Herbaceous Perennial Gardening

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Learning Objectives

1. To identify and select a useful range of perennials

2. To understand principles for developing perennial garden planting plans

3. To understand basic concepts of perennial plant propagation

4. To understand the principles of proper maintenance for herbaceous perennials

4. To evaluate the site and soil suitability for specific perennial plantings

5. To recognize and manage basic pest problems, using integrated pest management techniques
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Plant Characteristics

Perennials are herbaceous plants. In winter their tops die back, while the crown and root systems go dormant. The following spring the tops reappear and roots come out of dormancy. When grown from seed, they produce vegetative growth the first year and bloom the second. With proper care they will continue to add color and foliage interest to the garden for many years.

Most plants grown from bulbs are also perennials, but are usually thought of as a separate category of plants, since their needs and care may be different. Ornamental grasses, too, are usually perennial plants, but will not be covered extensively in this chapter. Technically, shrubs are perennials, too, but because of their woody stems, they are not herbaceous perennials.

Bloom cycles and duration are quite variable from genus to genus. Those with a relatively short bloom period (5 -10 days) include peonies and iris, however, by selecting cultivars that bloom early, mid and late season, their seasonal interest can be extended for up to 3 or 4 weeks. Coreopsis and salvia are long bloomers, carrying their blooms for 4 -6 weeks. Daylilies produce individual blooms that last for 1 day, however, as the blooms are borne on scapes, each containing many buds, the bloom time is greatly extended as the buds open over a period of several weeks. With proper maintenance, various perennials such as delphinium and some of the phlox can produce a second flush of bloom.

Principles for Planning the Garden

Site Considerations

Although certain perennials will tolerate some shade, most do best in full sun, or at least 5 hours of sunlight a day. Many perennials follow the sun and will lean if not planted where they receive sufficient light during the day. Good drainage and protection from drying winds are also essential for good growth.

It is generally accepted that the position of the garden is best where it can be viewed from the house, patio or sidewalk. The exact position is influenced by the type of garden you choose, such as a border or an island bed.

Garden Shape and Edging

Viewing the border from the front, its longest sides are horizontal. It can be enhanced by adding a background. Shrubs, a hedge or a fence, are good choices as backgrounds. A fence is better for a small property, considering that the border should be a minimum width of 8 feet to achieve a good sequence of bloom. The fence requires the least amount of space, and vines can be trained over it to create interest and texture.

In using individual shrubs or a hedge of shrubs as a background, allow for a two-foot space between the shrubs and perennials to permit ease of maintenance, provide good airflow to allow air to circulate between plants and reduce root competition for water and nutrients. When shrubs are used as a background, a minimum width of 12 feet is needed to create a pleasing sequence of bloom.
The island bed is designed for viewing from all sides. The tallest plants are placed in the center, with shorter heights graduating out toward the edge of the bed. When planting an island bed, the height of the tallest plant should not exceed half the width of the bed. For example, an 8-foot wide bed should have plants no taller than 4 feet, or the ability to create a pleasant gradation of heights will be difficult to achieve.

In the mixed border or island bed, perennials are placed between early blooming shrubs. Clean, neat edges, especially the front edge of the perennial garden is important. A straight edge, while creating a more formal look to the border, is easy to maintain.

A gentle curving edge gives the illusion of length to the border. A garden hose can be used as a guide to plan the long curves.

A scalloped edge, creating a chopped-up effect should be avoided. This not only is aesthetically distracting, it is difficult to maintain. Mowing around a scalloped edge is challenging.

Metal or plastic stripping, bricks, or fieldstone's can be used as an edging. However, the gardener should keep in mind that any of these materials will create addition maintenance, using a weed trimmer or shears to trim the edge of the grass. A mow strip of flat stones or bricks can be set into the lawn edge, along which the mower wheels can be run. Unless plastic is laid underneath the mow strip, grass will eventually grow between the cracks.

The best approach to edging is simplicity, maintaining a sharp cut edge using a half moon edger or straight ended spade. Following the initial garden shape design, annual edging should be done in spring with a mid-summer trim; the edges will remain neat and tidy throughout the season.

**Site Preparation**

If possible, the site should be prepared the fall prior to planting, allowing time to eliminate persistent weeds such as quack grass and sorrel. It is possible to weed the site with a spade or spading fork.

One way to make this method a little easier is to cover the garden area with black plastic, a thick layer of newspaper or old rugs for about 10-14 days. After the vegetation underneath is killed by being smothered out, hand dig with a spade or spading fork carefully removing all roots and stolons; do not rototill, as this can propagate any remaining underground parts. Then cover the area with clear plastic and leave for several weeks. The heat under the plastic will solarize the soil and kill out any remaining
vegetation and weed seeds. Continue with soil preparation, monitoring to check for any re-growth.

