot deep. Mix in generous amounts of organic matter, such as compost. Add 1/4-1/2 cup of 10-10-10 fertilizer per plant to the soil in the bottom of the planting site. Avoid adding fertilizer to the soil that will surround the roots. Do not lime the soil unless soil pH is below 5.5. Peonies thrive in slightly acidic soil (pH 6.0-7.0). Allow soil to settle, or if working the soil immediately prior to planting, pack the soil firmly to prevent settling once the roots are planted. To learn about your soil conditions, submit a soil sample for analysis. Refer to Purdue Extension publication HO-71-W, Collecting Soil Samples for Testing, for more information.

Setting new plants: Dig a hole in the prepared soil area that is 1.5 to 2 times the width of the root ball but only an inch deeper than the root ball height. Place the plant in the hole, then work the soil in about the roots. Be sure to firm the soil. The upper-most buds (eyes) should not be covered more than 2 inches. Planting too deep is a common cause of failure to bloom. When planting peonies in containers, be sure the level of the soil in the pot is level with the soil in the new container. Newly transplanted plants may need two to three years to become established enough to produce normal flowers.

Protection: It is advisable to protect peonies with mulch for the first winter. Use a small amount of coarse straw over each plant. Mulch helps preserve moisture and prevents alternate freezing and thawing, which can heave soil — and plants, too! Be sure to remove mulches promptly in spring.

Annual Care

Weed control: Use mulch to reduce weed growth or practice regular cultivation. Do not cultivate deeply since there is danger of disturbing the roots. Do not mound the soil up around the plants during the growing season. This results in deeply covered crowns and failure to bloom.

Disbudding: If you want larger blooms, leave only the large, terminal bud on each stem. Remove the other side or lateral buds while they are still small. Picking flowers does not injure the plant, but removing leaves does, so cut flower stems short, leaving at least two leaves per stem on the plant.

Fertilization: Peonies that are well-established in fertile, well-prepared soil and that are kept weed-free will not require additional fertilizer for one or two years. As they age, an annual application is beneficial. The best time to fertilize is immediately after the flowering season. This will enable the plants to make rapid, sturdy growth and develop strong buds for flowering the next spring. A quarter-cup of complete fertilizer per plant, such as 10-10-10 or 12-12-12, scratched into the soil surface annually is adequate.

Staking or caging plants during bloom: Some peonies require staking or caging while in bloom. The large blooms are heavy, and the long stems are not able to support the weight of the flowers. This causes the blooms to flop over, diminishing the aesthetics of the flowers and plants in the landscape. Staking or caging peonies early in the season is recommended to prevent plant damage during installation (Figure 3).

Debris disposal: Peonies become dormant in late September or early October. At that time, cut the stems as close to the soil level as possible without injuring the crowns, and remove all plant waste. Plant debris can be composted, but if disease was present, it should be disposed of.

Figure 3. There are a number of ways to support the peony stems later in the season. In this example, a partial plant cage is installed early in the season. (Photo by John Orick)

Possible peony problems

Failure to bloom

Several factors may cause peony plants to fail to bloom, including not enough light, too little fertilizer, plants that are too young and plants that are overcrowded or were recently divided. Stress factors, such as late freeze, overly dry or moist conditions, planting too deep, and insect or disease problems can also cause failure to bloom. Refer to HO-173, A Guide to Flowering and Why Plants Fail to Bloom, for more information.

Diseases

Fungal diseases that most often affect peonies are powdery mildew, Botrytis blight (Botrytis species), and leaf blotch (Graphiopsis chlorocephala). Once the symptoms of a fungal infection are noticed, it is neither practical nor cost effective to apply fungicides to manage the disease in the home garden for that season. However, sanitary measures can offer effective means of control for future growing seasons. In the fall, gather old, infected stems, leaves and other plant debris and remove from the area. This reduces possible overwintering sites for the fungal spores. In the spring, remove and destroy any wilted or rotted shoots and remove mulch or other covering used for winter protection before the new shoots emerge. This mulch may contain the pathogens and should not be reused.

