Herbaceous Peony Culture and Care

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-Major Points of Culture-

Typically, herbaceous peonies do not require much special treatment and their culture is fairly intuitive for the gardener, with some exceptions.

1) Plant in a well-drained site, which never becomes wet and allows roots to prosper. It is especially important to know the winter season's site properties, as this is period in which many soils may become saturated. Typically, gardeners do not notice winter soil conditions due to inactivity in the garden, thus extra attention is required to the site before planting. Winter kill from excessive moisture is one of the most common reasons for herbaceous peony crown death (rotting).

2) Select a site which does not have competition from other plants – especially shrubs and trees. Lilacs and some other shrubs produce root systems which compete with the roots of peonies for the same nutrients.

3) The planting site should be one <u>not</u> subject to late spring frosts, as this may prevent young buds from developing further. Low sites are most often impacted by late frosts.

4) Provide a site with full sun or very light shade. Those planted in hot summer climates are best when some shade is provided to protect the leaves from burning.

5) Water only if needed. Herbaceous peonies are quite drought resistant and resent wet feet. Keep plantings well clear of automatic sprinklers, such as those to keep lawns green and growing. Do not plant near downspouts and roof driplines.

6) Provide a site which will have good air movement and is not crowded. Good air movement around plants prevents foliar and stem diseases.

7) Plant in predominately native soil found at your location, if at all possible. Amending soils heavily with organic material in the planting hole often creates a 'BIRD BATH EFFECT', in which water is held and may cause rooting issues. The goal is to create a homogenous soil in which roots do not encounter pockets of variable constituents (roots have to adapt to each soil variable they encounter). If amending the soil, do so broadly over the entire planting area, not just the planting hole. DO NOT USE excessive amounts of peat as an amendment – it holds water and is acidic. Peat is a very good dry packing material for shipping peonies due to its antiseptic properties, but is not useful as a major soil constituent for growing peonies. However, peat may be <u>well</u> mixed with native soils in very minor amounts to improve soil structure without detriment.

8) Soils which support best growth have a near neutral pH (6 to 7). Clay soils are often highly fertile and may support excellent growth, but may hold excessive water which damages roots. Avoid soils with fresh and excessive organic material included, as this may promote disease. Soils predominantly composed of sand are not particularly fertile and peonies will not prosper.

9) Cut stems to the ground after the growing season has ended in the fall season. Remove all stems and leaves from the garden and destroy or send to a public composting program. Do not compost foliage from peonies for use in future peony plantings, as residual diseases may persist and infect plants where applied. Do not cut down herbaceous peonies while foliage is green, since they continue to use their leaves to photosynthesize (make energy).

10) Containerized culture is not recommended and less than positive results may be expected over time. Plant herbaceous peonies in the ground where they may grow their extensive root systems.

11) Fertilize only if necessary. Allow plants to establish at least 3 years before considering the application of fertilizer (true for all peonies). Avoid the use of fresh manure, as this may burn root systems or carry diseases. Herbaceous peonies grow slowly the first couple of years and their growth is always measured, thus it is unlikely any large increase in growth will ever be noted after fertilizing. High nitrogen fertilizers, as those found in lawn and bedding plant ratios, are to be avoided. High nitrogen fertilizers will promote soft growth susceptible to disease.

12) Plant them in the late summer into the fall season as soils begin to cool. This period of time is when root growth occurs. The month of planting will depend upon the region in which the garden is located. Those in the northern tier of the United States usually plant at the end of September to mid-October. More southerly locations will have best results in mid-October to November. Spring planted divisions can be expected to flounder (or die) and will not produce roots until soils begin cooling in late summer – spring planting is not recommended and does not produce a larger plant the following year.