Another option is chemical weeding, using a non-selective herbicide. If you choose the chemical option, you need to apply it two to three weeks before you begin digging the site. For large areas, such as an entire perennial border/garden, chemical weeding not only saves time and backache when you are establishing the garden, but perennial weed roots and stolons are eliminated, reducing the amount of hand weeding later, when the garden is established. When using a chemical herbicide, or any other pesticide, always read and follow the label directions. Then thoroughly dig or rototill the area.

After the site preparation digging (regardless of method), have the soil’s pH tested. Most perennials grow best within a pH level of 6.2-6.8. Add lime or sulfur, if needed, in the fall to correct the soil pH level by spring. To prepare the soil, add organic matter such as compost, leaves, peat moss or animal manure. Manure’s should be aged a year before they are added to the soil. Organic matter primarily builds good soil structure, but it can also provide a small amount of nutrients.

As soon as the soil can be worked in the spring, it is time to re-dig the garden and apply a fertilizer. If using a chemical fertilizer, be aware that they can burn plants. To avoid burning, the chemical fertilizer should be applied several days prior to planting. This also allows the ground to settle, which is important for perennials requiring specific planting depths. Organic fertilizers can be applied as late as planting time.

By spending time preparing the garden, you will be rewarded in future years.

**Planning the Site Design**
After selecting your site, and preparing the soil, the next step is to make a plan. Your goal is to create a garden that provides a continual sequence of bloom from spring through fall. You can't plant the garden all at once. Most plants can be planted in early spring, while others, such as peonies, are better planted in the fall.

You can create a colorful garden the first year. Use bulbs and annuals to fill in the spaces the first year until perennials become established.

Bulbs can and should be a permanent part of the garden. Early blooming bulbs precede most perennials, providing early spring color to the garden. Unlike other herbaceous plants, which are placed according to height, bulbs are different. The minor bulbs (e.g. snowdrops, squills, crocus) are placed toward the front of the garden. The larger bulbs, such as tulips and daffodils are planted in both the middle and back sections of the garden. These bulbs will bloom when most of the perennial foliage will be only a few inches tall. For a natural look, never plant bulbs in rows. A grouping of 8 or 10 bulbs creates a nice effect. By the time the bulbs have bloomed, most of the herbaceous foliage will be tall enough to hide bulb plants’ yellowing foliage.

Annuals fill in spaces between newly planted perennials. They add color in the summer and early fall while the perennials are getting established. In most cases, annuals can be planted in the same space as spring-flowering bulbs, as well. Most annuals, unlike perennials, have a longer season of bloom. If you plant marigolds in May, for instance, they will continue to bloom until autumn frost.
Perennials have specific bloom times. With their various bloom times, perennials need to be planted in a way that captures a continuous sequence of bloom from a series of selections. One way to ensure a good bloom sequence is to use dominant or backbone plants for different seasons. For instance, iris and peony for spring, daylily and phlox for summer, and aster and Japanese anemone for fall color – all are plants whose foliage will remain attractive throughout the season.

Another consideration will be the height and spread of plants. By visualizing the border being divided into three sections (back, middle and front), draw a rough diagram indicating exactly where you will place individual plants or drifts of plants with different heights and spreads. You may or may not want to name the specific plants at this point, but indicate the height and spread characteristics that you desire.

Plants 3 feet and taller are placed in the back; those growing 1-3 feet are planted in the middle border; and those under 1 foot are for front and edging plants, use this as a guideline, being careful not to create a rigid step effect.

Perennials are well suited to group or mass planting (all one type and color), sometimes referred to as drifts of plants, rather than dotting single specimens throughout the garden. This will create an eye pleasing effect. Mixed colors within a small grouping tend to lose impact, resulting in a washed-out effect.

Plants along the edge of the garden can be planted in groups of 5, 7 or more, but avoid a front edge planted in a sequence of mixed colors (e.g. 1 red, 1 white, 1 blue). This type of planting creates a fragmented appearance. Most low growing plants in the front of the border bloom early in the season, so it is important that they maintain good foliage. Select plants with different forms, textures and color. Early blooming dwarf iris with gray-green, spiky foliage and perennial candytuft (Iberis sempervirens) with dark green and mound shaped foliage create interesting contrast. A summer blooming pinks grown with the iris and candytuft adds a different foliage texture and provides summer color. Low growing, gray or burgundy foliage plants can also add a long season of interest to an edge planting.

Middle border plants are best set in groups of 3 to 5. Base your selection on the dominant plants, adding durability and texture with complementary flowering and foliage plants. Locate plants with different growth habits together. For example, a grouping of vertical plants behind a clump of peonies, and to the side the fern leafed yarrow (Achillea) creating foliage contrast.