Powdery mildew is a fungal disease named for the white, powdery coating that develops on leaves later in the season (Figure 4). Plants growing in low light conditions with poor air circulation are more likely to develop powdery mildew, but certain varieties are known to be more susceptible to the disease Susceptible varieties may turn completely yellow or drop their leaves in response to severe infections Resistant varieties grown in full sun have few problems with powdery mildew. Refer to ID-414-W, Disease-resistant Annuals and Perennials in the Landscape, for more information.

Botrytis blight and Graphiopsis leaf blotch mostly occur during wet springs. Botrytis paeoniae may cause spots on the stems and cause them to soften or decay. It can also infect flower buds, causing them to blacken and fail to open. Graphiopsis chlorocephala may cause purple to brown spots to appear on leaves (Figure 5) and red to black spots on stems. Both fungal diseases can affect the aesthetics of the plants, but they will not kill peonies on their own. Clip out badly infected stems and clean pruning tools with a disinfectant between plants.

Phytophthora crown and root rot is not common but is a fungal disease that can be brought in with purchased plants or when planted in previously infested sites. Symptoms include stem rot, plant decline, wilting, and decay in the crown and roots. More information is available in the Purdue Extension publication BP-215-W, Phytophthora Diseases in Ornamentals.

Peonies may also be susceptible to these viral or bacterial diseases:

Tobacco rattle virus (TRV) is the most common virus disease of peony. The virus is mainly spread by propagating from infected plants but may also be spread from plant to plant by pruning tools and nematodes in the soil. Symptoms include yellow rings,

Figure 4. White powdery coating that develops on leaves and flower buds later in the season caused by powdery mildew. (Photo by Purdue Plant and Pest Diagnostic Lab)

Figure 5. Purple to brown spots on peony leaves caused by Graphiopsis chlorocephala. (Photo by Purdue Plant and Pest Diagnostic Lab)

lines and blotches on otherwise green leaves. Like all virus diseases, once a plant is infected it will always have the disease. Virus diseases can be avoided by selecting only healthy plants and removing infected plants. More information available in this Purdue Landscape Report article on Tobacco Rattle Virus.

Bacterial blight is not a common disease of peony, but it may appear as small dark spots that can coalesce to form larger blotches. The disease is worse in years with frequent spring rainfall and when using a sprinkler to irrigate. Work on infected plants only when leaves are dry, and at the end of the season remove and destroy all leaves.

Ant

Ants are commonly found on peony blooms (Figure 6). The presence of these insects on the blooms does not cause a problem for the plants but rather provides a benefit. The ants arrive because peonies produce nectar, an enticing food source, in the glands on their sepals. Mutualism occurs because the ant benefits the plant by protecting it from other pests that may attempt to colonize. It's commonly believed that the presence of ants enables the plants to flower, but this is not the case. To avoid moving ants into your home when cutting the blooms, hold the bloom upside down by the stem after cutting and shake it outdoors to dislodge the ants. Do not apply insecticides to try to manage the ants.

Figure 6. Ants on peony buds are not a problem. This is a mutualistic relationship where ants feed on the nectar while protecting the peony from pests. (Photo by Karen Mitchell)

Glossary *

Carpel – The plant organ that bears ovules.

Deciduous – A plant that sheds all its leaves annually. *

Guard petals – The large outermost petals that protect the inner petals.

Herbaceous – A soft, pliable shoot or plant. Distinct from stiff, woody growth. *

Mutualism – An association between two different species in which each benefit.

Petaloid – Resembling a flower petal in form, texture, and color, as the bracts of Poinsettia.

Stamen – The male, pollen-producing part of a flower consisting of the anther and its supporting filament. *

Staminode – A sterile stamen, or a plant organ resembling an abortive stamen.

Sepals – The outermost flower part, typically green or greenish and more or less leafy in appearance. Sepals enclose the other parts of the flower within a flower bud. *

Terminal bud – A bud occurring at the tip of a stem.

**Definitions taken from MG-3, Purdue Extension Master Gardener Manual*

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