13) Avoid the use of mulch near herbaceous peonies. Mulch often holds excessive moisture and does not allow for good aeration of the soil below it, often creating a wet situation. Mulching plantings has become popular and is one of the main causes related to plant failure and development of disease. If plantings are mulched, make sure it is applied no closer to the peony plant than 16 inches. Additionally, many of the commonly available mulches are now treated with preservatives and coloring to enhance their longevity and visual appeal, these may be detrimental peony growth. Mulch contamination from oils, herbicides and other contaminants may occur at the production site before it is sold to end consumer – these may also present issues with its use. Lastly, some wood mulches may be produced from tree species which contain chemicals which adversely impact peony growth (ex: Black Walnut).

- What to expect -

As you read, please keep in mind the information included is based primarily on experiences growing herbaceous peonies in one of the most demanding winter climates in the United States – Wisconsin. Wisconsin is a northern tier state which is subject to wide climate variations. Herbaceous peonies have been grown here successfully for more than 100 years, making them a good choice for norther tier gardens. Experiences in other locations may differ and we make note where we have information.

Herbaceous peony plant growth is relatively slow, compared to other perennials, and it may take certain cultivars three or more years to produce stable flowering habits. Young herbaceous peonies often do not bloom true to form and color, and will only show fully developed and colored flowers on mature/established plants. Once plants are established, they may grow in one place in excess of 50 years. Most cultivars require 3 to 4 years of growth to attain mature size – sometimes more. Plant performance and flower characteristics will vary due to site, climate and other variables.

All herbaceous peonies require a cold dormancy period. USDA Hardiness Zones likely to experience the most success are Zones 3 through 8. Hardiness and performance are not completely reliant on low winter temperatures and therefore using the “zone formula” should not be used exclusively. Variability in

temperature, precipitation, exposure and air properties through all seasons play a major role in the performance of herbaceous peonies. Winter conditions which are extremely variable in precipitation forms (rain, ice, snow) can cause numerous issues in planting sites. Equally problematic may be summer conditions which present low humidities, excessive UV exposure and heat. All gardens are now being impacted by climate change and further diligence may be needed. Each gardener should evaluate their own conditions and make commensurate adjustments to their siting choices for best success.

Herbaceous peony groups and cultivars are extremely diverse and their behavior in the garden is equally diverse. Equal treatment of all cultivars will not produce the same results. Climate, soil and numerous other variables all play a part in the performance of these plants in our gardens. If new to herbaceous peonies, begin by growing those that might be considered "easy" or "reliable" and definitely purchase a number of plants from different cultivar groups (see groups). All said, these are not difficult plants to grow, but the more you know the better your chances for success.

- Commercial Availability -

Reliable herbaceous peony sources will ship bare root divisions in autumn. The best divisions consist of 3 to 4 dormant vegetative buds (eyes) on a well-proportioned youthful root system. Specialty nurseries are the best choice when purchasing herbaceous peonies, as they are more likely to provide fresh, healthy true to name cultivars.

Low quality divisions are often sold during winter and spring in bags by mass marketing plant companies or through big box stores, or generalist catalogs – these should be avoided. Peonies sold in winter and spring were harvested the prior year (August to October) and were stored prior to distribution. Most generalist companies and big box stores are resellers and do not grow their own plants, thus are not aware of source issues. Sources for these companies often harvest old cut flower fields and resulting divisions are of poor quality, may be diseased, and are often incorrectly marked for sale. In 2021, we purchased a dozen bags of peonies from a big box store to test their reliability. Fifty percent (50%) were diseased and needed to be destroyed before they produced their first blooms. Only two of the remaining plants were true to name (labeled correctly). This is good reason to purchase from a specialty nursery. Note: Many of the spring potted peonies seen in garden centers offerings may have similar issues, as their sources are often large discount growers or distributers. However, there are a number of American wholesale growers who are members of the American Peony Society who reliably provide quality wholesale herbaceous peonies, which should be considered as sources. Divisions from reliable sources will likely cost more and will sell out quickly.

Root Divisions

Fall Dug plant, with new roots emerging

This plant configuration is produced from digging larger plants and either cutting or sawing them apart to create division. The overall structure of divisions can be quite variable due to cultivar ancestry. The size, structure and availability of divisions is dependent on cultivar characteristics (genetic), plant age and origin climate. In very cold climate areas, we recommend mid-fall planting before soil temperatures fall excessively, for best results.