Perennials such as oriental poppy (Papaver orientalis) and bleeding heart (Dicentra spectabilis) are quite spectacular when in bloom, but by mid summer they are a mass of unsightly yellowing foliage that completely disappears. A plant of baby's breath (Gypsophila paniculata) with it's later bloom season is a good choice to plant behind or to the side of these plants. It's airy growth habit will conceal the open space left by the dormant plants, yet allow good air and light, enabling the summer dormant poppy to produce new leaves by late summer.

Back border plants are generally used in small groupings of 2 or 3 or a single specimen. Adequate spacing is crucial. A general guideline is to space plants within a group 12-15 inches apart. The average spacing between groupings is 2-3 feet, depending on individual plants. Tall bushy plants require ground space equal to their height. For
example, a mature plant of false indigo (*Baptisia australis*) requires a space of 3 feet by three feet.

Plants that provide vertical accents are also important. Some choices include: foxglove (*Digitalis spp.*), delphinium (*Delphinium spp.*), Culver's root (*Veronicastrum virginicum*) and ligularia (*Ligularia przewalskii* and *L. stenocephala*). They need to be planted in groups behind a drift of perennials about half their height, blending with the rest of the garden, without looking like a “flag pole”... as they would if only one were planted.

Consider the effect of color. Deep warm colors, like yellow and red, are eye catching and create an illusion of appearing closer. Paler, weaker colors create a cool, elongating effect. You can create a pleasant balance by harmonizing colors. You may want to tone and blend the brighter colors by using pastels, gray and white.

**Mapping your garden plan**

Once you've decided on the flowers to be planted, map out a plan. Choose the dominant plants and supplement from lists of plants that bloom at the same time. During the mapping, the specific plant, including its cultivar, is included on the map.

Make a triple overlay plan of the garden to help you visualize the garden at different seasons of the year. To make a triple overlay plan, use one sheet of graph paper and two sheets of tracing paper to represent the three seasons. Each sheet should be divided into sections for the front, middle and back border.

On the first sheet of paper draw in the plants you choose for your fall bloom sequence. Be sure to have an even distribution of height ranges and color throughout the border. Place a sheet of the tracing paper over the fall plan and sketch in the plants from the summer list. The remaining tracing paper is used to repeat the process with the spring bloomers.

When the sheets are viewed separately, you can see if the sequence of bloom and color is evenly distributed through the seasons. This planning will help you to develop a plan that provides a continually changing and colorful garden from early spring through fall. As you read about and research the different perennial plants, you will also enlarge your knowledge of many new and different perennials as you see where any new plant might fit in the overall garden seasonal plan.
Criteria for plant selection

Plant selection is the first principle of integrated pest management. Prevention of future potential problems can often be avoided. Design is also improved by careful plant selection.

- Learn in advance the probability of disease or insect susceptibility
- Select the plants most suitable for the environmental conditions (light, soil, wetness or dryness) — “the right plant for the right place”
- Know the plant’s growth habit and fate or condition of leaves throughout the season
- Determine which plants are long-lived and which are short-lived: peony, false indigo and gas plant are examples of long-lived plants, while delphinium and pinks are examples of short lived plants.
- Know which plants are hardy to your area. New York State has USDA hardiness zones ranging from 4-7. NYS winters are very unpredictable. Besides USDA hardiness rating, consider other factors, such as: soil type, moisture levels, micro climates for a specific garden site, winter and summer temperatures, and snow levels may predict which species and cultivars will do best. The best teacher, however, is experience: grow them to know them.

Perennials for specific purposes
The following abbreviations are used: sp. means a particular species, spp. means several or many species, and cv. means cultivar.

Plants for shade
Astilbe spp.
Bergenia cordifolia
Brunnera macrophylla
Dicentra spp.
Doronicum caucasicum
Geranium spp.
Hemerocallis cv.
Heuchera spp.
Hosta spp.
Primula spp.
Pulmonaria spp.
Trollius spp.

false spirea
bergenia
heartleaf brunnera
bleeding heart
leopard’s bane
cranesbill
daylily
coral bells, alumroot
plantain lily
primrose
lungwort
globeflower

Drought tolerant plants
Achillea spp.
Anthemis tinctoria
Artemisia spp.
Coreopsis spp.
Dianthus spp.
Euphorbia spp.
Eryngium maritimum
Gaillardia spp.
Lavender angustifolia
Penstemon spp.

yarrow
golden marguerite
wormwood
tickseed
pinks
spurge
sea holly
blanket flower
English lavender
bearded tongue
**Salvia spp.**  sage
**Sedum spp.**  stonecrop
**Veronica spp.**  speedwell
**Yucca filamentosa**  Adam's needle

**Perennials which prefer moist conditions**
**Astillbe spp.**  false spirea
**Brunnera macrophylla**  siberian bugloss
**Lythrum spp.**  loosestrife
**Ligularia cv.**  ligularia
**Lobelia cardinalis**  cardinal flower
**Primula japonica**  Japanese primrose
**Trollius spp.**  globe flower

