Geranium Care for the Consumer

History

Geraniums are originally from the mostly dry and hot regions of South Africa. *Pelargonium peltatum*, today's commercial ivy types, were first introduced into Holland in 1700. *Pelargonium* x *hortorum*, today's commercial upright zonal types, were first cultivated in England by the Duchess of Beaufort in 1710. Most of the early breeding was done in England and later, in the 19th and 20th centuries, in Germany. Most of the current commercial varieties are the result of breeding work done in Germany. Fischer GmbH & Co., Hillscheid, Germany, the world's largest producer and breeder of geraniums, has over 110 geranium varieties on the worldwide market and is adding new varieties every year. Fischer USA, Inc. is the marketing and distribution arm for Fischer Germany in North America. These new modern varieties, all with better colors, bigger flowers, and improved growth habit, can be traced to around 20 natural species of *Pelargonium*.

Why Geraniums?

With 500 million geraniums produced in Europe and 200 million produced in North America, geraniums represent one of the most exciting commercial flower crops in the world. No other flowering plant has shown a greater rate of increase in dollar value to commercial floriculture and better performance to the purchasers during the last twenty years. Gardeners around the world love the overall beauty, toughness, and versatility of geraniums. Compared to many other plant species, geraniums can tolerate cold and hot conditions, can handle complete dryness, and are very resistant against pests. Their beautiful and long lasting flowers bloom continuously, from the last frost in the spring to the first frost in the fall. By following the guidelines below you can insure your success with geraniums in the garden.

Categories

The two main categories of geraniums are upright growing geraniums (*Pelargonium* x *hortorum*) and the trailing "ivy" geraniums (*Pelargonium peltatum*).The two types of upright geraniums are:
A: *Seed-produced geraniums*, often referred to as "hybrid" geraniums, have single flowers, smaller flower heads, and the blooms shatter relatively easily. Seed geraniums are used mainly for mass plantings. Because the flower heads naturally shatter they do not require removal of the old blooms.
B: *Cutting- produced geraniums*, often referred to as "zonal" geraniums, are genetically advanced, with sturdy, stronger "zoned" leaves, large shatter- resistant flower heads with semi-double florets, and a great variety of colors. They are an excellent choice for specimen plantings in flower beds, patio pots, and containers throughout the summer. The consumer can choose between dark green-leaved types and lighter medium-green leaved types.

Home Culture Tips for Cutting Produced "Zonal" Geraniums

Pre-Planting Care

Make sure to only purchase well-branched compact plants that have healthy root systems, fresh green leaves, and new emerging buds. Avoid tall, stretched plants with yellowing foliage and poor root development (brown roots).

When you get the plants home, don't let them dry out before planting. If you can not plant them immediately, place them in a bright location but avoid full direct sun**. Do not store them in dark areas, like a garage, for more than one day.** Geraniums like high light levels and plants that are stored longer than two days in low light or in a dark garage will lose the new buds and the foliage will turn yellow. If this happens, your plants will need up to one month to begin flowering again.

Preparation of Soil, Beds, and Pots

Pots, baskets, window boxes, or other containers should be thoroughly **cleaned and disinfected** before use. A good disinfectant is 1 part Clorox to 9 parts water. The pots should be cleaned well with the solution and hosed off with fresh water to remove any residue that would harm the plants. The **pot size** should be approximately 1.5 to 2 times the diameter of the potted pot purchased. That means a 6" potted plant should be planted into a 9" – 12 " container. Three 6" plants should be potted into a 14" –16" container.

For maximum growth, your potting mix soil should provide adequate drainage.