The industry standard, as mentioned earlier, is 3 to 5 dormant vegetative buds located on a crown with a proportional root system which will support healthy growth after transplant. The best divisions will not be from old plants with large inactive roots, which often decay and do not produce new roots readily. Conversely, divisions from younger plants with smaller youthful roots are more likely to be vigorous growers and will establish more quickly.

The number of dormant vegetative buds (eyes) is not synonymous with the vigor or quality of a division. A good division will have a number of dormant vegetative buds which are in proportion to the root system. Whether a division has 20 dormant vegetative buds or just a few, plants typically will only initiate bud growth which can be supported. Typically, 3 to 5 eye divisions with a proportional supporting root system will only initiate 2 or 3 stems and sometimes less – this is expected and does not stress the root system. Occasionally, divisions with many dormant vegetative buds grow too many stems in the first year and plants will become stressed due to lack of supporting root structure – good reason to purchase well-proportioned divisions.

Containerized Plants

Many commercial sources offer plants in containers during the spring season. Containerized peonies are sold in the spring to take advantage of gardeners' enthusiasm for planting during that season, however it is not the correct time to plant peonies. Spring planting of herbaceous peonies is not as successful as fall bare root planting, due to limited or no root growth due to the warming soils of the season. Plants which do not outright die from spring planting, will often show extreme wilting during summer and a lack of growth. If they survive to the fall season, it is likely they will establish and grow the next year, but no gains will be experienced. Containerized plants may be held until fall for planting, but often prove difficult to keep healthy until the proper planting time arrives. Keeping containerized plants evenly moist is one of the greatest challenges to success due to fast changing conditions within the pot (sometimes occurring within a few hours). Additionally, containerized plants are subject to overheated root systems from summer air temperatures and sunlight. If herbaceous peonies are purchased in a pot, we recommend burying the pot in a shady part of the garden that can be monitored closely for water needs, while it waits to be planted in the fall. Containerized peonies can be planted in the fall, just as their bare root counterparts are – simply remove all soil from the root system, cut stems back to match the root system and treat it as you would a bare root planting. Holding peonies in containers, for any length of time, is a gamble due to required maintenance to keep them healthy. Consider - All commercial growers/propagators grow their plants in the ground (field) and only place them in containers for sales purposes – proof that containers are not preferred by the experts! Solaris Farms does not sell containerized plants due to the challenges they present.

Old/Large Plants and Divisions

Larger, older plants may difficult subjects for transplant due to their size and older root systems. Herbaceous peonies should always be divided when a large plant is dug. Old plants have less vigorous root systems which do not readily produce new young roots. New roots formed at the ends of older roots will transfer nutrients and water through older, often damaged, root structures and do not provide a direct path to the crown and dormant vegetative eyes. Many of the old roots will have diseased portions and voids in them, and only serve as damaged storage vessels. While the temptation is to simply move a large clump and place it in a new location, the reality is the existing root system was grown to meet the conditions in of its original location. Additionally, an undivided clump is likely to use reserves within old roots in the year after transplant, and then go into a downward performance cycle. Typically, this downward cycle includes root disease, lack of vigor and less bloom in subsequent years. Plants with older roots will have lost their youthful growth habits and must regrow root systems to support their larger size, but are unlikely to do so unless divided.

Divisions from old clumps should be prepared so little remaining root is attached to the crown. Rooting directly from the crown is desired over rooting from older existing roots, as noted earlier.

Rejuvenating old plants may be accomplished by removing most or all of the root system from crowns originating from old clumps. This practice forces new root growth from the crown and has proven highly successful in the peony industry. The practice may sound extreme, but the result will be a healthy vigorous plant with a young root system which will perform better over the long haul. In year one, plants will be small, but they quickly catch up to their rooted counter parts by year 3!