**Flowers with a long bloom period**
**Achillea spp.**  yarrow
**Anthemis tinctoria**  golden marguerite
**Campanula persicifolia**  peach leaved bellflower
**Coreopsis spp.**  tickseed
**Dicentra eximia**  fringed bleeding heart
**Echinacea purpurea**  cone flower
**Hemerocallis cv.**  daylily
**Heuchera spp.**  coralbell
**Monarda didyma**  beebalm
**Platycodon grandiflorus**  balloon flower
**Rudbeckia spp.**  black eyed Susan
**Salvia x superba**  sage
**Sedum spectabile**  upright stone crop
**Viola spp.**  violets

**Perennials with gray foliage**
**Anaphalis triplinervis**  pearly everlasting
**Artemisia spp.**  wormwood
**Cerastium tomentosum**  snow-in-summer
**Dianthus spp.**  pinks
**Eringium spp.**  sea holly
**Festuca ovina**  festuca
**Lavandula angustifolia**  English lavender
**Lychnis coronaria**  rose campion
**Nepeta spp.**  catnip
**Perovskia atriplicifolia**  Russian sage
**Santolina chamaecyparisis**  cotton lavender
**Stachys spp.**  betony and lamb’s ears
**Thymus lanuginosa**  woolly thyme
Propagating Perennials

Propagating perennials can be as simple or complex as you choose to make it. Preferred timing is important.

Seed
Many perennials can be propagated by seed. It is easy and a way of growing different and unusual perennials that might not otherwise be available.

Many texts suggest starting seed in mid-summer (July); this works well for seeds that require stratification (a season of cold to initiate germination). These summer-sown seed will germinate the following spring, or the second spring (for those that require two seasons of cold, sometimes called double-dormancy).

Another way of starting perennials from seed is very early in the spring, sown as early as January or February in four-inch pots, watered from below (bottom-watered), labeled and sealed in a plastic bag. The label in the pot will hold the bag up, away from the soil. Place the bagged pots outside in a sheltered spot away from the sun and where the rain cannot collapse the bag onto the soil surface. This method usually provides a long enough cold period and requires no further attention until warm spring temperatures and germination occurs. When seedlings develop, open and roll down the bag, water when needed and transplant in the usual manner.

The advantage of this method is that the seedlings are hardy because they were grown outside, well-adjusted, and reach sufficient size to be planted out into the garden the autumn after they are sown. It eliminates the possibility of winter-kill that can occur in seed sown in mid-summer.

Division
Division, separating a clump of a plant into several or many pieces, is a means of propagating. Generally, when dividing, it is necessary to dig up the entire clump, hose away the soil and inspect the roots closely, discarding any diseased or old woody parts. If you are replanting into the same site, renovate the soil by working in a bucket of aged compost, adding some form of phosphorus. Keep well-watered. The first year after dividing, apply a winter mulch after the ground freezes to protect the tender new plants.

Below are the best times for dividing specific perennials.

Garden phlox: either early spring, when new foliage is about 4 inches tall, or after bloom in late summer. Separate out into individual stems and plant a small group of about 4 or 5, spacing them about 6 inches apart. By summer they will develop into a blooming sized clump.

Peony: September through October, or about six to eight weeks before the ground freezes solid. Cut into sections that contain about 3 to 5 fat pink eyes underground buds, near the surface) and plant with the tips for the eyes no more than one inch below the surface.

Primrose: immediately after they finish blooming in early spring. Dig plants while still green, tease roots apart to create 3-4 clumps and plant immediately.

Coral bells: early spring as early as possible to prevent winter heaving. They have sparse root systems and need time to develop after dividing.
Baby's breath, balloon flower and lupine: difficult to divide because of their fleshy root system. Start new plants from seed.

Oriental poppy: late summer after they have gone dormant for the summer and new leaves appear.

Delphinium, foxglove, pinks, and columbine are all short-lived plants. They can easily be raised from seed and most will bloom the first year from seed.

**Cuttings**

While not as common as propagating by seed or division, taking root cuttings is an effective way of reproducing plants that resent being disturbed, such as oriental poppy, baby's breath, and gas plant. To make root cuttings, gently remove some of the soil from around the base of the plant to expose some of the roots. Carefully cut away some of the roots and cut into pieces 1½ to 2 inches long. Place on the surface of a pot or flat, filled with soil-less mix, to which a small amount of fine gravel has been added. Cover with a half-inch of soil-less mix. Each cutting will, in time, produce its own new plant.

Stem cuttings are rarely taken on perennials. Sometimes the technique is used on a few perennials, such as chrysanthemum, pinks (*Dianthus* spp.) and beard-tongue (*Penstemon* spp.)
Maintenance of Perennials

Perennials are not maintenance free and are not perpetual. In other words, they do not live forever. Maintenance is critical to the longest life possible for each species and cultivar.

