

Perennial Propagation And Production On The Texas Gulf Coast

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INTRODUCTION

Customer demand for herbaceous perennial color has steadily increased over the past few years, and will continue to increase as customers become educated in the landscape attributes perennials have to offer. Methods of propagating, producing, and marketing herbaceous perennials are as diverse as the number of species and cultivars available. It is the intent of this paper to present methods of propagation, production, and marketing of herbaceous perennials in the Gulf Coast region of Texas.

REGIONAL CLIMATIC INFLUENCES

Treesearch Farms Inc. is located in Houston, Texas. Houston has a humid, subtropical climate and is located in Zones 8 and 9 on the USDA Hardiness Zone Map. Temperatures in Houston can exceed 38C (100F) in July, Aug., and Sept., and sometimes drop to -9C (15F) in Jan. The average growing season in Houston is 300 days, with the average first frost occurring around Dec. 1st and the last frost occurring around Feb. 22nd. Winter temperatures are often very mild and temperature fluctuations are a common occurrence, creating production problems for nurserymen.

During winter, temperatures may be 21 to 27+ C (70 to 80+ F) in the afternoon only to drop to below freezing during the night. Precipitation is greatly influenced by the Gulf of Mexico and usually occurs from thundershowers which move in from the southeast. The average annual rainfall in Houston is around 127 cm (50 inches), with March the driest month, and May and Sept. the wettest months. Frozen precipitation rarely occurs in Houston and when it does it usually takes the form of sleet. The most feared weather phenomenon are tornadoes and tropical storms, such as hurricanes, which can destroy nursery buildings, greenhouses, and plant material.

SEXUAL PROPAGATION (SEED)

Only 5% of the perennial propagation at Treesearch Farms is done by seed with plants that are either too difficult to root or can be produced more efficiently and economically through seed. Examples include: *Gaillardia*, *Penstemon*, *Coreopsis*, *Echinacea*, *Asclepias*, *Liatrus*, and selected ornamental grasses. The 10 to 12 perennials which are seed propagated are hand sown from Jan. to March. Seed is sown 2 to 3 per cell into 121 Plug Trays® filled with 1 Fisons #5 plug mix : 2 perlite : 2 fine pine bark (by volume) and lightly covered with the same medium. The seeded flats are placed inside a greenhouse and manually misted twice daily with an overhead mist bench system. Upon emergence, the young seedlings are drenched weekly with Subdue® to prevent damping-off pathogens.

ASEXUAL PROPAGATION (CUTTINGS & DIVISION)

Ninety-five percent of herbaceous perennials at Treeseach Farms are propagated asexually, with cutting propagation as the most common method. Two distinct advantages of cutting over seed propagation of perennials are: 1) better uniformity and 2) faster turnover. Soft, vigorous stems from newly potted 1-gal stock provides the best rootable cutting material, with rooting exceeding 95%. This process also provides well-branched, full stock.

All perennial cuttings are processed in early morning. Plug trays are filled the previous day with the seed propagation medium. Before the cuttings are stuck, they are submerged in a bleach solution containing 2 tablespoons of bleach and 5 gal of water to eliminate pathogens. Since some species may be chlorine sensitive, cuttings are resubmerged into fresh water just prior to sticking. In general, most cuttings are processed so that they are approximately 8 to 10 cm (3 to 4 inches) in length with leaves stripped at the basal end and leaves left intact on the tip of the stem. Cuttings basal ends are dipped into a rooting solution of 1 Dip-n-Grow® : 10 water (v/v), and stuck at a 1-cm (0.5-inch) depth into the moist rooting medium. The cuttings are rooted under mist inside a polyhouse equipped with fans and vents to provide good ventilation and stable temperatures. The mist bench is sterilized before the cuttings are placed inside using a bleach and water solution. The bench is covered with polyethylene sheeting to maintain high humidity and prevent scorching.

Mist duration and frequency varies with season and weather patterns. Mist duration is set at 4 to 6 sec during cooler months and 8 to 16 sec during warmer months. Mist frequency varies from every 15 to 30 min in the summer months to every 45 to 60 min in the spring and fall. During cloudy and rainy days, the cuttings are monitored and mist frequency and duration is cut back to prevent waterlogging and rotting. During winter months, bottom heat is used to enhance soil media temperatures and decrease the time to root cuttings.

Most perennial species are rooted and ready for removal after 14 days. Newly rooted cuttings are then placed in a hardening-off or acclimation area and monitored closely. During summer months, the rooted cuttings are hand-misted once every 2 to 3 h to prevent stress during the acclimation process. The young plants are fertilized through a Dosatron® Injector using a 300 to 400 ppm continuous feed of 20N-18P-18K Technigro-plus®. After 10 to 14 days, the young plants are actively growing and ready to be potted up.

DIVISION

Division of plants such as daylilies, rain lilies (*Zephyranthes*), and grasses, which do not come true from seed, is a quick, uniform method to increase production numbers. The time of the season is often critical for successful divisions. "Bulbous" plants such as lilies, society garlic, ligularia, and iris are more successfully divided during the dormant period, whereas grasses and sedge are more successful in the late spring and summer. "Bulbous" plants are gently divided by hand. The medium around the bulbs is carefully removed from the roots, damaged roots are trimmed back, and the bulbs are placed in slatted baskets and kept moist and out of direct sunlight until potting can begin. Bulbs are triangulated with 3 per pot and covered with 4 to 5 cm (1.5 to 2 inches) of pine bark medium. The triangle method produces a fuller, 1-gal plant in less time.

