

GARDENING TIPS



Improving the soil

You can garden in just about any soil, but when dealing with heavy clay or pure sand, the results can be difficult and rather disappointing. Clay soils are heavy, drain poorly, and often stay wet and cold for long periods, which delays planting. Water may gather and puddle up on them, drowning sensitive plants, and roots have a hard time pushing into them. However, clay soils are often very rich- when you can get them to release their nutrients.

Sand is completely different and the very opposite of clay. Water tends to drain right through it, so plants often suffer from a lack of water even shortly after a downpour. It also does not hold many nutrients, so it is often very poor.

The solution to correcting heavy clay soils and excessively sandy soils is to add plenty of organic material. We recommend using compost, leaf mold, decayed manure, chopped leaves, shredded bark, and peat moss to convert your poor soil into rich garden soil. Use whatever is most widely available and least expensive in your area. In order to effectively improve clay soils which are the hardest to convert, work in 6 to 8 inches of organic material to a soil depth of 12 inches. With sandy soils, 3 to 4 inches of organic material dug in to a depth of 6 to 8 inches is usually sufficient and it's much easier to do. In either case, it's important to keep adding 2 to 3 inches of organic matter every year.

Watering and Fertilizing

Remember these two rules when watering. When you need to water, water deeply, and put the water on the ground, not in the air or on the plants. If you do not follow these rules, you could end up with shallow-rooted, wilt-prone plants and mildewed foliage. Use a hose instead of a sprinkler, so you can direct the water to the ground or base of the plants without wetting the foliage. An excellent method of watering is actually using a drip or trickle irrigation. Avoid watering in the evening to prohibit the water from staying on your plants all night, encouraging fungal infections like powdery mildew. A third rule for perennial irrigation is to mulch. Mulching will slow down soil water evaporation, but it won't stop it completely.

Once your perennials are in the ground and growing, we suggest fertilizing them. But remember that it's easy to overfertilize perennials, especially with nitrogen, causing tender, lanky growth and fewer flowers. Plants need all three of the major nutrients in Nitrogen (N), Phosphorus (P), and Potassium (K), but they may need different levels at different times- more nitrogen in springtime when growth starts, more phosphorus when they're flowering, and more potassium in fall when major root growth occurs. In addition to these major nutrients, plants need secondary or micronutrients such as calcium, magnesium, sulfur, copper, iron, manganese, molybdenum, boron, chlorine, and zinc. If your plants show deficiency symptoms like the plant may be stunted, or the leaves may turn yellow along the veins or even display purple blotches, they may not be getting enough of these essential elements. Foliar feeding is the best way to supply nutrients to your plants quickly. Instead of being available in solution in the soil- a process that can take a very long time for some rock fertilizers, foliar feeding allows the nutrients to be absorbed directly through the leaves and can be

used by the plant at once. Both our fertilizer and micronutrients upon diluting with water are instantly ready to be applied to the plant's roots or leaves.

Mulching

Mulching has become very popular and has come into its own as a prime garden problem-solver. Apart from having good soil, mulch does more for plants than any other additive or technique. Some major benefits of mulching are:

- Conserves water.
- Mulched soil stays more evenly moist, stays moist longer, and requires less frequent watering.
- Mulch keeps down weeds, since many weed seeds need light to germinate, so you save both time and the work of weeding.
- Mulch keeps soil and nutrients from washing away during heavy rains.
- Mulch keeps soil temperatures more even, protecting plant roots and beneficial soil organisms against violent swings in soil temperature.

We suggest applying the mulch in two to three inches thick. Avoid mountain mulching and piling on the mulch which can suffocate your plants or provide a safe haven for unwanted voles. These are some of the more convenient and preferred mulches which readily available. All of these will biodegrade over time, adding humus to the soil.

The best time to apply a winter mulch on your beds or to mulch fall transplants is when the soil cools even freezes, and the plants have been killed back by a hard frost.

- Compost
- Grass clippings
- Leaves, shredded
- Newspaper
- Pine needles
- Straw
- Wood of bark chips, shredded

Perennial Pests

Pest Name & Description	Damage	Controls	Plants Attached
Aphids. Adults: 1/12"-1/5" long; green, reddish, or blue-black; pear-shaped, with 2 tubes projecting back from abdomen; some are winged, some wingless.	Leaves, stems, and buds distorted, sticky; look for clusters of small insects.	Wash pest from plants with a strong spray of water; use insecticidal soap sprays for serious infestations.	Many

Larvae: smaller version of adults.

Beetle, Japanese.

Adults: 1/3"-long, metallic blue or green beetles with coppery wing covers.

Larvae: 3/4"-long, plump, grayish white grubs.

