



William T. Kemper Center for Home Gardening

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Gardening with Annuals

Annuals are plants that complete their life cycle in one growing season and die after producing seed. Due to their short life span, they are very free-flowering with bloom periods that far outlast most perennials in the flower garden. As such, they are often interplanted among perennials to help provide continuous bloom in the mixed flower border. Annuals are also used as bedding plants, for cut flowers, as dried flowers, in containers, hanging baskets, window boxes, ground covers and as screens. It is no wonder that many consider annuals the mainstay of the flower garden.

Types of Annuals

Hardy annuals are the most cold-tolerant of all of the types of annuals. The term hardy, as it applies to plants, refers strictly to the ability to withstand cold. Hardy annuals may be planted in early spring or in the fall allowing them to bloom again the following spring. Some examples of hardy annuals include pansies and Johnny jump-ups (*Viola tricolor*).

Half-hardy annuals will tolerate periods of damp or cold weather but may be damaged or killed by frost. Along with the hardy annuals, these are the plants that we typically think of as spring annuals. Half-hardy annuals include toadflax, calendula and nasturtiums which are typically planted some time after the third week of March.

Tender annuals for the most part are native to regions of the world where summers are warm and winters are mild. Tender annuals need warm soil temperatures and should only be planted after all danger of frost has passed. Summer annuals such as celosia, zinnias and petunias may be safely planted outside after May 10th in Missouri.

The definition of an annual is often extended to include biennials and tender perennials. Biennials are plants that need two years to complete their life cycle. These plants grow vegetatively the first year, producing only leaves. The second year they flower, set seed and die. Biennials are typically purchased as small plants after their first year of growth has been completed and are treated as annuals in the flower garden. Foxgloves, sweet William and money plant are among the biennials that are commonly grown as annuals in our region.

Tender perennials are plants that are hardy in warmer climates, but cannot survive the cold winters typical of much of the continental United States. These plants do not die after setting seeds as most true annuals, but are easily damaged by frost and lack the hardy root systems of true perennials. Some representatives of tender perennials include lantana, coleus and heliotrope.

There are also many annuals that come back from seed year after year. These plants reseed at the end of the growing season. The seeds lie dormant during the winter and then sprout when the soil warms in the spring. Cleome, alyssum, nicotiana and salvias are among the many annuals that freely reseed themselves.

Growing and Choosing Annuals

Gardeners with a little extra time and space might want to start their annuals indoors from seed. There are several good reasons to consider starting your annuals from seed. For one, it can be very gratifying to be involved in the whole process of growing plants from start to finish. Another good reason is that it is very inexpensive to start plants from seed. Gardeners can produce literally dozens of plants for the cost of one packet of seeds. A much wider selection of types and varieties of plants is available from seed racks and catalogs than is available at nurseries.

Some annuals are started from cuttings. Geraniums, coleus, ornamental sweet potatoes and impatiens are easier to propagate from stem cuttings than seed. Stem cuttings can be taken in the fall and overwintered indoors; then planted out the following spring. Cuttings may also be taken in the spring for planting in summer. The advantage of starting plants in this manner is that you can produce many plants from a single stock plant. The disadvantage is that you will need to have stock plants on hand.

When starting plants from seeds or cuttings, begin by purchasing a good, basic book on plant propagation. In addition to providing information about the materials and techniques necessary for taking cuttings and sowing seeds; it will also assist you with accurately timing the sowing of seeds for the planting-out date for your area.

With a few exceptions (such as cleome and nasturtiums that resent transplanting), most home gardeners purchase annuals as small plants from the nursery. While there are many things to take into consideration when choosing annuals, light requirement is probably the single most important limiting factor. In general, most flowering annuals will require six to eight hours of full sun. Some exceptions include impatiens, coleus and begonias which perform better if given a shaded location in the landscape.

When shopping for annuals, look for plants with stocky foliage and healthy, white root systems. Avoid plants with lanky foliage or roots that show any symptoms such as a blackish-brown discoloration or a foul smell. Plants should also be free of any signs of pest or disease problems. If possible, resist the urge to purchase plants that are already in flower. While it may provide for instant gratification, these plants will concentrate their energy on producing more blooms rather than on developing the healthy root systems they need to become established in the flower garden.