Seedlings

In the peony world, a seedling is any plant which has not had its name registered with the International Cultivar Registration Authority. The age or availability of a plant designated as a "seedling" does not correspond to its status as a seedling, only that it is unregistered. There are many plants available commercially which are not registered and are considered garden named seedlings. Naming unregistered plants without registering them creates numerous problems. Most notably, unregistered plants in commerce may create duplication of names assigned to different plants, have no long-term reference for further research and may be of lesser quality. Solaris Farms has propagated and sold a number of unregistered plants which are useful to collectors and hybridizers, but will not sell seedlings which are culls from our hybridizing programs. We believe sellers of unregistered plants (seedlings) should make note of their status and supply an assigned seedling number for future reference. Our advice is "buyer beware" when purchasing seedlings, as many not of registration quality and are often not trialed for reliability and beauty. To view and learn about registered and historic peony cultivars, visit the American Peony Society's PEONY REGISTRY. The "Registry" is freely available to the public and is searchable and sortable.

"Seedling" - A cull which will not be sold.

- Cultural Details -

Planting Time

The best transplanting time for herbaceous peonies is fall, after next year's dormant vegetative buds have appeared. Roots are triggered to grow by cooling soils in early fall and will continue long after the plants have lost their foliage. Planting in the warming soils of spring is not recommended, as roots are inhibited from growing in these conditions. Bare root divisions for fall planting are preferred and usually perform better than their often-available counterparts – containerized plants.

Site Selection

Selecting an appropriate site is one of the most important factors in growing any peony successfully. Since herbaceous peonies do not like to be disturbed, select a planting place that will accommodate the plant for many years without movement. Remember to allow plenty of space around the plant since in several years it will become much larger in width.

A site that **drains well and does not remain wet** at any time of the year is of great importance. Keep plantings well clear of automatic sprinklers, such as those to keep lawns green and growing. Do not plant near downspouts and roof driplines. Constant water application (outside of drought periods) is often detrimental to peony health. Once established, peonies are extremely drought tolerant and prefer soils which remain on the dry side. It is especially important to know the winter season's site properties, as this is the period in which many soils may become saturated and damage the peony's root system or cause it to die. Typically, gardeners do not notice winter soil conditions due to inactivity in the garden, thus extra attention is required to the site before planting. Excessive soil moisture in the winter season is a major reason for peony plant damage and/or failure. Poorly drained sites may produce plants which lack vigor and emerging shoots may be irregular and appear diseased. Obviously, bloom will be impacted by such conditions and plants will produce few if any flowers.

The site should be **free of competition** from other plants, especially trees and shrubs, which may impact peony plantings negatively or prevent abundant bloom. Select a site which is well away from large perennial plants for best results. Crowding from other smaller plants may also cause lack of air movement, resulting in foliar and root disease. All said, peonies respond best to having space around them. Lilacs (and some other shrubs) are especially problematic due to root systems which compete with those of peonies for the same nutrients and moisture – avoid planting near Lilacs. Certain tree species, such as Black Walnut, may inhibit plant growth in proximity to them. Peonies appear to be tolerant of Black Walnut, but may be impacted to a certain degree.

The planting site should be one not subject to late **spring frosts**, as frosts may prevent young flower buds from developing further. Low sites are most often impacted by late frosts. Many gardeners new to peonies ask: "Why do the buds on my peony stop development when very small?". Buds which have received a hard freeze after spring emergence may not grow beyond a juvenile state due to cell damage. These buds will generally look viable and remain green through much of the growing season, but will show no progression in growth. Certain cultivars are prone to bud damage; thus, some variability will be experienced from cultivar to cultivar.

The site should **receive full sun or very light shade**. The placement should receive at least one-half day of sun (preferably morning sun vs. afternoon sun) or shader locations should have bright filtered light. Most peonies would prefer full sun exposure for the entire day, but flowers often last for shorter periods in full sun. A few species and their closely related hybrids may prefer somewhat shadier positions in the garden. Examples of species requiring less exposure are: *Paeonia anomala sbsps. vietchii*, *P. daurica sbsps. mlokosewitschii* and *Paeonia obovata*. For most herbaceous peonies planted in excessive shade, growth will be slow and bloom will be sparse or none existent. Gardens located in areas with hot summer climates may need to provide additional shade to protect the leaves from burning during the heat of the day, thus regional variation in plant treatment may need to be implemented.