Leaves and flowers with holes; may be skeletonized.

Handpick adults into can of soapy water; apply milky disease spores to lawn to control grubs; set up traps away from beds; spray heavily infested plants with pyrethrins or rotenone. Sevin is a popular choice.

Alcea, Aster, Astilbe, Digitalis, Gaillardia, Hemerocallis, Hibiscus, Paeonia

Borers.

Adults: moths or beetles.

Larvae: caterpillars or grubs

Stems exude sawdustlike material and break; leaves wilt; iris borers cause irregular tunnels in leaves, damaged or rotted rhizomes.

Apply *Bacillus thuringiensis* (BT) at first sign of borers. Destroy weeds where borers overwinter. Crush borers in iris leaves; dust the pyrethrins in spring.

Many

Leafminers.

Adults: 1/10" long; wasplike, with yellow-striped black bodies and clear wings.

Larvae: yellowish, stout, wormlike maggots.

Leaves with tan or brown blotches or serpentine tunnels.

Prune off and destroy infested leaves. Spray leaves weekly with insecticidal soap at the first sign of leafminers. Remove garden debris in fall.

Aconitum, Aquilegia, Chrysanthemum, Delphinium, Dianthus, Eupatorium, Gypsophila, Heuchera, Lobelia, Primula, Salvia, Verbena

Scales.

Adults: 1/12"-1/5" long, with grayish, brownish orange, reddish brown, or cottony white shells; males are winged, females wingless.

Larvae: tiny yellow, brown, or red nymphs.

Leaves turn brown, drop; plants may die.

Prune off infested stems and leaves. Remove scales with a cotton swab dipped in rubbing alcohol; spray severe infestations with pyrethrins or rotenone.

Helianthus, Iberis, Monarda, Opunia, Paeonia, Phlox, Verbena

Slugs and Snails.

Adults: 1/8"-8" long; gray, tan, green, black, yellow, or spotted, with eyes at the tips of small tentacles; snails have a single spiral shell; slugs are shell-less.

Leaves with large, ragged holes.

Place copper strips around beds; sprinkle sawdust, ashes, or diatomaceous earth around plants. Set beer traps in garden. Handpick at night into

Alcea, Asarum, Begonia, Bergenia, Campanula, Delphinium, Hemerocallis, Hosta, Iris, Ligularia, Primula, Sedum,

Young: smaller, paler versions of adults.		can of soapy water.	<i>Viola</i>
Spider Mites. Adults: 1/50"-long, reddish brown or pale spiderlike mites with 8 legs; wingless. Larvae: smaller version of adults.	Leaves stippled, reddish to yellow, with fine webbing.	Spray plants daily with a strong stream of water. Keep soil moist. Use insecticidal soap sprays for serious infestations.	Many
Whiteflies. Adults: 1/12" long, white, mothlike insects. Larvae: green, translucent, fly nymphs.	Leaves yellow; plant weakened.	Spray leaves with insecticidal soap. Destroy weeds to reduce whitefly populations.	<i>Chrysanthemum, Hibiscus, Lupinus, Primula, Rudbeckia, Salvia, Verbena</i>

Using Sprays and Dusts

Water. A forceful spray of water is often enough to control aphids and spider mites; it knocks them off the plants, and these slow-moving pest can't find their way back.

Insecticidal Soap. Soaps are contact poisons that are effective against out-breaks of soft-bodied pests like aphids and whiteflies. Insecticidal soap can be purchased commercially (Safer is a commonly available brand). You need to dilute it according to the directions, or you can simply make your by mixing 1 to 3 teaspoons of liquid dish soap (not laundry or dishwasher detergent) in 1 gallon of water. Works best if sprayed every two or three days for two weeks. Remember, it a contact poison and for it to be effective, it must be absorbed or consumed by the pests and insects. Rain and wind can easily remove the soap solution; therefore you will need to reapply.

Pyrethrins. Pyrethrin insecticides are made from pulverized dried flowers of pyrethrum daises (*Chrysanthemum cinerariifolium* and *C. coccienum*). Pyrethrins can be applied as a dust or spray are very effective against a wide range of insects. For best control, apply pyrethrins in the early evening; two applications 2 hours apart may be most effective. Do not use them near water (they are extremely toxic to fish) or pets. Make sure you purchase plant-derived pyrethrins, not synthetic pyrethroids.

Rotenone. Rotenone is made from the dried powder roots of *Lonchocarpus*, a genus of South American legumes. It is very effective against a wide range of insects and is more toxic to pests than pyrethrins, usually requiring only one application. It is not pest-specific and is highly toxic to fish and birds. Do not use it near water or pets.

