

Propagating Geraniums from Stock Plants

Richard J. McAvoy

Extension Floriculture Specialist

Propagating geraniums (ivies, zonals or regals) from cuttings requires the proper cultural conditions and strict sanitation. Geraniums, especially the zonal geraniums (*Pelargonium x hortorum*), are highly susceptible to bacterial blight. Bacterial blight is a devastating disease caused by *Xanthomonas pelargonii*. There is no cure for bacterial blight. Infected plants must be destroyed.

Due to the severity of this disease, growers need to be especially careful to maintain clean disease free plants. It is recommended that growers purchase clean plants, culture indexed (CI) material, each year. Carrying stock plants over from year to year is not a recommended practice. In addition, growers should never mix nonindexed geraniums or geraniums from unknown sources with their clean stock plants. Regal geraniums (*Pelargonium x domesticum*) and ivy geraniums (*Pelargonium peltatum*) which are not CI should not be mixed with zonal geraniums. Regals show resistant to *Xanthomonas* but are believed to carry the disease.

Growers wishing to produce and sell geraniums have several options: produce all of their own cutting, purchase all cuttings from a specialist, purchase half of their cuttings from a specialist and take one cutting from each plant or purchase prefinished plants from a specialist. Producing cuttings in-house requires that the grower first produce stock plants.

Sanitation is crucial and must be maintained throughout the entire stock-plant-cutting-production period. Sterilize everything which the plants will come in contact with before the clean stock arrives (i.e. benches, walks, tools, pots, etc.). Isolate the propagation operation from all other cropping and greenhouse activities. Avoid transferring soil between plants and benches (i.e. via splashing, contaminated hoses, workers, etc.). Insist that workers wash their hands and wear clean clothing (coveralls) in this area.

Stock plants are purchased in May or June. During the warm, high-light period of summer the plants are forced to increase in size and number. Stock plants require weekly care, including removing tip cuttings, removing large or old leaves, removing flower stems and shaping the stock plants to the desired form.

There are several strategies which can be used to shape and produce productive stock plants, including the conventional method where tip cuttings are removed at weekly intervals producing a large plant with numerous breaks, the tree-form or totem method where the stock plant is trained up a stake to make use of vertical space in the house and the logarithmic method where tip cuttings become additional stock plants. The logarithmic method requires less space initially and a maximum amount of space in the spring. The best method is the one which produces the most cuttings per square foot of greenhouse space per week for you—not the biggest stock plant. In the cool, dark winter months, plant growth will greatly diminish, therefore, shaping and propagating stock plants must be accomplished during the summer and fall before growth slows.

Cuttings for salable plants can be harvested beginning in March. The health and vigor of the stock plant will greatly influence how well the cuttings root. Soft succulent cuttings are not desirable. Geraniums are moderately heavy feeders but excessively high nitrogen will produce poor quality cuttings. Frequent irrigation under high temperatures and low light will also produce poor quality cuttings. Medium nitrogen levels combined with high phosphorous and potassium levels will produce the best cuttings. Supplemental light (300 to 700 f.c., 18 hours per day) will greatly increase cutting production.

Tip cuttings with two fully expanded leaves should be removed by snapping the shoot off the plant (breaking by hand) or cutting with a propagating knife. The plant must be turgid in order to break off cuttings, but this technique is desirable because it will not spread disease. Additional, single eye cuttings can be made from lower stem sections.

Single eye cuttings are stem sections from below the terminal stem portion, with one leaf and one axillary shoot. Do not make single eye cuttings from nodes which have produced a flower bud. These will not produce vegetative shoots. Started eye cuttings can be obtained by waiting a week or so after the tip cutting is removed and then dividing the lower stem portion after the axillary shoots have begun to grow.

Geranium cuttings can be rooted in a variety of materials. Oasis blocks, rubber plugs, peat pellets, rock wool, sand or direct stick will all produce acceptable results if good cuttings are used and the environmental conditions are correct.

Geraniums root best with a root zone temperature of 70° to 75°F (do not exceed 80°F). Air temperature should be 60°F at night and 75° to 80°F during the day. Mist is helpful but should be used sparingly and in combination with bottom heat. Mist intermittingly during the first 7 to 10 days only. Root cuttings in full sunlight in late winter. Rooting hor-

mones can be used but are not essential. Apply rooting hormones with a puff duster applicator. Do not dip cuttings into rooting hormones, as this practice can transmit disease.

In general, unrooted cuttings (direct stick) potted in early to mid-March will produce salable plants for late May. Callused cuttings need to be potted in late March for late May sale and rooted cuttings planted on about April 1 will be ready for sale in late May. Single eye cuttings will take longer to flower (10 to 14 days) and will require warmer initial night temperatures (70°F).

References:

Rogers, M.N. *Stock Plants in Geraniums III*, pp:114-133. Ed. Mastalerz and Holcomb, Pennsylvania Flower Growers, University Park, Pa. 1982.