



## Species Peony Culture

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Species peonies are fascinating plants hailing from Asia, Europe and North Africa. Most come from areas that have pronounced dry seasons and relatively even rainfall during the spring and late months of autumn. All grow on well drained soils and grow on sloped landscapes. While each species has its own particular needs, some generalizations can be made that are helpful in their cultivation. A number have specific needs and their treatment narrows by comparison.

Doing some research concerning species' natural habitat and climate needs is recommended before purchasing any plants or seeds. Nearly all *Paeonia* species are threatened or endangered and bringing plants into foreign gardens can sometimes be challenging, perhaps not recommended. A wide range of perspectives are at play as to the whether these plants should be grown in gardens at all, or left to nature. This decision is up to the gardener, but one point is certain-wild collected plants should not be acquired, as it encourages poaching and decimates wild populations.

Before any seeds or plants are purchased, the gardener should have a suitable place to grow these rare and unusual plants. Site selection is of utmost importance and will likely determine, to a great extent, whether success or failure will be experienced. However, some species are more forgiving and starting with 'easy' plants will provide insights that may be helpful with more difficult subjects.

**Soil.** As noted earlier, a well-drained soil is required for all species. No species grows in nature in a location that is wet for any period of time. Many of the soils species grow upon in nature are a rocky-gravel mixed with organic material and this can be replicated in the garden before planting. Most of these plants require near neutral soil pH (6.5 to 7.2) and it is no surprise that many grow in areas that have limestone formations underlying the surface. Agricultural limestone can be added to a proposed planting site to build a more suitable soil. Getting a soil test ahead of planting any species is recommended.

**Position.** Since most *Paeonia* species grow naturally in mountainous or hilly sloped areas, consideration should be given to replicating this feature in a growing site. Excessive water is one of the greatest enemies of the species and minimizing possible impacts is important. Planting species on a slope helps shed water away from the base of the plants and root system. The slope can also be oriented directionally to make use of the path the sun takes across sky in a location. In Wisconsin, north facing slopes are desired in winter months, as sunlight is unable to thaw the ground due to its low angle. This prevents the plants from experiencing freeze-thaw cycles that can be very damaging. During the summer months the same north facing slope will receive direct sunlight due to the change in the sun's path across the sky.

Tree lines should also be considered, as many species are found along forest edges or sparsely forested areas. As trees go through their seasonal progression of leafing out, they often provide the necessary amount of light at the proper growing time for species peonies. They can also provide protection from the strong light of the midday summer sun and only expose plants to

softer morning or evening light. Trees also often mitigate soils from becoming overly saturated, but can also cause issues with root competition. Creating a habitat through the use of living structures can work quite well for some species and extra thought in this regard may prove quite successful.

Walls and other man-made structures can be used in creating microclimates, in much the same way trees are. Many Paeonia species grow among large rocks or among outcrops, which can be replicated with stone or brick walls. Walls, rocks, barriers and the plants, themselves, can be oriented for optimum variations in light, seasonal protection and water regulation. These features can also serve as hardscape in the garden to add interest and beauty.

**Sunlight.** Nearly all of the species can tolerate full sun, but a few will require shadier positions-the woodland species. Conversely, a number of species do poorly in overly shaded plantings and require full sun during the growing season.

**Water.** Nearly all Paeonia species have large storage roots that serve the plants well during dry periods. In the spring, before bloom occurs, most wild habitats in which peony species thrive, receive ample rainfall which aids in the emergence of their annual growth. Shortly after this period, drier conditions ensue, lasting until late autumn. Foliage often dies back and plants go into dormancy earlier than many other garden plants. Once dormant, water needs during late summer months are much less. Excessive water during this period can result in decay of the large storage roots or crown. In late autumn rainfall increases and another period of growth takes place-rooting. As winter arrives temperatures cool and precipitation becomes less abundant. Attempting to replicate this cycle as closely as possible will help keep garden grown species healthy, although it may be tall order in climates that receive much precipitation during summer and winter. Artificial covers can be erected to protect them from winter precipitation. Summer is more problematic, since the plants must receive sunlight. This is where planting along tree lines may be beneficial in the control of water reaching plantings. Use of your imagination, with consideration to resources available, will likely present a solution.