A few general practices that deserve special attention are fertilizing and dividing. Other practices like staking, thinning, deadheading, pinching and mulching are described briefly in the section "Calendar of Important Practices in the Perennial Garden."

Fertilizing
Under normal circumstances, perennials need a balanced N-P-K fertilizer, at the beginning of each growing season. There are several options for fertilizing. One is to apply a granular chemical 5-10-5 fertilizer at the rate of 4-5 lb. per hundred square foot. In an established bed, encircle each plant, being careful to avoid contact and potential burning of the roots. Alternately, another granular chemical 10-10-10 fertilizer is applied at the rate of 2 to 2 1/2 pounds per hundred square feet.

Slow-release fertilizers can also be used, according to package directions, and will pose fewer problems with burning. Soluble fertilizers can also be used, applied according to label directions; they are non-burning, but require frequent applications. A fourth option is a total organic fertilizer: 1 part dried blood, 2 parts bone meal, 3 parts wood ash, 4 parts screened compost. There are no specific recommendations for the amount of organic fertilizer that is optimal.

In a new, unplanted garden, spread half the fertilizer over the surface and cultivate it into the soil. The remaining half is then applied and lightly raked into the surface, evenly distributing the fertilizer throughout the entire garden.

Dividing
Dividing perennials maintains their vigor. Most perennials get overgrown and will need dividing at some point in the growing season. Signs that a plant needs dividing include: blooming declines, the plant center dies, or the plant has outgrown its allocated space. For more details on how and when to divide, review the section on Dividing under Propagation.
Integrated Pest Management

Perennials, like all other plants, are not immune to certain pest problems. However, many of these problems can be avoided if a few simple guidelines are followed:

- Select the right plant for the right place. Any plant grown under less than ideal conditions will soon become stressed and susceptible to a pest attack.
  - Check your hardiness zone. Consider micro-climates within your own garden environment.
  - Sun and shade requirements are important.
  - Soil type and drainage conditions must conform to the plant’s needs.
- Select disease resistant varieties.
- Don’t accept or bring home plants that show any signs of poor vigor. Pay special attention to root development. Healthy roots grow healthy plants.
- Garden sanitation and proper maintenance are critical to healthy plant growth.
- Maintain adequate soil moisture, avoiding shallow overhead watering.
- Keep plants in vigorous growing by dividing and discarding old and dead tissue.
- Use adequate spacing and thin emerging shoots to reduce mildew problems in mildew-susceptible plants like bee balm and garden phlox.
- Closely check monoculture (mass plantings of the same perennial) for pest build-up.
- Avoid planting a cluster of different perennials and shrubs that are mutually attractive to a common pest. For example, both sedum and rhododendron are attractive to black vine weevil. Another example is planting the many hosts of four-lined plant bug in the same part of the garden.
- Monitor all plants for signs of insect and disease problems.
  - Watch for and learn to recognize some of the more common pests of perennial plants. For specific diagnoses and solutions to perennial problems, the author recommends the following literature:
    - Herbaceous Perennials: Diseases and Insect Pests, by Margery Dougherty and Maurie Semel
    - Pest Management Around the Home, (management practices and pesticides recommended in NYS for homeowners), Cornell Cooperative Extension

Details on these publications are listed in Recommended References on Perennials.
A Calendar of Important Practices in the Perennial Garden

**General routine practices in early spring**
- Cut back and remove debris from plants that were not cut back in fall: European ginger (*Asarum europaeum*), bishop’s hat (*Epimedium* sp.), ferns, Lenten rose (*Helleborus* sp.), ornamental grasses, upright stonecrops like *Sedum x ‘Autumn Joy’*
- Don't walk on wet soil
- Rake fallen leaves from nearly trees and shrubs
- Don't step on plants that start growing later in the spring
- Have the soil tested for acidity or alkalinity (pH). (For more detail on soil pH, see ...practices for autumn, below). Have a complete nutrient analysis of the soil performed if the perennials grew weakly the previous year.
- Fertilize as needed, working it into the soil around the plants (see above for details).
- Stake perennials early in the season. There are several types to choose from to maintain the natural form of plant: cages, canes, frames, twigs, or wire. Stake individual flower spikes of delphinium as they begin to bud, or grow cultivars that are low growing.
- Edge the garden border
- Time to plan and think of the long summer days ahead
- Check the plant and seed catalogs see what's new, place orders
- Enjoy the first bloom of early bulbs and primroses
- Remove winter mulch gradually, giving the plants beneath a chance to acclimate slowly
- Gently push any plants that have heaved back onto the soil
- As soon as the soil is workable, clean up the border, removing old leaves and debris from the previous year
- If you have a history of iris borers, begin control measures when iris leaves are 4" tall in order to prevent later damage
- Cultivate soil, being careful not to cut off the tops of spring-flowering bulbs, lilies and late risers such as balloon flower and anemone
- Scatter a handful of lime or wood ashes to delphiniums, pinks and other gray leafed plants (if your soil is not too alkaline)
- To encourage larger flowers remove side buds on peony; ignore the ants
- Divide spring blooming primrose (*Primula* sp.) as early as possible
- Monitor young peony shoots and, later, flower buds for signs of botrytis
- Divide summer and fall-blooming perennials. Those that require division are: aster (*Aster* spp.), tickseed (*Coreopsis* spp.), garden chrysanthemums or mums (*Dendranthemum* spp.), coral bells (*Heuchera*), garden phlox (*Phlox paniculata*).
  You may want to set divided clumps of chrysanthemums in the vegetable garden to grow until fall