Perennial Diseases

Disease Name	Symptoms	Controls	Plants Affected
Anthracnose	Stems with sunken lesions and pink blisters;	Thin stems to improve air circulation; clean up garden in fall, destroying	<i>Alcea, Hemerocallis, Hosta, Paeonia,</i>

	plants may die.	infected plant material. Treat severe infections with copper fungicide sprays.	<i>Tulipa, Viola</i>
Botrytis Blight	Shoots wilt suddenly and fall over; stem bases blacken and rot; gray mold may appear on crowns; buds wither and blacken; flowers and leaves turn brown.	Remove and destroy infected plant parts. Clear mulch from crowns in spring to let soil dry; site plants in well-drained soil. Spray shoots with Bordeaux mix in spring.	<i>Gladiolus, Lilium, Paeonia, Tulipa</i>
Leaf Spot Bacterial	Leaves with many small brown or purple spots; heavily spotted leaves may yellow or drop.	Remove and destroy infected plants. Wash hands and tools after handling diseased plants. Avoid injuring healthy plants and splashing water on plant foliage. Clean up garden debris.	<i>Aconitum, Delphinium, Geranium, Iris, Papaver</i>
Leaf Spot Fungal	Leaves with yellow, brown or black spots; leaves may wither	Remove and destroy infected foliage; thin stems or space plants to encourage air circulation; avoid wetting foliage when watering. Apply preventive sulfur sprays if leaf spot was severe last season. Clean up garden debris in fall.	Manny
Mildew, Powdery	Leaves covered with white powder.	Grow resistant species and cultivars. Spray with sulfur fungicide every 10 days during warm, wet water. Water in the morning, and avoid wetting foliage. Destroy infected leaves	<i>Achillea, Aster, Coreopsis, Delphinium, Monarda, Phlox, Rudbeckia</i>
Nematodes, Foliar	Leaves with yellow-brown spots or blotches;	Remove and destroy infested plants and the	<i>Bergenia, Chrysanthemum,</i>

	leaves die and turn brittle; symptoms move up the plant.	soil surrounding them. Clean up garden debris in fall. Mulch in spring to keep nematodes from leaves. Avoid wetting foliage when watering.	<i>Heuchera, Phlox</i>
Rot, Root	Leaves yellow; plant growth slows; roots rot off.	Plant perennials in well-drained soil; avoid damaging roots when digging around plants. Keep mulch away from base of plants. Wash tools between plants. Remove and destroy infected plants.	Many
Rust	Leaf surfaces pale, with powdery orange spots beneath.	Grow resistant cultivars; keep leaves dry; thin stems to encourage air circulation. Remove and destroy infected plant parts. Apply wettable sulfur.	<i>Achillea, Aconitum, Alcea, Anemone, Aquilegia, Campanula, Clematis, Delphinium, Dianthus, Iris, Liatris, Monarda</i>

Fungal Diseases

Most perennial diseases are fungal. Fungi are organisms like mushrooms that reproduce by spores, lack chlorophyll, and live on organic matter. Normally most fungi are beneficial, but parasitic fungi cause diseases, sapping the strength of host plants by growing and feeding on them. These fungi are microscopic but produce visible spores that are often easy to identify, like the white, cottony spores of powdery mildew or the orange spores of rust.

Fortunately, since they're the diseases you're most likely to encounter in your garden, fungal diseases are the easiest to control. We suggest growing resistant species or cultivars and using cultural practices to reduce the likelihood of infection. Some of the most effective fungicide sprays include:

Antitranspirants. Sprays like Wilt-Pruf that are intended to keep leaves from dehydrating have also been proven effective in preventing powdery mildew. We suggest using 1/3 of the recommended summer rate and reapply to cover new growth and after rain.

Baking Soda. One homemade spray that tests have shown to be effective in controlling a wide range of fungal diseases, including leaf spot, anthracnose, and powdery mildew, is a .05 percent solution of baking soda and water. Mix 1 teaspoon of baking soda in 1 quart of water, add a few drops of liquid dish soap or cooking oil to help the mixture adhere to the leaves, and spray on infected plants.

Bordeaux mix. This very powerful fungicide is a combination of hydrated lime and copper sulfate. It will control a wide range of fungal diseases. You can apply it as a dust or spray.

Fungicidal soap. Safer Garden Fungicide, which contains sulfur in a soap emulsion, controls fungi including powdery mildew, leaf spot, and rust on perennials. You can purchase it in a ready-to-spray or concentrate form.