- For container gardening **use only high quality commercial potting mixes - do not use field or garden soil or poor quality inexpensive potting mixes.** The best potting mixes contain mostly coarse peat moss with vermiculite and perlite. Avoid mixes that have bark or wood chips unless they are well composted.
- If planting into flowerbeds, **make sure** to loosen the soil, and to add 30-50% compost or peat moss for increased drainage. Incorporate 1 – 2 pounds of a complete dry-formulated fertilizer for every 100-sq. ft. of bed at the same time. Instead of dry fertilizer, you can also incorporate controlled-release fertilizers (see fertilizer section below).
- Automatic irrigation systems should be designed to avoid wetting the foliage during watering - a drip irrigation system is preferred. Avoid watering on the same schedule as the lawn as this might provide too much water for the geraniums. Geraniums like to dry out between watering cycles.

Location

Make sure to choose a location where the geraniums get a minimum of 6 hours of full sun in the northern USA and Canada, 4 hours full sun in the middle of the US, and 2-4 hours in the southern parts of the USA. In the South, full sun with temperatures above 95 degrees F in the day and above 72 degrees F in the night can result in yellowing of the foliage. Light shade during the hottest hours, with morning or evening sun, is preferred under those conditions.

Geraniums generally grow best with day temperatures of 70 to 85 degrees F and night temperatures of 55 to 65 degrees F. If day temperatures are higher, some shade in the hot afternoon hours are helpful, to reduce stress. Because geraniums originate from the hot and dry regions of South Africa the plants can handle higher temperatures (up to 90-95 degrees F), but just will not perform at their best.

Planting

The planting should not be done during the hottest time of the day. The plants should be planted at the same level of the original potting soil. Water heavily immediately after planting.

As a rule of thumb, for proper spacing in flowerbeds, allow enough space in between the plants to accommodate the same diameter of the plants you are planting. For example, space 4" pots on 9" – 10" centers, 5" pots on 10" – 11" centers, 6" pots on 12" – 13" centers, and 7" – 8" pots on 15" centers.

If possible, mulch the plants in shortly after planting to help conserve water and prevent the soil from getting too dry during the hottest part of the summer. The most common types of mulch include shredded bark or bark nuggets. These are available in a variety of dyed colors or natural.

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Watering

Geraniums prefer soil that is moist. After receiving a good watering (This is very important!), the soil should become dry to the touch before the next watering. If possible, avoid watering over the tops of the plants and flowers. Do not over water your geraniums as this will result in root rot, especially when conditions are cold and cloudy and the plants are still small shortly after planting. During these times the water requirements of the plants are low until the plants become more established and the warmer weather arrives.

When the plants are actively growing, light rain showers or occasional sprinkling of the foliage does not provide enough moisture to constitute proper watering when the soil is dry. Geraniums will not wilt like most other bedding plants and show their need for water. For best results, water well and wait until the soil is dry to the touch before the next irrigation.

Fertilization

Geraniums need to be fertilized heavily and frequently. All fertilizers have three numbers on the bag that indicate the percent nitrogen-phosphorus-potassium in the fertilizer (example 14-14-14). The most important of these is nitrogen (the first number). Choose fertilizers that have a percent nitrogen level above 10, since nitrogen is the most important nutrient needed for growth of the plants. A long-term, controlled-release fertilizer can be mixed into the soil before planting or applied around the base of the plant after planting. Common brands include Polyon, Osmocote, or Nutricote. The draw back with these methods is that it is hard to see (unless you are experienced) when the fertilizer is used up or leached out by rain and irrigation. Once geraniums show nutrient deficiency (reduced flowering, small flower heads, small yellow leaves, reduced growth) the plants have already been under-fed for a few weeks. It will take another few weeks to recover from this lack of proper feeding. If controlled-release fertilizers are used, it is recommended to use them at the high rate and with a 9 month release, as they might actually only last 6 months under the hot summer conditions. A preferred way to fertilize is to apply water-soluble complete fertilizers that include micro-nutrients every third watering at the high end of the recommended rate. This method is more time consuming but supplies fertilizer to the plants at a more programmable rate. If plants are completely dry, irrigate with plain water before fertilizing, otherwise the roots might get burned.