Soils

Soils which support best growth have a near neutral pH (6 to 7). Clay soils are often highly fertile and may support excellent growth, but may hold excessive water and damage roots in wet seasons. Most native soils which are well drained will be suitable for growing peonies. We've noted soils made up of clay mixed with limestone gravel and stone grows peonies very well in the eastern United States – testament to their adaptability. Avoid soils with fresh and excessive organic material included, as this may promote disease. Soil predominantly composed of sand is not particularly fertile and peonies will not prosper. Many information sources have repeated information stating peonies must have highly organic, friable soils to prosper – false! Herbaceous peonies do very well on most mineral soils, but do perform best if soil is not compacted heavily, this is reason to incorporate organic amendments. Soils overlying limestone are excellent for growing peonies since the soils contain useful micronutrients for plant growth and help to provide a neutral pH.

Soil properties are extremely difficult to alter ad generally no amount of amending will change pH and overall structure widely, for an extended period. Most herbaceous peonies have large and wide-ranging root systems, thus amendments to the initial planting hole will likely have minimal long-term impact on plant performance. Again, if amending soil for any peony planting, do so widely and deeply to the entire planting area. A soil test is recommended before amending soils. Most county extension offices will supply instructions or provide sources for soil tests. Soil testing can also be contracted through many agricultural companies at generally low costs. If soil pH is low, additional liming (limestone) may be recommended to bring soils to a more neutral state.

Planting New Arrivals - Depth

Herbaceous peonies may be oriented into the planting hole in any number of ways. Preferably, dormant vegetative buds should be oriented to face upward, but may face horizontally. Buds not facing upward, will correct themselves and emerge as other stems do in the spring. Roots may also be placed in the hole horizontally or perpendicular to the surface – either way works well (we plant ours on their sides (horizontally).

Planting depth is dependent upon winter soil temperatures, exposure and a number of other variables. Peonies require cold temperatures to reduce dormancy in their crowns and roots, triggering them to vigorously grow when warmer conditions arrive in the spring season. This is the main reason why the warmest zones struggle to grow herbaceous peonies – not enough cold dormancy is provided.

Much misinformation is circulated in regards to herbaceous peony planting depth. Overly deep planting may inhibit growth and flowering, but is not a long-term reason for poor performance. A peony planted too deeply (within reason) will struggle to produce flowers for the first couple of years after planting, but shortly thereafter will have expanded its crown upward and will produce a new root system at the appropriate height, ultimately performing as their correctly planted counterparts do. Warmer zonal plantings may be an exception to this, causing greater difficulty with overly deep plantings (see below).

In colder zones, where soils are routinely frozen during the winter months, a planting depth of 1.5 to 2.5 inches is recommended to protect plants from wide ranging atmospheric and near surface soil changes. Avoid deeper planting as this causes slower growth in the first few years of planting.

Warm zonal plantings are situated close to the surface so winter air temperatures can cool root and crown structures, which reduces dormancy. Dormant vegetative buds should be planted in warm regions no more than .5 to 1 inch below the surface. Deeper planting in warmer climates is more problematic than those in colder climates because soils may not adequately cool beyond and the first inch or two. Thus, shallow planting allows the crown to be exposed to soils which have been cooled by winter air temperatures.

Planting New Arrivals – Process

Start by digging a hole which will easily accommodate all of the peony's roots. We recommend using as much native soil as possible and avoid the use of amendments, unless necessary. As noted earlier, amending soil within the hole only may create a "BIRD BATH EFFECT", which is basically a depression filled with foreign material, holds water and does not integrate with surrounding soil.

