GREENHOUSE PRODUCTION of HERBACEOUS PERENNIALS FOR CUT FOWERS

Phlox paniculata (Garden or Summer Phlox)

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Phlox paniculata is a herbaceous perennial that produces long-stemmed cut flowers in mid to late summer when grown under field conditions, but demand and prices for these stems are best during winter and spring. Research has been conducted at the University of Georgia over the past two years to develop comprehensive systems for off-season forcing phlox in greenhouses, and this report presents results from our 1998 studies. In the April edition of The Cut Flower Quarterly we will present results from our work completed in 1999.

Phlox are long-day plants that flower in photoperiods longer than 10 hours, and although cooling of plants is not required for flowering, cooling has been shown to increase stem length and accelerate flowering. Our initial studies, which began on November 1, 1997, investigated the response of two phlox cultivars to cooling duration, long-day lighting regime, and propagule type. Rooted cuttings and one-year-old transplants of 'Ice Cap' and 'Red Eyes' were cooled for either 0, 4, 8, 12, or 16 weeks and planted in plastic bulb crates at a density of two plants per ft. The crates were placed on benches in a glasshouse and forced under night-break (10:00 p.m. to 2:00 a.m.) or extended-day (5:00 p.m. to 12:00 a.m.) lighting provided by incandescent lamps in a greenhouse at 62 degrees F nights. At flowering, days to flower and stem length for each stem were recorded. Flowering stem yields per plant were calculated at termination of the study on June 10, 1998.

Cooling

Cooling accelerated flowering and increased stem yield and length. Days to flower for both cultivars decreased in a linear manner and both flowering stem length and yields increased linearly as cooling increased from 0 to 16 weeks, regardless of lighting method or propagule type, but cooling for 8 weeks or more was necessary to produce marketable cut flower stems. Days to flower ranged from 157 for plants with 0 weeks cooling to 92 for those with 16 weeks cooling, averaged across propagule type, lighting regimes, and cultivar. Stem lengths ranged from 37 cm for plants cooled 0 weeks cooling to 63 cm for those cooled 16 weeks, averaged in the same manner. Averaged yields per plant ranged from 5 for non-cooled plants to 17 for those cooled 16 weeks.

Lighting

Extended-day lighting produced longer stems than did night-interruption, although days to flower and yields were similar for the two lighting regimes, regardless of cultivar or cooling duration. As the study progressed from December to June the quality of stems produced improved dramatically, suggesting that providing supplemental lighting to increase overall light intensity may be useful in forcing phlox in winter and early spring.

Propagule type

Flowering stems produced from rooted cuttings were generally longer than those from transplants, although one-year-old transplants yielded more stems per plant over the course of this study than did cuttings, regardless of cooling treatment, lighting regime, or cultivar. We found that terminal cuttings from vegetative shots of phlox plants could be easily rooted in about three weeks, our results suggest that an efficient programed production program for phlox could be developed using rooted terminal cuttings which can be planted at higher densities than those required for field-grown transplants, thus increasing yield efficiencies for rooted cuttings.

Cultivar

Although both cultivars evaluated in this study responded in a similar manner to cooling and lighting, 'Ice Cap' produced longer stems of a greater diameter and generally pro0ved to be a superior cut flower cultivar compared to 'Red Eyes.' In future studies, we plan to evaluate a wider range of new and established phlox cultivars for cut flower production.

Conclusions

Field-grown transplants or rooted shoot-tip cuttings of *P. paniculata* cultivars can be reliably forced in controlled environments under incandescent lighting when cooled from 8 to 16 weeks. Twelve weeks cooling may be sufficient for most situations since relatively little additional gain in forcing time, stem length, or yields was obtained by cooling plants for 16 weeks. These results suggest that longer daily lighting intervals may be preferable to night-break lighting, such as that used in chrysanthemum production. Terminal cuttings of phlox cultivars suitable for cut flower production can be rooted and cooled in plugs to provide a programed source of cut flower stems on a year-round basis. Cultivars that generally produce longer stems of a greater diameter should be chosen for forcing programs.

Based on these conclusions, we have undertaken further studies which will be reported on in the next edition of the newsletter. In addition to production studies, we are also conducting post harvest studies with this species. Please address any questions to:

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