**Temperature.** Peony species, for the most part, are extremely cold hardy, most surviving frozen ground easily. Even those that have natural habitats in warmer Mediterranean areas are often quite resilient to the cold. However, the interaction of temperature with seasonal water is often a problem with species from warm regions. Too much summer heat combined with water causes plants to rot. Cold temperatures in winter causing frozen ground, coupled with winter precipitation can cause smothering and death. Species that have more northerly origins are often more forgiving of seasonal temperature/water anomalies, as they often better adapted. These plants tend to be easier subjects for gardeners in the United States. Air temperature seldom equates to soil temperatures, thus this measurement is only descriptive of what happen above the surface. Snow cover and soil moisture impact crowns and root systems and can only be marginally related to air temperature.

What follows is a general guide for species that have been grown in Wisconsin, USA. Wisconsin often receives excessive rainfall, has heavy soils and temperatures that reach as low as -30F. These are not optimum conditions for growing species peonies, but can accomplished with consideration to the plants' needs.

### Herbaceous Species Trialed in Wisconsin

<i>Paeonia Species</i>	Sunlight	Air Movement	Water Tolerance	Temperature Tolerance	Soil Drainage	Soil Constituents	Ease of Growth	Comment
<i>anomala</i>	☾*	↑	↑	↓ heat ↑ cold	drained	organic, friable	easy	Lacks heat tolerance
<i>arientina</i>	☼	↑	↔	↑ heat ↑ cold	well drained	gravel, sand, clay, organic mixture	average	High drainage needed
<i>emodi</i>	☾*	↑	↔	↓ heat ↓ cold	well drained	organic, friable	challenging	Variable races may perform differently, cold tolerance issues
<i>lactiflora</i>	☼	↑	↑	↑ cold	drained	all types	easy	Of easiest culture
<i>obovata</i>	●	↑	↔	↓ heat ↓ cold ↔ variable	well drained	organic, friable	challenging*	Heat and cold tolerance issues dependent on race origin
<i>daurica 'corifolia'</i>	☾*	↑	↔	↑ heat ↑ cold	well drained	organic, clay, sand mixture	average	Heat tolerance issues
<i>daurica 'mlokosewitschii'</i>	☾●	↑	↔	↑ heat ↑ cold	drained	organic, clay, sand mixture	relatively easy	Heat tolerance issues
<i>mascula*</i>	☾●	↑	↔	↑ heat ↔ variable cold	well drained	organic, clay, sand mixture	easy to challenging*	Cold damp spring conditions are issue
<i>mairei</i>	☼☾●	↑	↑	↔ heat ↑ cold	drained	organic, clay, sand mixture	relatively easy	Summer heat issues
<i>peregrina</i>	☼	↑↑	↓	↑ heat ↑ cold	sharply drained	gravel, sand, clay, organic mixture	average to challenging	Any excess of water is an issue
<i>intermedia</i>	☼	↑	↔	↑ heat ↑ cold	drained	organic, clay, sand mixture	easy	Summer heat issues
<i>tenuifolia</i>	☼	↑↑	↔	↑ heat ↑ cold	well drained	gravel, sand, clay, organic mixture	easy	Wet conditions can cause issues
<i>officinalis (subspecies and varieties)</i>	☼	↑↑	↔	↑ heat ↑ cold	well drained*	gravel, sand, clay, organic mixture	relatively easy*	Cold wet spring conditions are issue