Planting Annuals

Most annuals prefer slightly acidic, well-drained soil with a moderate humus content. For gardeners with poor soils, two to three inches of compost, well-rotted manure or other organic material should be tilled or forked into the soil. The addition of calcined clay will also help improve the drainage of poor soils. While it is best to start with a soil test to check for nutrient deficiencies, a complete fertilizer such as 12-12-12 can be worked into the soil at the rate of one pound fertilizer per 100 square feet. Choosing a slow-release fertilizer will minimize plant and root damage caused by over-fertilizing.

Apply slow-release fertilizer according to the directions on the bag. Starter fertilizers are also available to give newly set plants a head start in the garden. Starter fertilizers differ from balanced fertilizers in that they have a high phosphorous content (such as 10-52-17) which encourages strong root growth.

Before planting, check labels for spacing requirements and resist the urge to overcrowd. Overcrowding will decrease air circulation thus inviting insect and disease problems. Lay your plants out according to the spacing directions on the label. Remember to water transplants well before placing them in the garden. This will help keep the roots moist and the soil from falling off of the root ball thereby lessening transplant shock.

After you have arranged your plants in the garden, you will want to dig a hole and plant your transplant at the same level in the ground as it was in the container. Planting too deep will encourage stem rot. Planting too shallow will cause the roots to be exposed and the plant will dry out. If you applied a mulch layer before planting, make sure to dig into the soil past the mulch layer. Planting in mulch will lead to failure.

After removing each transplant from its container, tease the roots a bit. Place the transplant in the hole, cover with soil and firm soil around it. Don't forget to water in well! New transplants will require daily watering for the first week or two until the roots are firmly established. Do not allow the soil to dry out.

After your annuals have become established, fairly frequent, deep waters will help them develop strong, deep root systems. As a general rule, annuals require about an inch of water per week. If possible, water your plants in the morning. Watering plants in the evening can encourage fungal diseases to develop. As a final note, choosing drought tolerant species such as Dahlberg daisies, globe amaranth and Mexican zinnias will help to keep watering to a minimum.

Maintenance

After planting, applying a one-to-two inch layer of mulch will provide many benefits to your garden. Mulch helps retain soil moisture and stabilize soil temperatures by slowing the rate of cooling and heating. In addition, mulch discourages weed growth in the garden by preventing weed seed germination. Organic mulch made from plant material such as straw, leaves or bark, improves the soil by adding organic matter and nutrients to the soil as it breaks down. Finally, mulch will greatly improve the appearance of the planting site. When applying mulch, always remember to keep it away from the stems of plants as this may encourage fungal diseases, such as stem rot, to develop.

Some annuals, such as petunias, will benefit from an application of a balanced fertilizer such as 12-12-12 applied approximately every six to eight weeks. It is important to note, however, that many annuals such as cleome, cosmos and portulaca require very little in the way of fertilizer. These annuals, in fact, do better in relatively infertile soil. The safest method for boosting the soil's nutrient content, as mentioned earlier, is to apply a slow-release fertilizer. A side-dressing of compost and well-rotted manure, which also breaks down slowly, will help to enrich the soil over the growing season.

Nearly all annuals will benefit from pinching back the plant's growing tip. Pinching back will encourage bushy growth. Pinch young plants back when they are between two and four inches tall or when plants have become too stretched or leggy. Remember to always prune or pinch back growth at the leaf node (the place where the leaf meets the stem). This will help your plant keep a tidy appearance as well as discourage fungal disease.

Deadheading is the process of removing spent flowers before they go to seed. Deadheading forces a plant into flower production thus increasing the number of blooms produced. Some annuals that benefit from frequent deadheading include cosmos, dianthus and zinnias. You may want to ask your nursery person for varieties that self-deadhead to help keep garden maintenance tasks to a minimum.

Many of the taller annuals will require staking to remain upright. Use long plastic, metal or bamboo stakes and soft cord tied to the stake and looped around the stalk of these plants to provide gentle support. You can also purchase special rings or grids that can be inserted into the ground to provide support.

