

Hemerocallis (Daylily) Propagation

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Numerous *Hemerocallis* (daylily) cultivars are introduced each year that never make it to the consumer market because of limited supplies. The dramatic increase in the number of daylily cultivars and the preference for named cultivars has resulted in daylily propagation being limited to vegetative propagation, except in the case of hybridizers who use seed propagation to grow and evaluate the plants produced from their crosses. It has been stated that it can take 20 years for an outstanding cultivar to move from the enthusiast (connoisseur) market to the mass market (Pounders and Garton, 1996). The shortage and subsequent rapid nursery production of 'Happy Returns,' introduced in 1986, indicated that even if the cultivar forms a relatively large number of divisions per year, it can take ten years or more to have adequate plants to meet market demand.

Hybridizers have often been caught short of plants when a new introduction proves popular, leading some to postpone introduction for several years (C. Schott, 1995). The recent introduction of patented daylily cultivars and the continuing efforts by hybridizers to breed cultivars for use by the landscape industry has resulted in the need for rapid build-up of stocks in order to have sufficient supplies available. Current demand for daylilies for use in mass plantings, some containing tens of thousands of daylilies, has further strained already limited supplies of desirable cultivars. The use of all available propagation techniques will be needed to provide adequate supplies of desirable cultivars.

Seed Propagation

Seed propagation can start with seed collected from the capsules found on the scapes or from seed produced from selected crosses that can be purchased from daylily hybridizers/propagators. Seed collected from dormant daylilies benefits from cold stratification at 32-45F, following stratification the seed can be dried and stored at room temperature until sown (Griesbach, 1956). Seeds resulting from evergreen parents can be directly sown or handled and stored as described above for seeds from dormant parents (Benzinger, 1968; Munson, 1989).

Division

Dividing the daylily clumps by pulling or cutting apart is the most common form of daylily propagation. Division is relatively easy, plant survival is excellent and the resulting plants are identical. It is recommended that division be done during early spring or late summer, with harvest season defined by the area. In Kentucky, daylilies are commonly divided from February through April and late July through mid-September, with Autumn Equinox considered the latest possible day for dividing and transplanting. Fall is the dominant harvest season in Kentucky, but numerous small growers field divide from February to October in order to make retail and mail-order sales.

While division is the most popular form of propagation some limitations do exist. The most common limitation is the slow progress in producing adequate numbers of plants of a popular cultivar to

satisfy the market demand. A very high increase ratio would be 25:1, new plants to each original. However, the average might be closer to 8:1, with a minimum ratio for commercial production being 3:1 (Apps, 1995). There are cultivars that take a year to produce a single division and therefore, cannot be introduced even if they have desirable characteristics (Dunwell et al., 1995).

Proliferations

Proliferations are small plants that grow on the scapes of daylilies. Proliferations can be cut from the scape and, if multiple, can be further divided by cutting before being stuck in a well-drained medium. The proliferations will root in approximately a week. Daylily growers frequently miss the opportunity to produce plants from proliferations because summer shearing and late summer division remove the scapes with proliferations, and remove some scapes with proliferations, and remove some scapes on which proliferations would have formed. I have had success producing plants from proliferations (Table 1). Considering the value of each plant of a recently introduced cultivar, propagation by rooting proliferations can increase the income from that plant. Unfortunately, a single plant of 'Lisa My Joy' that had four scapes which produced a total of 14 proliferations in 1996 might not produce any proliferations in 1997.

Tissue Culture

Scientists have successfully grown daylilies from tissue culture (Apps and Heuser, 1975; Heuser and Apps, 1976; Heuser and Harker, 1976; Krikorian and Kann, 1979a, 1979b, 1980; Krikorian et al., 1981; Meyer, 1976, 1979; Pounders and Garton, 1996; Smith and Krikorian, 1991; Stoutemyer, 1976a, 1976b), but it has not become a favored method of propagation because some propagators had difficulty producing identical plants. In addition, the demand for new daylily cultivars was not at levels that would justify changing propagation techniques. Krikorian and Kann (1980) and Krikorian et al. (1981) showed they could produce identical plants from aseptically cultured tissues. The demand for new cultivars and large numbers of a single cultivar for mass planting now has several growers propagating plantlets by tissue culture.

Other Techniques

There are other techniques that can be used to propagate daylilies. Individual ramets can be cut into pieces that have some shoot and some root tissue. If handled in a sanitary manner, these ramet cuttings will grow and after approximately 6 months, can be made into cuttings (Foret and Nelson, 1967), Traub (1936) reported that the ramets should not be cut into divisions or smaller than 1/4 the original ramet.