**General routine practices in late spring**
- After flowering, cut bloom stalks of iris to ground level, allowing leaves to remain until fall (unless you are dividing them this year, then trim leaves as you divide them in in early summer)
- Check columbines for leaf miner and small green worms. Control as needed.
- Cut back to ground level two thirds of stems on mature clumps of garden phlox and beebalm to reduce mildew.
- Check columbines for leaf miner and (green)sawfly larvae. Control as needed.
- Spray lupines with water to dislodge aphids. It is hard to grow lupines with aphids.
- Check and adjust for soil pH for lupines. They prefer an acid soil.
General routine practices in summer

- Mulch in order to: conserve moisture, suppress weeds, add organic matter (as the mulch decomposes). There are several kinds of mulch: sterile compost, bark mulch, shredded bark, leaf mold, cocoa mulch, buckwheat hulls, decayed sawdust, rotted manure, pine needles. Avoid peat moss, wood chips unless old and broken down, hay, grass clippings (the seed produced can introduce weeds into the garden). Compare these reasons for mulching in the summer with reasons for mulching in the winter.

- Prune to lengthen the bloom period for perennials. Early bloomers that respond to shearing back by half, immediately after bloom, are: creeping phlox (Phlox subulata), perennial candytuft (Iberis), and rockcress (Arabis).

- Thin established perennials. Thinning is done to promote better air circulation and reduce mildew and fungal leaf spots. When stems are 4" tall, prune half of them to the ground level. Perennials that require annual thinning to perform well are: garden phlox (Phlox paniculata) and bee balm (Monarda didyma).

- Pinch back late blooming perennials. Pinching back means removing terminal growth tips. It will result in more compact, bushier plants that will require less staking and extend bloom times. Pinching is also used to create staggered heights and bloom times. Plants that require pinching are: aster (Aster sp.), boltonia (Boltonia sp.), Russian sage (Perovskia sp.), garden phlox (Phlox paniculata) and upright stonecrops like Sedum x 'Autumn Joy', and chrysanthemums. Apply a water-soluble fertilizer monthly.

- Divide overgrown daylilies and iris.

- Trim the edge of your garden, to retain neat and tidy appearance.

- Look for brown, angular spots on the leaves of a wide-range of perennials. Caused by the four-lined plant bug, this is one of the most common kinds of plant damage. The insect is rarely seen, while the damage is very noticeable. When numerous, the spots coalesce and appear to be a disease instead of insect damage.

- Cut back summer blooming perennials after they are finished blooming. They are cut back to basal growth to reduce sprawl and allow for some to re-bloom. Those that require basal pruning are: yarrow (Achillea), ladies' mantle (Alchemilla), silver mounds (Artemisia schmidtiana 'Silver Mound'), smooth wormwood (Chrysanthemum x superbum), delphinium (Delphinium spp.), cranesbill (Geranium spp.), white Nancy nettle (Lamium maculatum - 'White Nancy'), catmint (Nepeta sp.), Salvia x superba and other salvia cultivars, veronica (Veronica spp.).

- Maintain a close watch for cyclamen mites on delphinium. You will see a blackening on the leaves. Discard if found and don't plant delphiniums in the same site for several years.

- Prune the roots with a sharp spade after the plant has bloomed and while it is still in the ground. An alternative is to grow these aggressive plants in sunken tubs: gooseneck loosestrife (Lysimachia clethroides), sundrops (Oenothera).
• Deadhead perennials that have completely finished blooming for the season. Remove spent blooms but do not cut the foliage on: daylilies (Hemerocallis), irises (Iris sp.), lupines (Lupinus), peony (Paeonia), upright phlox (Phlox spp.)

• Watch for browning on leaf margins on ladies’ mantle. Cut back the foliage. It’s a harmless physiological condition.

• Watch for plants that suddenly collapse. Check around roots for underground pests, i.e. black vine weevil in stonecrops.