Insects and diseases

The best defense against insect and disease problems is good planning. Whenever possible, choose disease-resistant varieties. In addition, planting a diverse selection of plants in your garden will decrease the possibility of losing an entire planting to a specific pest or disease problem. Providing a diverse planting also encourages beneficial insects to visit your garden. Beneficial insects prey on garden pests reducing their numbers in the home landscape.

Good cultural practices will also help decrease the numbers of pests and diseases in your garden. Some common pitfalls of inexperienced gardeners that weaken plant vigor include skimping on or completely ignoring proper soil preparation and watering practices, planting plants too close together and planting sun-loving annuals in the shade and shade-loving annuals in the sun. Failing to remove weeds in a timely fashion can also cause problems in the flower bed. Weeds compete for sunlight, nutrients and water. Weeds may also harbor unwanted insect pests. Perhaps the most common mistake made by gardeners is planting tender transplants out before the climate and soil have sufficiently warmed. These weakened plants rarely recover their full vigor.

If diseases and/or insects do become a problem, always consider the least toxic method of pest control. Often, this may mean techniques as simple as hand-picking, applying a strong spray of water from your garden hose or pruning away the affected area. Regular monitoring of your garden will help you become aware of any potential problems. Treating pest and disease problems as soon as they occur often lessens the need for drastic measures. Following is a list of the most common pest and disease problems of ornamental annuals.

Aphids are small, soft-bodied pests that come in a variety of colors. Aphids plague a wide variety of garden annuals. They are usually found on shoots, flower buds or the undersides of leaves and often seek out soft new growth. Aphids suck out plant juices leaving foliage and blooms stunted and deformed. Sticky excretions, called honey-dew are often present on afflicted plants. The safest treatment is to wash them off with a strong spray of water from the hose. Insecticidal soap or a horticultural grade oil spray may also be applied to infestations. Encourage lady beetles to visit your garden as they are natural predators of aphids.

Annuals attract a wide variety of beetles that can be found munching on their flowers and foliage. Handpicking is the best solution for smaller infestations. Larger infestations may require the use of chemical controls. Sevin dust is often used to control beetles. Sevin is very harmful to both pests and beneficial insects, such as honeybees and butterfly larvae, so do not use in gardens whose aim is to attract wildlife. It is also recommended to avoid the use of commercial or homemade traps, as they often attract more beetles to the garden.

Mites are tiny pests that suck juices from the undersides of foliage causing plants to look dull and unhealthy. Mites cause plants to lose vigor and a severe infestation may result in plant death. Fortunately, there are many natural predators that feed on spider mites. If mites do become a problem, repeated spraying with a strong stream of water will help provide some control. For severe infestations, spray with insecticidal soap or horticultural grade oil.

Slugs thrive in moist, shady locations and can inflict serious damage to annuals. Suspect the work of slugs if large portions of your plant are disappearing, or if shiny, slimy trails appear on soil or foliage. For small infestations, slugs can be handpicked and destroyed. Slug traps can be made using a tuna or other small can

sunk into the ground and filled with beer. Diatomaceous earth scattered around the base of plants will also help to deter slugs.

Thrips are tiny, brownish-yellow insects that strip foliage of its chlorophyll. Thrips damage is most evident as flecked or silver-white streaking and stippling on foliage and flowers. Hosing affected plants off with water can usually prevent or reverse an infestation.

Both the adult stage and larval stage of whitefly damage plants by sucking out plant sap. Heavily infested plants can be seriously weakened and grow poorly. Leaves often turn yellow, appear dry and drop prematurely. Control of whitefly can be difficult. Try reducing pest populations by spraying plants with a strong stream of water every two to three days. Spraying with insecticidal soap or a horticultural grade oil will also reduce populations.