Another technique is to cut the top off crowns and apply growth regulator compounds to force production of offshoots that can be excised and rooted. Apps and Heuser (1975) and Kirby-Smith and Kash (1981) experimented with applying kinetin and kinetin-auxin mixtures respectively. They both had success, but care is required

in carrying out the procedure, and the method has not found favor with commercial propagators,

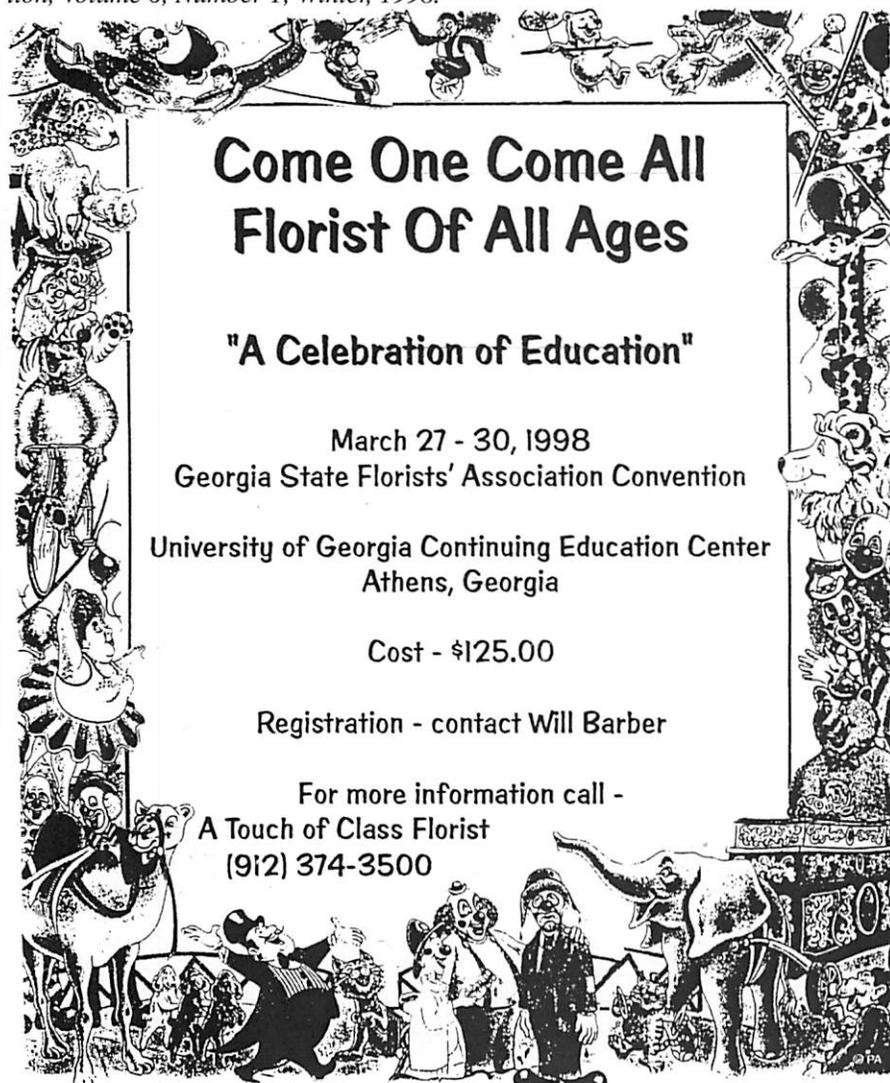
It should be noted that the standard "ditch lily," *Hemerocallis fulva*, and its cultivars are stoloniferous. Those wishing to propagate *H. fulva*, or any of its relatives, can cut the rooted offshoots that occur at the end of the roots.

While division will continue to be the most popular form of propagation for daylilies, tissue culture will make a significant contribution in the future by ensuring that deserving new cultivars get to the market place so the large numbers of plants used by the landscape industry are available.

Table 1. Cultivars produced by scape proliferations.

Best of Friends	Mad Max	Ruffled Magic
Cantique	Mary Shadow	Siloam Sunburst
Coral Crab	Milady Greensleeves	Siloam Red Toy
Evening Bell	Milano Marschino	Siloam Toddler
Fairy Tale Pink	Milano Violet Mark	Spectacular
Granite City Toehead	My Son Bob	Stella de Oro
Jambalya	Octavian Exotic Marble	Sunflare
Janice Wendell	Octavian Marble Model	White Temptation
Lavender Patina	Open Hearth	Winds of Peace
Lisa My Joy	Prairie Blue Eyes	
Lullaby Baby	Purple Oddity	

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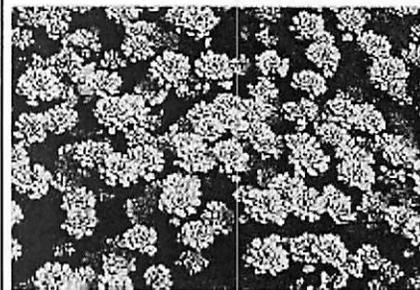
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