After placing the division in the hole, fill the planting hole approximately 3/4 full of soil and water thoroughly, so that all air pockets are removed. Proceed to fill in the remainder of the hole with soil and add water as you fill. Add additional soil over the planting to create a low mound. The low mound sheds water away from the peony and prevents pooling of water over the peony as the planting settles. Firmly press down the soil above and around the plant with your hands. In most instances further watering is not advised, unless drought conditions are prevalent in the area. We no longer advise the use of mulch due to climate change impacts on winter gardens. Mulch may create wet conditions during periods of the year when plants are less active (winter). If mulch is used, keep it away from the plant (at least 16 inches or more). Pine boughs may be laid over the planting during the first winter season and are a good winter stabilizing structure to prevent frost heaving or inconsistent freezing and thawing of soil. If your area experiences winter drought conditions, watering may be necessary, but remember peonies require only lightly damp soils to the touch – nothing more.

Larger growers and some gardeners who plant numerous divisions make use of trenches, instead of holes. The same process is recommended with similar treatment.

Water

Herbaceous peonies are not heavy water users and are drought tolerant once established. It is beneficial to keep soil evenly moist during their major growth periods - spring, late summer and fall. During very warm periods in early spring, leaves may wilt a bit (especially new plantings), this is not always an indicator that the soil is dry, but rather that plants cannot move enough water from their roots to their leaves. In such cases adding additional water to the planting will not help the plant and may actually cause damage to the root system. Usually, wilting subsides after the heat of the day passes and plants will recover. Only water when necessary and do so by watering plants at their bases slowly and deeply. Avoid overhead watering, as this may encourage foliar disease or cause sun burn damage during daylight hours. Overly wet soils are one the herbaceous peony's worst enemy, thus creating this situation should be avoided at all costs.

Automated irrigation systems may be problematic, since greater amounts of water may be supplied than the peony can use. These systems can create prolonged wet soil situations and cause disease issues. Typically, these systems are successful for lawns and other shallowly rooted plants, but may be used in very dry climates if installed and monitored correctly for peony cultivation. Irrigation can a form of "scheduled watering", which typically is not well suited to most plants, since the environment dictates the amount of water being used by the plant. Scheduled irrigation can be successful in soils which drain well and/or in areas in which drought is prevalent, but soil conditions will require monitoring for best results.

Avoid planting where water is concentrated in the environment. Examples: roof driplines, down spouts, water spigots, low gardens, swimming pool/pond overflow areas, spring runoff collection points, etc…

Diseases

Herbaceous peonies are generally disease-free plants, but can be subject to certain problems brought on by poor air circulation, wet soil conditions, overhead watering and over fertilizing. Climates which are prone to cool-wet periods are more likely to experience disease issues. Any kind of damage to stems or leaves may provide entry points for disease organisms (hail, wind, animal, human activity).

Herbaceous peonies, like all peonies, can be infected with botrytis, a common fungal disease. Botrytis may appear as black spots on the foliage or black/brown sunken areas on stems. Wet and cool conditions, as seen in spring in the northern tier, can cause this fungus to be problematic and the best treatment is prevention. Keep the plants well-ventilated and remove diseased portions of the plant upon discovery. Make sure to remove diseased plant parts from the garden to prevent its spread. Commercial fungicides may also be used for prevention (copper sprays tend to be most effective). Disease resistance is cultivar and group specific. Those with species in their ancestry which require high drainage and occur in nature in drier climates are most susceptible to diseases brought on by wet conditions and high humidity.

Garden clean up in fall is an important part of keeping all peonies healthy. At a time when foliage begins to go dormant in the fall season is the time for stems to be stripped of leaves and removed from the garden. Any weeds or neighboring plants which have encroached on the peony can be removed at this time as well. Note: Peony foliage in the fall often appears to be diseased, but for the most part, their appearance is simply indication that all usefulness to the plant has passed for the year.