Botrytis blight, also known as gray mold, is a fungal disease that overwinters on affected plant parts. Botrytis blight causes buds and flowers to develop abnormally. Flowers may have irregular flecks and brown spots. Severely affected plant parts tend to rot quickly and may be covered with a gray mold following damp, cool weather. The best defense against botrytis blight is good sanitation. Always be certain to remove and destroy all infected plant parts as soon as they are observed. Some things to avoid include overhead watering, over fertilizing and overcrowding which all help to promote the initial development and spread of the disease. It may be necessary to spray severe outbreaks with a fungicide such as Bordeaux mix or chlorothalonil. But remember that fungicides are preventative, not cures.

Powdery mildew is a fungal disease that appears on plants as a white powdery cast on the upper leaf surface. This fungal disease afflicts a number of annuals including snapdragons and zinnias. The best defense against powdery mildew is to adhere to good cultural practices as noted. If it becomes necessary to use a conventional fungicide, a sulfur-based fungicide will be safest to both gardener and to beneficial organisms.

Spring Annuals

Common Name	Botanical Name	Light	Bloom Color	Height (in.)	Comments
Annual Baby's Breath*	<i>Gypsophila muralis</i>	full sun part shade	pink	6-8	Does not hold up well in Missouri's hot summers.
Swan River Daisy	<i>Brachycome iberidifolia</i>	full sun	purple, white, pink	6-8	Small, daisy-like flowers that work well in containers.
Pot Marigold	<i>Calendula officinalis</i>	full sun	yellow, orange	6-18	Edible flower that is sometimes called poor man's saffron.
Cornflower	<i>Centaurea cyanus</i>	full sun part shade	blue, lavender, white, purple	6-24	Plant in spring for early summer blooms.
Pinks*	<i>Dianthus chinensis</i>	full sun part shade	pink, purple, white, lavender	6-12	Deadhead frequently for increased bloom.
Sweet Pea	<i>Lathyrus odoratus</i>	full sun part shade	pink, white, purple, blue	vine	Does not do well in Missouri's heat. Very short-lived.
Toadflax	<i>Linaria maroccana</i>	full sun	many colors	6-24	An abundance of tiny snapdragon-like blooms.

Lobelia	<i>Lobelia erinus</i>	full sun part shade	purple, white rose	6-8	Does not do well in Missouri's heat.
Sweet Alyssum*	<i>Lobularia maritima</i>	full sun part shade	white, lavender, rose	8-10	'Snow Crystals' does best in hot Missouri summers.
Stock	<i>Matthiola incana</i>	full sun part shade	white, purple lavender, pink	10-24	Good cut flower with fragrant blooms.
Cupflower	<i>Nierembergia hippomanica</i>	full sun part shade	white, purple	6-8	'Mont Blanc' will flower into the summer.
Love-in-a-mist	<i>Nigella damascena</i>	full sun	white, blue, pink	6-18	Heavy reseeder. Pods are used in dried flower arrangements.
Nasturtium	<i>Tropaeolum majus</i>	full sun part shade	many colors	variable	Edible leaves and blooms.
Johnny-Jump-Up	<i>Viola tricolor</i>	full sun part shade	many colors	4-6	Early flowering annual with fragrant, edible blooms.
Pansy	<i>Viola x wittrockiana</i>	full sun part shade	many colors	6-12	Plant in fall for increased vigor. Edible blooms.

Summer Annuals

Common Name	Botanical Name	Light	Bloom Color	Height (in.)	Comments
Musk Mallow	<i>Abelmoschus moschatus</i>	full sun	cherry red, pink	12-18	Good butterfly plant but reseeds heavily. Aphids are sometimes a problem.
Floss Flower	<i>Ageratum houstonianum</i>	full sun part shade	blue, pink, white	6-30	Aphids and whitefly can be a problem.
Snapdragon	<i>Antirrhinum majus</i>	full sun	many colors	6-36	Deadhead frequently to encourage new blooms.
Wax Begonia	<i>Begonia semperflorens</i>	full sun part shade	white, pink, red, orange	6-18	Easiest to grow from transplants or from cuttings.
Caladiums	<i>Caladium bicolor</i>	shade	grown for foliage	6-24	Dig up tubers in winter and store in a cool, dry place.
Canna	<i>Canna x generalis</i>	full sun	red, orange, yellow	24 - 48	Dig up rhizomes in winter and store in a cool, dry place.
Vinca	<i>Catharanthus roseus</i>	full sun	white, red, purple, lavender, pink	8-14	One of the best annuals for hot, dry areas.
Cockscomb	<i>Celosia cristata</i>	full sun	many colors	6-24	Good cut and/or dried flower.

