

Cell Pack Production of Perennials by Tip Cutting: The Green Leaf Method

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At Green Leaf we produce cell pack perennials by four basic methods: seed, division, root cuttings, and tip cuttings. My talk will concentrate on the Green Leaf system of vegetative tip-cutting propagation with only a brief mention of the other three propagation methods.

We sow seed-grown perennials by two methods—a mechanical seeder and hand seeding in open flats. The bulk of our seeding is by machine, but there are types that are not practical to sow mechanically. For example, it's easier to hand sow the irregular seed types such as large seed (*Baptisia*), seed with tails (*Gaillardia*), and seed with special needs or long germination periods. After hand-sown seedlings are up, they are transferred to cell-packs.

We do a few plants from divisions—hardy geraniums, *Hemerocallis*, and Japanese anemones. Many divisions, however, are just too big for cell flats.

Root cuttings are used with some *Geranium*, Japanese anemone, *Phlox-paniculata*, *Pulmonaria*, *Aegopodium*, and *Stokesia*. Our root cuttings are done from December through early February. Root cuttings are relatively new for us, so we are still experimenting.

Most of our vegetative production of perennials is done by tip cuttings. We propagate by tip cuttings 12 months of the year. Of course, not every plant can be produced that way throughout the year. We grow cell pack liners in three different sizes—36, 54, and 72. Plant characteristics and needs determine which size will be used. All cell packs fit into a 10-20 tray for standardization of growing and shipping. Therefore, we can use the same shipping box for all plants.

We use only pre-mixed, bagged, peat-lite mixes. It may be cheaper to mix our own growing media, but we find the ease and uniformity of the bagged mixes to fit our needs. Any commercial, well-drained, artificial mix should work for you. If you mix your own, use a Cornell mix. Flats are pre-filled by a flat filler, and then set out for the sticking crews in the propagation houses.

The propagation benches are equipped with Bio-therm bottom heat and electronically controlled mist lines. Soil temperature is kept at approximately 68°F. The mist is adjusted depending on the time of the year, and the specific needs of the plants. Cuttings are misted until root growth is evident by physically testing the cuttings and then turned off. Rooting usually takes 2 to 3 weeks. The rooted cuttings are kept in the propagation house or moved to another warm area, until a full root ball is established. Depending on the type of plant and time of year this can be approximately 6 to 8 weeks. The flats are then moved to a holding area. In the winter, the holding area is run at approximately 34°F at night, to satisfy the dormancy requirements of the plants.

Tip cuttings are taken by production crews from stock plants or mature plants in cell flats. All stock plants are kept in greenhouses where we can control and manipulate their growing conditions. Most herbaceous perennials root best before

flower bud initiation when new, soft spring-like growth is used. We use heat, supplemental lighting, and good cutting techniques to increase the number of cuttings per plant and to lengthen our window of opportunity when cuttings can be taken. We try to take at least a 2-node cutting to ensure good rooting. Smaller cuttings seem to have less vigor and do not root or grow properly. The crews carry plastic wash baskets that they fill with the cuttings. Cuttings, baskets and all, are then dipped into wash tubs containing a solution of K-IBA (potassium salt of indolebutyric acid) and a fungicide. K-IBA is used at a rate of 2 tablespoons per 10 gal of water. Since the demise of Benlate, we have used several different fungicides. Cleary at 3 oz/10 gal or Domaine at 2 oz/10 gal has given us our best results. After dipping the cuttings for approximately 2 min, the crews take the cuttings in the baskets to the propagation tables and stick them into prepared flats.

The rooted cuttings are ready for sale after moving to the holding houses, but may sit on the benches for another 6 months. Storage can become a problem because overgrown or stretched plants can be a haven for insect infestation and disease.

We have developed what we call "the way back machine" which is an electric lawn mower mounted above a moving belt. This machine enables us to easily maintain the flats and produce a bushier, more uniform product. Two people can trim hundreds of flats in a day.