Se… - not d…

Viral diseases are beginning to show up with greater regularity due to a number of factors. Typically, most infected plants contract the disease via tools used in propagation, but may also be infected by insects and nematodes. Inexpensive imports from overseas are most often afflicted with viral infections, a good reason to purchase plants from reliable sources which do not tolerate diseased plants in their collections. USDA inspectors have little to no tolerance for viruses in the plants they inspect, thus commercial sources who grow their own plants

within the United States typically do not distribute infected plants. Peonies tolerate viruses very well and most often continue to grow without hinderance, but the presence of infected plants in a garden may allow for other plants to become infected. Thus, removal of infected plants is the only method of control for gardeners concerned with such infections. Symptoms of viral infections are usually yellow patterns on leaves under certain conditions. Not all leaf distortions or color patterns are viral in nature and other factors may be at work causing such manifestations (soil conditions, drought, fungal infections). Most peonies carry viruses, some benevolent, others detrimental. We recommend care when attempting to identify virus infections, since many plants may exhibit "false" symptoms and the wrong conclusion may be reached. Thus, plants with suspected viral infections should be tested by a lab specializing in virus testing. Most state agricultural extension offices can recommend such testing labs.

Rabbits and deer during early season may nip off soft emergent growth, but this damage is typically not life threatening to the peony. Rabbit damage is can be identified by a clean cut through stems and the stems can be found close to the origin plant. Rabbits do appear to actually eat peonies. Deer grazing can be identified by rough or ragged areas on the stems, since these animals bite and pull shoots. Again, deer do not appear to consume the plant material they pull away.

Fertilizing

Only apply fertilizer if it is needed. Herbaceous peonies take time to establish and during first few years of their growth in the new garden no fertilizer should be applied. Supplying fertilizer in situations in which it is not needed may cause root damage and ultimately create poor results. Fertilizing may be necessary at some point, in certain locations. Avoid high nitrogen fertilizers as this will cause excessive foliage to be grown at the expense of flowering and may promote disease on soft new growth. Most peony growers recommend fertilizers suitable for bulbs as a good choice, but a soil test should be made if any greater needs may be present. Any fertilizer application will not create immediate results and often takes a year or more for results to be observed. Avoid the use of manures around peonies as there is evidence such practices promote the growth of disease organisms.

Winter Protection

No winter protection on established plants should be necessary in climates which do not fall below -20°F. Windy locations may be problematic, since dry air in winter may cause soils to dry excessively and roots/crowns may desiccate in such situations. Root systems are less impacted by winter temperatures since soils cool and warm much more slowly than air temperatures. Herbaceous peonies generally need no winter protection in USDA Hardiness Zones 3 through 8, but this may not hold true in areas which experience unusual weather conditions. Each gardener will need to assess hardiness individually with respect to their own climate variables.

Climate Change

Climate change has made gardening more challenging in recent years and greater care in planting has become paramount. The months of December/January/February/March have been especially problematic in the northern tier states in recent years, with large swings in temperature and winter rain. While we may not notice, soil that thaws in the winter/early spring is able to absorb water, which then refreezes around the plant's crown and ultimately smothers it. A good way to prevent this problem is to cover plants after the ground has frozen in early winter with pine boughs. The boughs will act as an insulator and not allow soil to thaw and take on more water-a good thing for plants. Mulch is no longer recommended as it holds water and contributes to plant death. Summer droughts, floods and extreme temperatures may also damage our beloved plantings. Careful

observation of your gardens and their special properties is important for the plants which reside there. With climate change in mind make adjustments to your gardens which lessen the impacts of climate events for best results. There is not a "recipe" which will fit all for growing any plant, thus a willingness to take necessary steps can result in a better outcome. All said, if the basic needs of herbaceous peonies are met, they are not difficult to grow well.

In summation, herbaceous peonies are wonderful long-term additions to a garden. Some patience will be required while the plants mature, but in the long run they are extremely rewarding and will likely become one of the 'favorite' plants in the garden. Try them, you won't be disappointed.

For further information about herbaceous peonies, we recommend visiting the American Peony Society's website at: https://americanpeonysociety.org/learn/herbaceous-peonies/.

-Cultivar Groups-

Species and Near Hybrids.