Celosia	<i>Celosia plumosa</i>	full sun	many colors	6-30	Good cut and/or dried flower.
Wheat Celosia	<i>Celosia spicata</i>	full sun	purple, pink	18 - 48	Good as a dried flower. Heavy reseeder.
Spider Flower	<i>Cleome hassleriana</i>	full sun	purple, pink, white, rose	36 - 60	Start from seed as cleome resents transplanting. Heavy reseeder.
Cup and Saucer Vine	<i>Cobaea scandens</i>	full sun	cream, purple	vine	Fast grower that can grow to 25 feet. Direct seed.
Calliopsis	<i>Coreopsis tinctoria</i>	full sun	yellow, maroon	12-24	Good cut flower. Direct seed in early spring. Will reseed.
Yellow Cosmos	<i>Cosmos sulphureus</i>	full sun	yellow, orange	12-24	Good cut flower and butterfly plant.
False Heather	<i>Cuphea hyssopifolia</i>	full sun	white, lavender	12-18	Tender perennial grown as an annual. Useful as an edging plant.
Dahlia	<i>Dahlia pinnata</i>	full sun	many colors	6-18	Resents Missouri's heat and humidity.
Hyacinth Bean	<i>Dolichos lablab</i>	full sun	white, purple	vine	Plant directly from seed. Pods are edible.
Blanket Flower	<i>Gaillardia pulchella</i>	full sun	red, orange, yellow	6-18	Smaller than the perennial form.
Treasure Flower	<i>Gazania rigens</i>	full sun	red, yellow, orange	6-18	Needs well-drained soil.
Globe Amaranth	<i>Gomphrena globosa</i>	full sun	red, pink, purple, white	6-18	Good dried flower.
Sunflower	<i>Helianthus annuus</i>	full sun	yellow, orange, red, white	12 - 144	Many new varieties and cultivars are available.
Strawflower	<i>Helichrysum bracteatum</i>	full sun	many colors	6-14	Good dried flower. Does not do well in Missouri's heat and humidity.
Heliotrope	<i>Heliotropium arborescens</i>	full sun part shade	purple, white	6-18	Fragrant perennial grown as an annual.
Chinese Hibiscus	<i>Hibiscus rosa-sinensis</i>	full sun	white, pink, orange, red	14 - 150	Habit varies from bushy to very upright.
Polka-Dot Plant	<i>Hypoestes phyllostachya</i>	part shade full shade	white, pink, red	8-12	Grown for its unique polka dot foliage.
Impatiens	<i>Impatiens walleriana</i>	part shade	many colors	8-30	One of the best annuals for shady areas.
Moonflower	<i>Ipomoea alba</i>	full sun	white	vine	Fragrant flowers open at night.

