

The World of Hosta Breeding

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INTRODUCTION

Of the 1050 *Hosta* cultivars registered by the American Hosta Society through 1994, nearly half were hybridized by bees, yet the introducers of these cultivars dared to call themselves hybridizers. To date, there are only 12 serious hosta breeders in the U.S.A.

While controlled crosses are the norm with iris and daylilies, such is not the case with hostas—yet! Surely, with controlled breeding efforts, we could far surpass the random efforts of our winged friends.

BREEDING HOSTAS

The Breeding Program at Plant Delights Nursery. We began our breeding program in 1984 to do just that—to make controlled crosses. After researching earlier breeding efforts, we found that most of the breeding had been done using only two species, *H. sieboldiana* and *H. tokudama* (now elevated to specoid status). The reason that many hostas looked like large blue-green clumps was due to the lack of new genetic material in the breeding lines. We began our breeding program, designed to produce distinctive-looking hostas, using as many species as possible in our breeding lines. The following hosta specoid have been used in our breeding program to date: *H. capitata*, *H. clausa*, *H. fortunei*, *H. hypoleuca*, *H. kikutii*, *H. longipes*, *H. longissima*, *H. montana*, *H. nakaiana*, *H. nigrescens*, *H. plantaginea*, *H. pycnophylla*, *H. rupifraga*, *H. sieboldiana*, *H. sieboldii*, *H. tardiflora*, *H. tibae*, *H. tokudama*, *H. tsushimensis*, *H. ventricosa*, *H. venusta*, and *H. yingeri*

Breeding Hostas in Containers. While some of our breeding takes place on plants in the field, most crosses are done with plants in containers. Bee pollination, which can introduce unwanted pollen, is a problem when crossing in the field, so we have developed “hosta condoms” which are placed over the bloom stalk to be used as the pod parent. In the morning when the blooms are receptive, we remove the condom and make the cross, replacing it after we are finished.

When breeding hostas in containers, we take the containers into a cooled greenhouse, where there is no danger of stray insect pollination. The daily crossing is done between the hours of 8 AM and noon, depending on the ripening schedule of the pollen to be used.

Our Goals in Breeding Hostas. Our goal, since 1989, has been to make at least 200 different crosses each season. Each cross is repeated from 5 to 20 times, so that we are assured of good seed set and a representative set of offspring. When making interspecific and other wide crosses, there is a high percentage of failure of pollinated plants to set seed. In a given year, nearly 30% to 40% of our crosses fail to set seed due to this phenomenon.

Procedures for Breeding Hostas. Each cross is tagged on the bloom scapes which contains information on both the cross and the date of the cross. We leave

the seed pods on the plants until they turn yellow, although the seed are actually mature within 30 days of the cross.

As the pods begin to yellow, the seeds are harvested and removed from the pods. The seeds are planted in a heated green house, with seeds from each cross sown in a community pot. A commercially prepared potting soil is used, and the seeds are covered lightly with the potting soil in the pot. The seed will typically germinate in 30 days or less. We will normally have to sort through about 20,000 seedlings each year.

By Dec., we have transplanted all of the desired seedlings into cell packs, usually culling down to 500 plants at this point. These seedlings remain in the heated greenhouse under 24 h of fluorescent lights, which speeds the growth of the seedlings. The young seedlings are fertilized weekly with a water soluble fertilizer. Hosta seedlings can be pushed without any dormancy requirement when they are at this age.

In May, these cells are transplanted into 1-gal containers, where the pots will fill with flowering plants during the summer months. By the end of their first summer, we hope to have reduced the number of plants remaining from the year's breeding efforts to 200 plants.

CONCLUSION

The goal of our breeding program is to produce attractive-looking, fast-growing, distinctive, fragrant hostas with good-looking flowers. Another goal of ours and many of the current hosta breeding programs are developing hostas with red leaves and flowers. While each hosta may not meet all of the criteria, it must fit our **10-ft rule**, which means that it must be distinctively recognizable from 10 ft away from any other current cultivar on the market.

To commercially bring a new hosta into the market will typically take about 7 to 10 years, varying of course with the use of tissue culture, or the size of market that one wants to reach.