Species are plants which occur in nature and are the ancestors to the hybrids and lactifloras. Their near hybrids have similar characteristics to naturally occurring plants. The group is diverse and culture can be quite specific. Most are small in size, compared to their hybrid relatives.

Some species are extremely cold hardy, while others must have warm, dry conditions to prosper. Those which grow in Mediterranean climates are most challenging to grow in U.S. continental climates due to their narrow growing requirements. Others, like *Paeonia tenuifolia* and its hybrids are better suited to cold climates which may receive more winter precipitation.

Foliage is quite unique in many species. Fern-like foliage is exhibited by *P. tenuifolia* and it near hybrids. *Paeonia daurica ssp. mlokosewitschii* has very rounded broad leaves with veining and often unique color variations. Both make excellent rock garden plants.

Some, such as P. anomala ssp. veitchii grow well in shady conditions and have beautiful nodding flowers carried over finely cut foliage.

Many near hybrids exist with traits which are nearly the same as the species themselves. In many instances these "near hybrids" are less demanding in culture than the species.

Numerous other species are available and may be grown successfully in the United States, but are often rare and difficult to source. Many plants in this group present propagation difficulties by division due to their narrow crowns and unusual root systems. Thus they are not widely available and specialty nurseries need to be used as sources.

We recommend the following species for cold climates: *P. peregrina* (red single), *P. officinalis* (mauve-plum single), *P. villosa* (small pink single), *P. arietina* (small mauve pink single), *P. tenuifolia* and variants (red, pink, white – double or single), *P. anomala*, subspecies and variants (pink singles), *P. lactiflora* (white single).

Herbaceous Hybrid Group.

These are herbaceous peonies which have more than one species in their ancestry. Some have pedigrees involving four or more species in their makeup. Typically stems carry one bloom, but sometimes more. Colors tend to be purer and more vibrant than in Lactiflora Group cultivars. A wide range of plant and foliar habits may be seen within the group.

Herbaceous hybrids are the “new kids on the block” in the peony world. They offer many improvements to cultivars in the Lactiflora Group. Most notably, improved stem strength and a wider range of colors are seen within the group. Some are preferred for their excellent landscape properties and many are now finding their way into cut flower programs. Foliage can be quite unique, ranging from narrow (almost fern-like to extremely broad). Emergence of plants in spring often brings unique and interesting forms and coloration, adding appeal to the early garden. Some cultivars have pleasantly scented flowers, while others are considered unpleasant (corals).

Root systems can be unique in size, structure and color. Many hybrids have widened tuber-like shaped roots and others grow long, narrow roots. Many cultivars have adventitious roots, which can grow new plants from roots which do not have crown tissue. Adventitious roots can be both a blessing and a curse. A blessing if you’d like to grow additional plants from root pieces. A curse is you dig plants up and leave behind root pieces in the ground, as they will grow new plants from small remnants for years were the plants were once located.

Most are of easy culture, but typically perform better when planted in highly drained soils. Many new cultivars are being introduced on a yearly basis and more advanced and unique hybrids are likely to become available in years to come.

Lactiflora Group.

These are the common garden peonies descended from the Chinese herbaceous peonies. They are diploid in chromosome number. There are more cultivars of these than in any other group. Crosses between members of this group are not considered hybrids. Multiple blooms per stem almost always occur with plants in this group. As a group, they are typically latest to bloom. Also in this group are the "lactifloras of hybrid origin" which result from hybrids being crossed back to lactifloras to the point they become visually indistinguishable from others in the group.

Lactifloras make up the largest number of cultivars used in the cut flower industry and many have fine properties for vase use. Fragrance is often sweet and what most associate with “peony fragrance”. Many cultivars require support while in bloom, due to large heavy flowers. They are hardy, adaptable and are generally of easy culture. Many cultivars in this group were introduced to commerce in the late 1800’s to early 1900’s and persist in many gardens throughout the world. More recently introduced cultivars often exhibit better plant habits and disease resistance, thus this group remains popular.

Flower forms occur in a wide range of configurations (single, semi-double, anemone, Japanese and bomb).