Sweet Potato Vine	<i>Ipomoea batatas</i>	full sun part shade	chartreuse, pink, purple	vine	Ornamental sweet potato that is great in hanging baskets and containers.
Morning Glory	<i>Ipomoea purpurea</i>	full sun	pink, blue, white, purple, bicolor	vine	Old-fashioned vine that needs vertical support.
Lantana	<i>Lantana camara</i>	full sun	many colors	6-24	Tender shrubs grown as annuals. Very heat and drought tolerant.
Statice	<i>Limonium sinuatum</i>	full sun	many colors	12-14	Good dried flower.
Blue Stars	<i>Laurentia axillaris</i>	full sun	blue, white	8-12	Star-like flowers on ferny foliage.
Melampodium	<i>Melampodium paludosum</i>	full sun	yellow	8-18	Does well in Missouri's heat and humidity.
Four-O'Clocks	<i>Mirabilis jalapa</i>	full sun	many colors	24 - 36	One to two inch flowers that open in part shade in the afternoon.
Flowering Tobacco	<i>Nicotiana glauca</i>	full sun part shade	many colors	12-30	Fragrant flowers that need deadheading for continuous bloom.
Nicotiana	<i>Nicotiana glauca</i>	full sun part shade	white	48 - 60	One of the most desirable accent plants for the late summer border. Very fragrant.
African Daisy	<i>Osteospermum fruticosum</i>	full sun	white, pink, purple	12-18	Well-drained soil. Prefers dry conditions.
Geraniums	<i>Pelargonium hybrids</i>	full sun part shade	many colors	12-18	Good bedding and container plants.
Egyptian Star Cluster	<i>Pentas lanceolata</i>	full sun	red, pink, white, lavender	12-36	Sub-shrub that is good for containers. Good butterfly plant.
Petunia	<i>Petunia x hybrida</i>	full sun	many colors	6-18	Many cultivars available. Petunias benefit from regular fertilizing.
New Zealand Flax	<i>Phormium tenax</i>	full sun part shade	bronze, yellow, purple, variegated	14 - 30	Upright, sword-like leaves that make great accent plants for containers.
Moss Rose	<i>Portulaca grandiflora</i>	full sun	many colors	8-12	One of the best annuals for hot, dry locations. Self- deadheading.
Flowering Purslane	<i>Portulaca oleracea</i>	full sun	many colors	8-12	Flowers need sun to open. Nice edging plant.
Black-eyed Susan	<i>Rudbeckia hirta</i>	full sun	yellow, orange, brown	8-36	Tolerates poor, dry soils. Great cut flower.
Texas Sage	<i>Salvia coccinea</i>	full sun	white, salmon, red	12-24	Good hummingbird plant.

Mealy-cup Sage	<i>Salvia farinacea</i>	full sun	blue, white	18 - 24	Good low maintenance annual that is a great cut and/or dried flower.
Scarlet Sage	<i>Salvia splendens</i>	full sun	many colors	8-28	Scarlet sage will benefit from regular fertilizing.
Coleus	<i>Solenostemon hybrid</i>	full sun part shade	many colors	8-36	Grown for its colorful foliage. Many new coleus cultivars are suited to full sun.
Creeping Zinnia	<i>Sanvitalia procumbens</i>	full sun	yellow, orange	12-16	Great low-growing annual that thrives on heat and humidity.
Fan Flower	<i>Scaveola aemula</i>	full sun part shade	blue	12-18	Fleshy stemmed annual that is excellent in containers and hanging baskets.
Dusty Miller	<i>Senecio cineraria</i>	full sun	yellow	6-18	Grown for its fuzzy silver foliage. Great foil for colorful annuals.
African Marigold	<i>Tagetes erecta</i>	full sun	yellow, orange	6-36	Great for hot, dry locations. Deadhead frequently for continuous bloom.
French Marigold	<i>Tagetes patula</i>	full sun	yellow, orange, white	6-24	Great for hot, dry locations. Deadhead frequently for continuous bloom.
Dahlberg Daisy	<i>Thymophylla tenuiloba</i>	full sun	yellow	6-8	One of the best annuals for hot, dry locations.
Mexican Sunflower	<i>Tithonia rotundifolia</i>	full sun	orange, yellow, red	24 - 60	Good plant for the back of the border. Very attractive to bees and butterflies.
Wishbone Flower	<i>Torenia fournieri</i>	part shade	white, rose, purple, blue	6-12	Attractive in containers. Does not respond well to heat and humidity.
Brazilian Verbena	<i>Verbena bonariensis</i>	full sun	lavender	36 - 48	Useful as a tall see-through plant in the back of the border. Heavy reseeder.
Hybrid Verbena	<i>Verbena x hybrida</i>	full sun	many colors	8-12	Does not do well in heat and humidity. Spider mites can be a problem.
Mexican Zinnia	<i>Zinnia angustifolia</i>	full sun	yellow, orange, white	12-24	One of the best annuals for hot humid conditions. Very low maintenance.
Zinnia	<i>Zinnia elegans</i>	full sun	many colors	8-36	Many forms and colors. Direct seed in midsummer for second flush of blooms.