Grower 101:

Propagating Herbaceous Perennials

The basics on how to propagate herbaceous perennials from tip cuttings.

By Sinclair Adam Jr.

Propagation of herbaceous perennials may be accomplished by a number of techniques. One of the most frequently used techniques is stem or tip cuttings. Stem cuttings are frequently taken from vigorously growing plants, inserted into propagation media and then rooted under intermittent mist systems. Stem cutting is the method of choice by growers for a wide range of herbaceous perennial cultivars. Plants that have a vertical growth pattern can usually yield stem cuttings. This method of propagation requires a high-humidity environment, with a high degree of temperature control. Plants propagated by this method may require the addition of rooting hormones for successful, uniform rooting. Temperatures will need to be maintained at a favorable range for rooting to proceed in a timely manner.

ENVIRONMENTAL CONDITIONS

While optimum environmental requirements for rooting cuttings vary by plant, most plants are tolerant of these parameters, allowing the requirements to be met in a way that provides successful rooting for many types of plants in the same propagation environment. Since many herbaceous perennials come from temperate habitats, they are tolerant of similar temperature ranges, and many different species can be rooted in a temperature range of 55-85°F. Optimum rooting rates occur at 68-72°F, but plants will root at higher or lower temperatures. The key is to provide a temperature range that can succeed with all of the species being rooted.

Generally, propagators set their system temperatures by experience and crop timing requirement, but lower temperatures can provide a significant cost savings and may not have negative effects on production schedules. Tabletop systems and under-bench heating systems are both effective approaches to meeting heat requirements. Other systems can be used but may decrease fuel efficiency or slow the rooting process, depending on how they are managed or how efficient they are in the first place. In the active growing season (May-October) additions of heat for rooting may not be necessary, depending on local climate and conditions. For this reason, propagators often do most of their herbaceous perennial propagation by stem cuttings in the active growing season. Again, optimum temperatures should be maintained, and cooling or shading can be of great value for in-season propagation. The cutting material for propagation is also readily available for collection at this time. Out of season, plants can be forced into vegetative growth by temperature or day length control, but this growth may be of inferior quality compared to material collected at the higher light levels that occur in the active growth phase under natural conditions.

HORMONES

Many species benefit from the addition of rooting hormone to the stem end of the cutting. Numerous commercial products are available, and if no prior experience with the product exists, it should be tested on a small batch of cuttings prior to application on an entire crop. Plants that are in a vigorous state of growth or are relatively easy to root, may not demonstrate any benefit from the addition of hormones. The use of a hormone is generally practiced by propagators for many species of plants and would typically be applied at the rate of 1,000 ppm active ingredient. Perennial species that root sporadically by tip cuttings without hormone additions have shown an increase in rooting percentages when a hormone is used. In order to provide a uniform, well-rooted crop, hormone additions are often the way to go.

Hormones are available in powder and liquid forms. Choosing which product to use for which plant will vary by operation. Propagators should use the most effective product for their needs, and perennial propagators may use more than one rooting product when propagating a number of different perennials. Frequently, the choice of hormone is influenced by decisions based on labor required or cost of treatment, but it is a good idea to know the effectiveness of the hormone for the target crop.

PERENNIALS FOR PROPAGATION

With so many plants in the industry, perennial propagation may seem a bit overwhelming, but to some extent, propagation strategies can be employed across many generic lines. The genera phlox contains a number of good perennial plants for landscapes and gardens. All of these plants can be propagated by tip or stem cuttings. Phlox subulata (moss phlox or mountain pink) will appear different from other phlox species due to a short internode distance and needlelike leaves. Cuttings taken from P. subulata are stem cuttings nonetheless, and will root just as successfully as other phlox species. Several nodes of tissue should be selected for stem cuttings and sized to fit the product package. Good, healthy cuttings will not result if too much material is harvested and cutting foliage is overlapping when under the mist system. Generally, 2-4 inches of material will work well, and cuttings are stuck in trays suitable to their size (72s for P. divaricata and P. subulata and 48-50s for P. paniculata).

A large number of perennial genera can be propagated by stem cuttings, including aster, dianthus, chrysanthemum, heliopsis, lamiurn, monarda and oenothera. Other perennial genera may not be as suitable for this propagation method. Coreopsis contains a number of selections that are readily produced by tip cuttings (the C. verticillata selections), and some that are not very good candidates for tip cuttings, such as Coreopsis auriculata nana. Some
genera are rarely or never propagated by stem cuttings such as asarum, hemerocallis, hosta, heuchera, pulmonaria and ferns.

**SCHEDULING**

For successful results propagating tip cuttings from these and other perennial groups, healthy, vigorously growing shoots should be selected. Shoots are best collected on cloudy days, early in the morning or in the early evening. If solar levels are too high, the cutting material can be damaged before it even arrives in the mist system. If the cuttings can’t be stuck immediately, then it may be possible to place them in a cooler or refrigerator in plastic bags, but the interval of storage should not be too long. Cuttings generally perform best when stuck promptly, but some propagation companies have started shipping unrooted cuttings from outside the United States with good results. The key to success is maintaining good protocol for collection, handling and storage of cutting material, regardless of the route the cuttings take to arrive in your mist system. Cuttings should be free of harmful pathogens, and for consistent results in propagation, stock plants are typically maintained with higher standards than those used for finished product. Stock plants should also be retired at a suitable interval.

Misting intervals should be set to meet the environmental requirements of the propagation zone. The best propagation systems adjust the mist interval to meet humidity, light and temperature levels and are managed by computer systems. It is also possible to manually adjust the mist intervals to meet the propagation requirements as environmental conditions change. The general idea with any mist system is to keep the foliage of unrooted cuttings moist, but not too saturated.

Schedules for cropping vary by firm, but typically, most stem cuttings will show evidence of root initiation within 2-3 weeks and may complete their stay in the mist system in 4-6 weeks. A period of post-mist finishing is usually required and typically lasts 2-4 weeks for most perennials. Frequently pinching the cutting flats will produce a nicely branched liner suitable for finished product, and pinching operations can be made shortly after the flats of perennials are removed from the mist. Total cropping time should be 6-8 weeks or less for perennials produced by tip cuttings. Successful propagation of uniform, healthy perennial liners generated from stem cuttings is possible for many greenhouse and nursery operations. By following the objectives outlined and through careful observation, a high degree of success is possible with these diverse and interesting plants. 

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