Woody Species Tried in Wisconsin								
<i>Paeonia Species</i>	Sunlight	Air Movement	Water Tolerance	Temperature Tolerance	Soil Drainage	Soil Constituents	Ease of Growth	Comment
<i>ludlowii</i>	☾●	↑	↑	↑ <sub>heat</sub> ↓ <sub>cold</sub>	drained	organic, clay, sand mixture	difficult	Normally low temperatures kill stems annually
<i>delavayi</i>	☾●	↑	↑↑	↔ variable heat & cold	drained	organic, clay, sand mixture	average	Cold temperatures often kill stems
<i>rockii</i>	☾●	↑	↑	↑ <sub>heat</sub> ↑ <sub>cold</sub>	well drained	all types	easy	Highly cold tolerant and adaptable
<i>quii</i>	☾●	↑	↑	↑ <sub>heat</sub> ? <sub>cold</sub>	well drained	organic, clay, sand mixture	relatively easy?	Unknown cold tolerance due to short trial period
<i>ostii</i>	☾●	↑	↓	↑ <sub>heat</sub> ↓ <sub>cold</sub>	well drained	gravel, sand, clay, organic mixture	average	Cold, wet winters kill stems regularly
<i>jishanensis</i>	☾●	↑	↑	↑ <sub>heat</sub> ↑ <sub>cold</sub>	well drained	gravel, sand, clay, organic mixture	relatively easy?	Unknown cold tolerance due to short trial period

Key to charts: Observations from USDA hardiness zone 4b site. High rainfall events are common in this area. Soils are clay based, variable in infiltration capacities and are often dense. Spring warm up is slow due to proximity to Lake Michigan.

**Sunlight:** ● = may be grown with plants like Hosta; ☾ = broken light or on the edges of tree lines; ☼ = at least ½ day of direct light

**Air Movement:** ↑ = free movement of air around entire plant; ↑↑ = breezy conditions are best to prevent stem and foliage diseases.

**Water Tolerance:** Water is interactive in the environment with temperature, which causes variable results. The term 'moist' does not mean saturated, rather water is held in the soil and does not run out. ↓ = becomes diseased easily if overly moist conditions persist; ↔ = can tolerate short periods of excess water; ↑ = tolerates even moisture throughout much of the growing season; ↑↑ = tolerates continuous moist conditions and periods of excessive rainfall.

**Temperature Tolerance:** Temperature is interactive in the environment with water, which causes variable results in different seasons. Woody peonies typically will lose stems, but survive very cold conditions of winter. ↓<sub>heat</sub>: may become diseased/stressed in summer heat; ↓<sub>cold</sub>: Struggles with low winter temperatures in Upper Midwest; ↑<sub>heat</sub>: very tolerant of summer

heat; ↑<sup>cold</sup>: little or no impact from low winter temperatures; ↔<sup>variable</sup>: results depending on particular wild origin climate or genetic variance within a species. Note: A number of species have variants and subspecies, or have races that grow in different conditions. These variations cause differences in temperature tolerances and probably other growing needs.

**Soil Drainage:** **drained**=soil that will allow all water from heavy rainfall to infiltrate after a day; **well-drained**=soil that will allow heavy rainfall to infiltrate after an hour; **sharply drained**=soil that will allow heavy rainfall to infiltrate as it falls.

**Soil Constituents:** Soils impact water storage, fertility, infiltration and temperature. Soil testing is recommended to determine best options for amendments. Amending soil to improve drainage may be needed on some sites to suit a particular species' needs. **Organic**=derived from decaying organisms, has high nutrient value, becomes gummy when wet;

**Friable**=descriptive of loose, easily broken soil; **gravel**=relatively inert, serves as aerating structure, may release calcium and other nutrients if limestone; **sand**=relatively inert, serves as aerating structure, may release calcium and other nutrients if limestone based; **clay**=may have organic components, mineral components, often highly fertile, causes poor drainage due to flat particle configuration, easily compressed to an impermeable state.

**Ease of Growth:** See chart. This is a generalized statement in relationship to their trialing in Wisconsin.

**Comment:** Experiential observations.

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