Ornamental grasses and sedges are divided using folding pruning saws or, for larger clumps, carpenter's saws are sometimes used. The clumps are quartered and the leaf area is trimmed to prevent stress and facilitate handling. Damaged roots are trimmed off, and the divisions are kept moist and out of direct sun until potting can begin. With some grasses, the divisions are often too small to place directly into a 1-gal pot. In these cases, 4-inch pots with a peat based medium are used.

For larger divisions, plants are potted directly into 1-gal containers. The fresh divisions are placed in a 25% shaded greenhouse until active growth resumes and they can be placed in full sun.

PRODUCTION AND CULTURE OF PERENNIAL PLUGS

After acclimation and when the perennial plugs have begun to actively grow, they are brought to the potting table for transplanting. Generally, 2 to 3 plugs are planted per 1-gal pot in a medium consisting of 3 remilled pine bark : 1 Hadite® (v/v), with 3.6 kg m⁻³ (6 lb yd⁻³) of nitrogen (Nutralene® + Nitroform®). During potting, the roots are gently reoriented to prevent circling and to help establish the root system more rapidly. The newly potted plants are placed on a nursery trailer and watered in with a solution of Superthrive® and Subdue®. The plants are placed inside polyhouses equipped with floor bottom heat, fans, and louver vents. The plants are watered by hand and are fertilized at each irrigation (fertigated) with 500 ppm soluble fertilizer using a Dosatron® fertilizer injector. The well water at Treesearch Farms has a pH of 8.4 and phosphoric acid is added to fertigation tanks to lower the pH to 6.5.

After approximately 6 to 8 weeks, the plants are well rooted in the containers and can be sold directly from the greenhouse, moved outside to the container yard for further growth, and/or used as stock plants for future cutting material. If the plants are moved outside, they are top-dressed with 21N-7P-11K Slocote® slow-release fertilizer and Ronstar® preemergence herbicide.

PESTS AND DISEASES

Constant monitoring of crops has proven very successful in early detection of disease and insect problems. The greenhouses at Treesearch Farms are scouted daily to check for insects and diseases, and the whole farm is walked twice a week. Most disease and insect problems are observed inside the greenhouses and coldframes where high humidity, low air circulation, and plant crowding help insects and disease get a foothold. Outdoors in the container production area where plants are under full sun, well spaced, and have good air circulation, very few problems are found.

White fly and spider mites are the main, persistent pests, and can cause unsalable plant material. An IPM approach is used to monitor the pest population with crops being flagged and subsequently sprayed as needed. Rotation spraying of Avid®, Enstar®, horticultural oils, insecticidal soaps, and synthetic pyrethroids, using two-cycle Solo® jet-pak sprayers has been very successful at keeping insect populations at non-damaging levels. In mid-summer, with high temperatures and relative humidity, root rot pathogens become very prolific. To combat root pathogens in perennial crops, top dressing with Banrot® or Subdue® granules has proved very successful. The biggest key in eliminating these types of problems has been the constant monitoring of plants by a well-trained staff.

PRODUCTION SCHEDULING AND SALES

One of the biggest challenges in growing perennials is knowing how many to grow, what species to grow during what time of year, and in what pot sizes. To solve this dilemma, we have added an option to our computer and inventory system. The option allows us to look at what species sold, during what times of the year, and in what pot size. With this monthly and biannual information, we can better plan production and have crops ready in a timely manner. This option has helped in eliminating some of the guesswork in perennial production planning.

One of the biggest problems facing perennial growers is selling plants when their growth has peak ornamental characteristics. This avoids the need for added inputs to keep the crop marketable. While the computer system has eliminated crop number guesswork, another piece of electronic equipment that has become a necessity is the fax machine. Each Friday, a weekly availability list is compiled with the following information: 1) species available, 2) size of plants, 3) price, and 4) a short commentary on the plant product. The fax is sent via computer modem each Monday at 8:00 AM and reaches 30+ retail nurseries and 30 to 40 landscape contractors and landscape architects. The fax program has been one of the best additions to our sales system, and has helped our customers immensely by eliminating travel time and plant locating. The Fax is also used to help us move crops that have been discounted so that no further maintenance and production inputs are put into the crop.

CONCLUSION

The demand for herbaceous perennial color has increased as customers have become educated in the landscape attributes perennials have to offer. Perennials are easily asexually propagated by cuttings and division. Constant monitoring of perennial crops for diseases and insects allows a more environmentally safe approach, if problems are recognized early and the proper control is implemented. Tracking of sales records by species, size, and numbers sold through computer records eliminates much of the guesswork involved with production scheduling. The weekly faxing of available plant materials to customers has been very helpful in selling perennial crops which are in prime condition. The fax machine can also be used effectively to move discounted crops so that further production inputs are not necessary. The lack of customer education is one of the biggest problems facing perennial growers. However, this problem can be minimized by informing customers and potential clients about the attributes of perennials! Good luck in your perennial production program!