PRUNING CLEMATIS

Pruning Group 1

- . Flowers appear in April or May on old wood
- . Prune only after flowering but before the end of July
- . Prune minimally, only as needed for size control and to thin out when overcrowded
- . Some references suggest that shoots that have flowered should be removed

Clematis alpine

Columbine
Constance
Frances Rivis
Frankie
Helsingborg
Pink Flamingo
Rosy Pagoda
Ruby

Subsp. Sibirica

White Moth
Tage Lundell
Willy

Clematis armandii

Apple Blossom
Snowdrift

Clematis x cartmanii

Joe

Clematis chrysocoma

Clematis cirrhosa

Var. balerarica
Freckles
Wisley Cream

Clematis gracilifolia

Clematis indivisa

Clematis koreana f. lutea

Clematis macropetala

Blue Bird
Jan Lindmark
Lagoon
Maidwell Hall
Markham's Pink

Clematis Montana

Broughton Star
Elizabeth
Fragrant Spring
Freda
f. grandiflora
Marjorie

Mayleen

Picton's Variety
var. rubens
var. sericea
Tetrarose
Warwickshire Rose
var. wilsonii

Pruninia

Rosie O'Grady

White Swan

Clematis

Pruning Group 2

- Large-Flowered hybrids with first flowers about mid-June on old wood, may reflower late on new wood.
- Prune in late winter to remove weak growth and twiggy side shoots.
- Remaining stems should be shortened slightly, leaving only robust buds. These will produce the first flowers.

Clematis patens

Andromeda	Gillian Blades	Multi Blue
Arctic Queen	Glynderek	Myojo
Asao	Guernsey Cream	Nelly Moser
Barbara Dibley	Haku-okan	Niobe
Barbara Jackman	J. F. Young	Peperial Pearl
Beauty of Richmond	Henryi	Pink Fantasy
Beauty of Worcester	Horn of Plenty	Pohjanael
Bee's Jubilee	James Mason	Prins Hendrik
Belle Nantaise	Joan Picton	Proteus
Belle of Woking	John Warren	Ramona
Blue Ravine	Kathleen Dunford	Richard Pennell
Bracebridge Star	Kathleen Wheeler	Royal Velvet
Burma Star	Keith Richardson	Royalty
Chalcedony	Kiri Te Kanawa	Ruby Glow
Cardinal Wyszynski	Lady Croline Nevill	Scartho Gem
Carnaby	Lady Londesborough	Sealand Gem
Carnival Queen	Lady Northcliffe	Serenata
Charissima	Lasurstern	Silver Moon
Corona	Liberation	Snow Queen
Countess of Lovelace	Lincoln Star	Sugar Candy
Crimson King	Lord Nevill	Sunset
Daniel Deronda	Louise Rowe	Sylvia Denny
Dawn	Marcel Moser	The President
Doctor Ruppel	Marie Boisselot	The Vagabond
Duchess of Edinburgh	Masquerade	Twilight
Duchess of Sutherland	Maureen	Wada's Primrose
Edith	Miss Bateman	Warsazwaska Nike
Edouard Desfosse	Miss Crawshay	W. E. Gladstone
Elsa Spaeth	Monrw Cassino	Will Goodwin
Empress of India	Moonlight	William Kennett
Etoile de Malicorne	Mrs. Bush	Vino
Etoile de Paris	Mrs. Cholondeley	Violet Elizabeth
Fair Rosamond	Mrs. George Jackman	VyVyan Pennell
Fairy Queen	Mrs. Hope	
Fireworks	Mrs. James Mason	
Fuji-musume	Mrs. N. Thompson	
General Sikorski	Mrs. P.B. Traux	
	Mrs. Spencer Castle	

Clematis

Pruning Group 3

- . Depending on selection, can start blooming as early as late-June on new wood, most bloom late in the season
- . Some species, some large-flowered hybrids
- . Cut back to 2-3 feet in late winter