• Cut flowering stems to the point of foliar growth. This prevents seeding for the following perennials: flowering onions (Allium spp.), columbine (Aquilegia spp.), golden marqueterie (Anthemis cv.), masterwort (Astrantia sp.), perennial spirea (Astillbe spp.), bellflowers (Campanula persicifolia cv.), perennial bachelor buttons (Centaurea montana), pinks (Dianthus spp.), foxgloves (Digitalis spp.), coneflower (Echinacea spp.) feverfew (Matricaria cv.), siberian iris (Iris sibirica), rose campion (Lychnis coronaria), garden phlox (Phlox paniculata), balloon flower (Platycodon spp.). If seed are desirable for propagation, some stems should be kept. In most gardens, however, these seed stalks are a nuisance.

• Divide oriental poppies as soon as new foliage appears.

**General routine practices in autumn**

• Divide remaining perennials that have become overgrown. Division depends on rate of growth, and can also be influenced by cultural practices. Slow growing perennials, like peony and gas plant are slow and seldom need dividing, while beebalm and wormwood are vigorous growers and need frequent dividing, probably annually. Lilies (Lilium spp.) and plantain lilies (Hosta spp.), and garden phlox (Phlox paniculata) are moderate growers, but may need division from time to time (every few years).

• After the first frost, cut most perennials to a height of 3" above the ground. Any lower is too low and can injure the crown. Certain perennials should not be cut back until spring. See spring maintenance above for perennials to cut back in the spring.

• Apply phosphorus to heavy feeding perennials, like peony and astilbe. Work it well into the soil.

• Remove debris from garden.

• If you have a history of iris borer, cut and remove leaves to prevent eggs from overwintering.

• Plant new bulbs.

• This is also a good time to check the pH of the soil. Most perennials prefer a pH of between 6.2 - 6.8. To take a soil pH sample for testing: Use a small trowel to take four or five samples from various locations. Mix these together and test to determine the pH of your soil.

• Modify the soil around those perennials that have specific in their pH needs: delphinium, lavender, cotton lavender (Santolina) and grey foliage plants prefer a neutral to slightly alkaline soil pH approximately 7.0 Lupine and Siberian iris however,
prefer a slightly more acidic soil (pH 6.0 -6.5). To raise soil pH (or "sweeten" it), work in a handful of limestone or wood ash. Sulfur or used coffee grounds will acidify the soil. Sulfur is quicker acting than the used coffee grounds.

- Have a complete nutrient analysis of the soil performed if the perennials grew weakly in spring and summer.

- If the season has been dry, water deeply before the ground freezes.

**General routine practices in winter**

- Apply a winter mulch after the ground freezes. Winter mulches maintain even winter temperatures at the crown and surface roots of perennials by moderating rapid changes in temperatures that normally occur. The best winter mulches allow moisture and air to pass through. This is especially important for newly set plants, less important for established plants.

- Select plants for next year’s garden that are hardy to your area. New York State has USDA hardiness zones ranging from 4-7.
Master Gardener Perennial Gardening Review Questions

1. Most perennials prefer a pH of:
   a. 5.5 - 6.2
   b. 6.2 - 6.8
   c. 6.8 - 7.2

2. Name at least two dominant plants that would give provide color in mid summer.

3. Which of the following plants are best grown in the shade?
   Peony, Astilbe, Hosta, Iris, Primula, Coreopsis, Hemerocallis, Artemisia.

4. When is the best time the cut back Epimedium sp._

5. Name two plants that prefer a slightly alkaline soil.

6. When is the best time to divide the following?
   Peony _ Hemerocallis_ Phlox_

7. Perennials should be staked
   a. in early spring
   b. in autumn
   c. when they bloom

8. How can you stage the bloom time of a group of peonies?

9. When is the best time to apply a winter mulch to border
   a. after the garden is cut back in fall
   b. some time in December

10. Name two plants that flower in vertical stalks.
Recommended References on Perennials


Refer also to the list of Cornell Cooperative Extension publications on Perennials.
# Related Resources

## Vegetables

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<thead>
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<th>Title</th>
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<tbody>
<tr>
<td>Garden in the City</td>
<td>141L78</td>
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<tr>
<td>Grow with the Flow: Hydroponics</td>
<td>141M7</td>
</tr>
<tr>
<td>Vegetable Production Handbook (commercially oriented)</td>
<td>142VPH</td>
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<tr>
<td>Weed Control For The Home Vegetable Garden</td>
<td>161IB216</td>
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<tr>
<td>The Home Vegetable Garden</td>
<td>161IB101</td>
</tr>
<tr>
<td>The Heirloom Vegetable Garden</td>
<td>161IB177</td>
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<tr>
<td>Cover Crops for Vegetable Production in the Northeast</td>
<td>142IB244</td>
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<tr>
<td>Pest Management Around the Home Parts 1 &amp; 2</td>
<td>139S74</td>
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<tr>
<td>Natural Enemies of Vegetable Insect Pests</td>
<td>139NVP</td>
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<tr>
<td>Tomato Disease and Pest Identification (Fact Sheet Set)</td>
<td>VFSTOMA</td>
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<tr>
<td>Pepper Disease and Pest Identification (Fact Sheet Set)</td>
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These titles are available for review and sale at The Resource Center's online bookstore:

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These titles are also usually available through your local Cooperative Extension association office.
Cornell Website information on Vegetables

All Cornell website information on gardening is accessible through the Cornell Gardening Resources Website www.gardening.cornell.edu

The following are specific sections of the Cornell Gardening Resources Website as of Dec.15, 2004. New web pages are added regularly. Please check www.gardening.cornell.edu periodically for updates and new information.

http://www.gardening.cornell.edu/vegetables/index.html

http://www.hort.cornell.edu/extension/commercial/vegetables/ (commercially oriented)

http://www.nysipm.cornell.edu/vegetables.html

http://www.entomology.cornell.edu/Extension/DiagnosticLab/IDLFS/index.html

Cornell Visual Presentation Resources in Vegetables
Master Gardeners may borrow resources from the Department of Horticulture’s Home Grounds and Community Horticulture Resource Library in Ithaca, NY. MG’s should discuss it with their county MG Coordinator and reserve a resource through that staff person. Resources in this library are slides, powerpoint CD-ROM’s and videos. They are generally used by Master Gardeners to make presentations to community groups as part of the county CCE’s educational mission. The \[\] symbol means that it is appropriate for the Core Qualifying Course for Master Gardeners. The number preceding each resource is its library code number in Ithaca.

VEGETABLES
68. Home Storage of Fruits & Vegetables Slide Set (64 slides & script) NRAES, Cornell University
122. Growing Vegetables in the Home Garden Slide Set (176 slides & script) M. Eames-Sheavly, Cornell University
130. Natural Enemies of Vegetable Insect Pests Slide Set (91 slides & script) M. Hoffman & A. Frodsham, Cornell University
134. Late Blight: A Serious Disease of Potatoes and Tomatoes Slide Set (16 slides & script) D. Karasevicz, Cornell University
136. Heirloom Vegetables Slide Set (77 slides & script) B. Becker, Cornell University
157. Organic Gardening Slide Set (80 slides & script) K. Hennigan, C. Mazza, S. Cunningham, Cornell University, 2001
CD-5 Organic Gardening CD-powerpoint -- 80 frames (images and/or text) & script – K. Hennigan, C. Mazza, S. Cunningham, Cornell University, 2001
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<tr>
<td>Sequence of Bloom of Perennials, Biennials and Bulbs</td>
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<td>Gardens of Fabulous Flowers</td>
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<td>Ornamental Grasses for the Home and Garden</td>
<td>141IB64</td>
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<td>Pest Management Around The Home part 1 &amp; 2</td>
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<tr>
<td>Pest Management Guide for the Production and Maintenance of Herbaceous Perennials</td>
<td>160PMRHP</td>
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<tr>
<td>Herbaceous Perennials Production: A Guide from Propagation to Marketing</td>
<td>123NRAES93</td>
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Cornell Website information on Perennials
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http://www.gardening.cornell.edu/flowers/index.html
http://www.explore.cornell.edu/scene.cfm
http://plantclinic.cornell.edu/flower/index.htm
http://www.entomology.cornell.edu/Extension/Woodys/CUGroundCoverSite/GroundcoverMain.html

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Flowers/Herbs
52. Flowers and Landscaping Slide Set (50 slides & leaflet)
58. Spring-Flowering Bulbs Slide Set (93 slides & script) CCE/Nassau Co.
70. How to Plan and Plant Summer Gardens Slide Set (80 slides & script) National Garden Bureau
77. Perennials for New York State Slide Set (56 slides & script) D. Rakow, CCE/Broome Co.
114. Introduction to Gardening with Herbs Slide Set (70 slides & script) J. Mishanec
128. Lesser Known Perennials Slide Set (80 slides & script) L. Nelson, CCE/Broome Co.
139. Herbaceous (Perennial) Ornamental Plants Slide Set (338 slides & script) S. Still, Ohio State University
141. The Culture of Garden Roses Slide Set (47 slides & script) Cornell University
154. Herbs & Their Uses Slide Set (69 slides & script) A. Comfort, CCE/Chenango Co.
156. Perennials for Upstate New York Slide Set (80 slides & script) Univ. of Maine, script adapted for NYS

V 23. Landscaping with Herbaceous Perennials Video, (120 min.) University of Wisconsin Extension

Ecological Perspective
CD-7 Invasive Plants of New York State. CD-powerpoint, 79 frames (images and/or text) & script, Community Horticulture Program Work Team, Cornell University, 2004.