Sometimes during the hottest time of the growing season, ivy geraniums will begin to turn their youngest leaves yellow. This is what is known as heat-induced iron deficiency. Some varieties are much worse than others. If you begin to see this occurring, then drench the soil around the plants with a solution of iron sulfate or iron chelate. Follow the directions on the label for proper mixing rates; however, usually a drench rate of 4 oz per 100 gallons of water applied every 3-4 weeks throughout the hottest part of the summer will help keep the new leaves green.

Removal of Spent Flowers and Leaves

It is important for the overall health, attractiveness, and development of the geraniums to remove all old flowers and yellow leaves on a weekly basis, especially after a heavy rainfall.

Ideally the whole flower stem should be removed at the junction with the main stem to avoid fungal diseases, especially under moist conditions. Care has to be taken to avoid damaging the main stem when removing the old flowers and leaves. The process of removing the old flowers is called dead-heading and is commonly done on a variety of annual flowering plants. If branches grow out of proportion they can be trimmed back to help keep a compact and bushy shape.

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Pest and Weed Control

The flowerbeds should be kept free of weeds and monitored for pests. The most common insect pests are:

- Aphids – small green ovate insects, usually clustered together at the growing tip of the plants. A good indication of aphids include small new leaves, small white outer-skin skeletons from the insect (molts), and sticky honeydew on the leaves. The honeydew can sometimes become blackish.
- Red Spider Mites – close to microscopic in size, the red spider mite is usually found on the under side of the leaves, very often within their delicate webbing (mainly on trailing ivy geraniums). Because of their size, red spider mites are hard to detect without the use of a hand held magnifying glass. Spider mites cause speckling damage on the leaves and sometimes cause the ivy leaves to get brown corky areas.
- Caterpillars – most caterpillars do their work at night. Look for circular holes in the edges of the leaves, freshly chewed flower stems, dark brown to black excrement left on the surface of the leaves.
- Bud Worms – look for small round holes in the new buds or for the small (1/4" –1/2") worms actively feeding on the buds. Wherever you see small moths or butterflies in and around the plants, expect to see bud worms several weeks later.

Treat, if possible, with environmentally friendly chemicals that are the least harmful to humans and animals. Inspect the plants periodically throughout the growing season for early signs of these pests.

Special Requirements for Trailing Ivy Geraniums

Although ivy geraniums have very similar needs to upright zonal geraniums, there are some differences which should be considered. Because of their trailing growth habit, they are primarily used in hanging baskets, window boxes, and containers. Ivy types generally tolerate less light and hot temperatures than the zonal types. However, recent breeding efforts in the ivy types have been to improve performance under high light and temperature conditions. New varieties like Barock ’99, Beach ’99, Taj Mahal, and Summer Rose Lilac from Fischer have much improved performance under extreme conditions. Cascades and the Blizzard-Cascades, which have medium to large single flowers, are more heat tolerant and an excellent choice for use in flowerbeds. Because of their single flowers that naturally shed, they are “maintenance free” since they do not require removal of the old flowers.

Most Common Problems With Geraniums

1. If geraniums don’t bloom enough, they usually don’t have enough light.
2. Most geraniums are over-watered in the cool and rainy spring and kept too dry in the hot summer months. A good sign for over- watered plants is if the bottom leaves of the geraniums get yellow and the leaves show pale yellow “water spots” the size of a pinhead.
3. If the entire plant looks a bit more pale yellow than green, then it lacks fertilizer.
4. If you look at the flower buds and see little holes in the buds, budworms are present. The plants have to be treated with a chemical that, if possible, should be environmentally “friendly” and the least harmful to humans and animals. When spraying the plants, make sure to try to include the inner leaf canopy where the worms might be hiding.
5. Most of the commonly available potting mixes in retail stores is too heavy, poorly drained, and does not allow for enough oxygen for good root development. Make sure to buy the best mixes you can get with good, well structured, peat.
6. Usually geraniums are planted too early, when the soil is still too cold and frost can still destroy the plants.

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7. If small plants have yellow leaves, few branches, and possibly brown roots, chances are very good that they never will grow into a good geranium. Always try to buy the best and healthiest plants available.

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