Clematis addisonii	Purpurea Plena	Pagoda
Clematis aethusifolia	Elegans	Paul Farges
Clematis x aromatic	Abundance	Perle d Azur
Clematis x bonstedtii	Alba Luxurians	Perrin's Pride
Crepusule	Arabella	Pink Fantasy
Clematis campaniflora	Ascotiensis	Polish Spirit
Clematis crispa	Betty Corning	Prince Charles
Clematis x durandii	Bill MacKenzie	Princess Diane
Clematis x eriostemon	Black Prince	Rhapsody
Clematis flammula	Blue Angel	Rouge Cardinal
Clematis fusca var.	Blue Boy	Royal Velours
Violacea	Comtesse de	Star of India
Clematis heracleifolia	Bouchaud	Venosa Violacea
Var. davidana	Dutchess of Albany	Vistoria
Dorothy Walton	Ville de Lyon	Wyevale
Clematis hirsutissima	Elvan	
Clematis interfrifolia	Ernest Markham	
Alba	Etoile Rose	
Rosea	Etoile Violette	
Clematis x jackmanii	Gypsy Queen	
Alba	Gravetye Beauty	
Rubra	Guiding Star	
Clematis x jouniana	Hagley Hybrid	
Praecox	Huldine	
Clematis ladakhiana	Jackmanii	
Clematis potaninii	Jackmanii Superba	
Clematis recta	John Huxtable	
Purpurea	John Paul II	
Clematis rehderiana	Kermesina	
Clematis serratifolia	Lady Betty Balfour	
Clematis tangutica	Lady Bird Johnson	
Clematis terniflora	Madama Edouard	
(Sweet Autumn)	Andre	
Clematis texensis	Madame Julie	
Clematis tibetana	Correvon	
Clematis x tgriternata	Madame Grange	
Rusromarginata	Margaret Hunt	
Clematis viticella	Margot Koster	
Mary Rose	Minuet	

XERISCAPING

(Reducing water use by purposeful landscape planning)

PURPOSEFUL PLANNING

1. Select drought-tolerant plants. Drought-tolerant plants can take the heat, cold, wet and dry conditions.
2. Group plants with similar water needs together. This lets you water just a small area frequently while letting the rest of your plants survive in drier soil. If your yard has a low spot, use it for your water loving plants.
3. Reduce your lawn area by replacing with groundcovers and drought-tolerant ornamental plants. These plants need less water than lawns to survive and thrive.

PURPOSEFUL GARDEN MANAGEMENT

1. Add organic matter to your garden soil. This will help make water more available to your plants. Organic matter helps both sandy soil and soil with lots of clay. You can use compost, decayed leaves, or baled sphagnum moss.
2. Use mulch to help retain soil moisture. This will also help control weeds. You can use shredded bark, dried leaves, even stone. Mulch should be thick enough to reduce water loss from the soil but not so thick that it prevents rain from reaching the soil. One to two inches of mulch is usually sufficient. Remember to keep mulch several inches away from the trunks of trees and shrubs.
3. Follow wise watering principles. If possible, use a soaker hose in your garden areas. Whether you use a sprinkler or a soaker hose, water slowly so the water soaks into the soil. If it is running off instead of soaking in, reduce the rate of application. Don't water during the heat of the day when most of the water evaporates instead of going into the soil.
4. Water your garden plants deeply and infrequently. Trees, shrubs, and flowers should be watered to a depth of 8-12 inches then not watered again until they begin to show water stress (slight wilting, change in color) or until the upper soil is dry. To tell if soil is dry, squeeze a small handful. If it stays in a ball it is still moist; if it breaks apart, it is dry.

ROBERTA'S CURRENT AVAILABLE DROUGHT- TOLERANT PLANTS

H174895	Sedum Pink	Perennial	Sun
H174897	Sedum, Red Carl	Perennial	Sun
H187161	Gaura	Perennial	Sun
M17984	Columbine, Song Bird	Perennial	Sun
M19692	Lavender, English Munstead	Perennial	Sun
M22351	Daylily, fragrant re-blooming	Perennial	Sun
M22374	Lavender, Purple/Pink	Perennial	Sun
M23302	Baptisia	Perennial	Sun
M22310	Columbine, Double Clementine	Perennial	Sun
M23318	Sweetpea, Pearl Series	Perennial	Sun
M25667	Sempervivum	Perennial	Sun
M25920	Red Hot Poker	Perennial	Sun
M25926	Pincushion	Perennial	Sun
M25933	Sea Holly	Perennial	Sun
M25935	Ice Plant	Perennial	Sun
M25941	Baby's Breath	Perennial	Sun
M25947	Jupiter's Beard	Perennial	Sun

M25951	Cliff Maids, Alpine Rainbow Mix	Perennial	Sun
M25997	Thyme, Trample Me Creeping	Perennial	Sun
M29515	Lavender. Long Stemmed French	Perennial	Sun
M23283	Foamflower, Shady Lady Tiarella	Perennial	Sun
M105730	Hosta, Francee	Perennial	Sun/Shade
M105728	Hosta, Aureomarginata	Perennial	Sun/Shade
M105734	Hosta, Canadian Blue Small	Perennial	Sun/Shade
M105726	Hosta, Gold Standard	Perennial	Sun/Shade
M105736	Hosta, Mediovariegata	Perennial	Sun/Shade
M105732	Hosta, Wide Brim	Perennial	Sun/Shade
M20729	Sweet William , Super Deluxe	Perennial	Sun