

## Unusual Hosta Propagation Techniques<sup>®</sup>

**Tom Kimmel**

P.O. Box 247, Berrien Springs, Michigan 49103 U.S.A.

The purpose of this paper is to describe two propagation techniques for hostas so that the grower can economically increase production of the newer and better cultivars of hostas while not having to buy in hostas with the concomitant risk of kik weed contamination. These techniques will triple the production over conventional splitting methods.

Leaf-bud cuttings work well in mid summer on the larger *Hosta sieboldiana* types such as; 'Sum and Substance', 'Northern Halo', 'Francis Williams', and also the *H. tokudama* types. In the winter dormant splitting of the dead eyes and other crown material is effective for increasing the production of the smaller hostas that already produce a lot of eyes such as; 'So Sweet', 'Francee', 'Summer Fragrance', and 'Halcyon'. These two techniques do not involve tissue culture, rossiting, treatment with growth regulators, forcing with lights, or heeling up. They can be easily trained and taught. Unfortunately they are much easier to explain with a few photos than with a lot of words.

Leaf-bud cuttings are done in midsummer when the leaf buds have had time to fully develop and there is still time for them to begin growing before going dormant in September. The procedure is begun by lifting a 2-year-old clump from the field and shaking or washing most of the soil from the roots. This clump is then cut in a conventional fashion into single divisions. There is usually a scape surrounded by leaves and with roots attached. The leaves overlap each other around the scape with a wide leaf base similar to that of celery. After first locating the outermost leaf it is pulled off revealing a triangular shaped leaf bud underneath it located at the base of the leaf and above the woody crown. With a small sharp knife make a vertical and slightly concave cut right behind the leaf bud such that the bud, some woody crown material, and a few roots are detached. The purpose of the small amount of material cut off is to allow for as many cuttings as possible. One then continues pulling off leaves and cutting leaf buds until either one runs out of leaf buds, which happens near the center of the clump, or too much crown material has been cut away such that leaf bud production has to stop so that the mother plant can still live. The mother plant is left with a few leaves and some roots. This is then either potted into a 1-gal pot or replanted in the field where it will make a single stalked plant the next year. A good sized 'Sun and Substance' stalk of 1½ inches in diameter will produce at least 3 and up to 10 leaf bud cuttings.

The leaf buds are then potted, from 50 to 75, in a bulb crate by inclining the bulb crate and placing a large handful of soil over each cutting, thus burying the bud about 1-inch deep. The bulb crate can be placed out in the growing area in the full sun and under the standard watering program. After 2 weeks new leaves will begin to show and after a month all of the buds will develop into new leaves and the roots will begin to grow.

Given the value of the plants which can cost up to \$3 if bought in from tissue culture, it makes economic sense to increase the growth as much as possible. This is done by putting the bulb crates into a shaded polyhouse. Hostas begin to go dormant at about the 13-h day length. Therefore, a 4-h night interruption is needed

in September and October to keep them growing. This night interruption lighting does not require high intensity growing lights but is done with regular house-type lighting. In mid November the heat is turned down and the lights are turned off and they are allowed to go dormant. More growth can be induced by heating early in the spring. This method produces a plant larger than a tissue culture cell and about the size of a number two field division. It takes about 5¢ worth of labor to make a division from leaf buds. And it is a method that works well with field production and makes use of a normally skilled work force. It is the only non-tissue-culture method that economically produces the *H. seiboldiana*-type hostas.

The second method, of splitting the dead eyes and all other dormant crown material, is more counter-intuitive as there are no visible leaf buds or eyes or anything discernible that would give one an indication that a plant might start from this material. The dormant division of perennials, and hosta in particular, is the standard propagation method and is done by the large field-grown perennial producers in the U.S.A. and Holland.

Conventionally a 2- or 3-year field clump is dug in the fall, generally after some frost has killed the foliage and certainly before the ground freezes, the soil is either shaken or washed from the roots, and it is stored in a cooler. The eyes, as they are called in the U.S.A., or noses, as they are called in Holland, are easily discernible as they are conical growths from the top of the crown that will the next spring develop into a set of leaves with a scape in the middle, which is the flower stalk. Conventional division is by cutting with a knife vertically around the eyes so that one or two eyes with whatever crown and roots are underneath them are produced. This is generally potted up in March into a container and placed in a polyhouse for sale as soon as foliage develops, or whenever the pot is well rooted depending on the ethics of the grower and the sophistication of the buyer. This method is economical where the increase is a geometric progression of 3 or 4 so that after 2 years in the field one will get from 9 to 16 eyes per clump. This can be improved upon. A close examination of the washed and dormant field clump shows that several eyes surround a dead eye. The dead eye is the conventional name for the eye that was growing in the previous season and that had a scape growing from the middle of it. The scape either is still attached to the dead eye or, if fallen off, has left a concave depression making the dead eye take the shape of a miniature volcano crater. Sometimes there is an extension of thickened root just below the dead eye that extends for several inches and has roots growing from it. We have found that there are a lot of leaf buds in all of this crown material that one cannot see.

Therefore, after conventionally dividing the clump for eyes, the dead eyes are quartered vertically so that there are some roots with each piece if possible. Then the vertical root material is sliced about every inch horizontally along its length. Any other crown material left over is chopped up and all of it is potted into a bulb crate in a similar manner to that for the leaf buds and set into a cold frame for the rest of the winter. It is difficult to describe what all of this material is that will make new hosta plants because there are no obvious leaf buds or eyes visible. The faith in this method is rewarded not only by a lot of new plants, but many of the quartered dead eyes will have 2 or 3 leaves sprouting from them in the spring.

Given the value of the hostas, it makes economic sense to heat these in early spring to get as much growth and root development on them before they are field planted or container potted in June.

The theory of these two techniques is to get all of the leaf buds to develop into plants. This will not happen naturally because of the apical dominance of the regular eye. Therefore any method that separates the small leaf bud from the larger eye will automatically destroy the apical dominance and then the new leaf will grow. These methods are easy to teach to the standard nursery work force and they do not require any specialized equipment.

There is a very bad weed that sometimes contaminates hosta roots. In Holland it is known as kiek, the common name is creeping field cress, and the Latin name is *Rorippa sylvestris*. It has little pieces of rhizomes that are impossible to completely wash out of the hosta roots and are not visible. There is no effective chemical control of the weed in the U.S.A. In Holland a mixture of 2,4-D and MCPA is used and this is not cleared for use in the U.S.A. Roundup or broad-leaf weed killers will defoliate the plant for a few weeks and multiple applications during the growing season will usually slow it down enough to prevent blooming and seed formation. Kiek looks like a miniature dandelion with deeply serrated leaves. The flower is small and yellow and on a long stalk. When it appears in the field, the soil should be dug up around the plant and the entire plant and soil carefully discarded. When we find the weed in a pot the whole pot, dirt, and plant are discarded. Cultivation of any kind only spreads the weed further by breaking small pieces off rhizome off and spreading it around. When we find it in the field we spray weekly with Roundup to slow it down until the field is fumigated with methyl bromide, which kills it. The more ethical hosta growers have made a serious effort to not sell contaminated plants. It is still a weed that needs to be carefully observed to limit its spread as it will put a nursery out of business if it takes over a bed or a field.

The purpose of explaining the above methods of propagating hostas is so that the nursery operators will be able to grow the better cultivars without resorting to buying them in from other growers. The better cultivars are those that keep their variegation all summer long even in the full sun and also have sweet-smelling flowers. There are a number of these improved cultivars that the breeders have been working on for years and they are much better than the old standard variegated ones that fade to a yellow green by mid-June.