Soil. As Patrick Nutt, Assistant Director of Horticulture (Maryland Aquatic Nurseries, Inc.), once remarked, "If it'll grow grass it will grow water lilies". A clay, sand, and silt (20 : 40 : 40, by volume) mixture works well. We use a good grade top soil with a similar analysis. No bagged mixes; they may contain too much organic matter and ferment.

Herbaceous Perennial Plants for Dry Shade©

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INTRODUCTION

Gardening in the Southern U.S.A. has many challenges. Particularly with the dry weather we have been experiencing this past summer. Because of our intense sun and heat, shade is almost a necessity, so we plant trees that create dry shade. The list of herbaceous perennial plants for dry shade is much shorter than a list for moist shady areas.

The following herbaceous perennial plants not only bloom once established in dry shade, but these plants hold their foliage reliably well throughout the summer.

HERBACEOUS PERENNIAL PLANTS FOR DRY SHADE

***Geranium macrorrhizum* (big root cranesbill).** Extremely fragrant leaves form a dense and vigorous ground cover. Flowers appear in early summer; good fall foliage color; height: 35 cm (12 inch); spread: 0.6 m (24 inch); hardiness Zones: 2-9; selections: 'Bevan's Variety' with deep magenta-pink flowers. [Source: Blooms of Bressingham] and 'Ingwersen's Variety' pale with candy pink flowers and light green foliage.

***Heuchera micrantha* (coral bells).** Many new varieties are appearing each year. The older varieties were grown for their early summer display of flowers, but many of the newer types have been selected more for their outstanding foliage which has shades of purple, brown, red, and amber, often with metallic silver markings. Height: 0.3 to 0.6 m (12 to 24 inch); spread: 0.3 to 0.5 m (12 to 18 inch); Hardiness Zones 7 to 9; selections: *H. micrantha* var. *diversifolia* 'Palace Purple' is native to the U.S.A. West Coast with large foliage crinkled with maple-leaf shape in shades of deep purple-red; stems of small whitish pink flowers appear in early summer. 'Palace Purple' was the 1991 Perennial Plant of the Year; has violet purple leaves with silver veins [Source: Green Leaf]; 'Amber Waves' golden leaves [Source: Walters Gardens]; 'Raspberry Ice' dark veins over a background of raspberry and frosty silver [Source: Blooms of Bressingham].

***Pulmonaria longifolia* (lungwort).** Lungworts are among the first perennials to bloom in spring, sometimes starting in early March in the Southern U.S.A. Flower buds are usually pink turning to blue, red, or white when mature. Plants may go dormant in summer if conditions are too dry. Height: 25 cm (10 inch); spread: 0.3 to 0.5 m (12 to 18 inch); hardiness Zones: 3 to 9; selections: 'Ocupol' Opal™ alumroot, pink blooms turn to white [Source: Green Leaf], and 'Majeste', silver foliage with green edge [Source: Green Leaf].

***Tiarella cordifolia* (foamflower).** Foamflowers from low clumps of leaves with airy sprays of light pink or white flowers in late spring. *T. cordifolia* is a spreading species. Many of the newer cultivars are nonspreaders. Height: 15 to 30 cm (6 to 12 inch); spread: 30+ cm (12+ inch); Hardiness Zones 4 to 9; selections: 'Pink Brushes' maroon veining with quilted appearance [Source: Blooms of Bressingham] and 'Jeepers Creepers' with creeping fuzzy green leaves with a black pattern [Source: Terra Nova].

The Following Plants Will Tolerate Dry Shade: *Acanthus spinosus, Arum italicum* 'Marmoratuma', *Cyclamen* species, *Epimedium* species, *Hedera helix, Iris foetidissima, Liriope muscari, Rubus tricolor, Symphytum grandiflorum,* and *Tellima grandiflora.*

Propagation of Oak Liners©

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INTRODUCTION

Oaks are relatively simple to propagate from seed. Problems generally occur with obtaining a uniform finished liner crop with a strong fibrous root system. At Mid Georgia Nursery we start oaks from seed, use air pruning and SpinoutW® and utilize multiple top prunings, thus producing a very uniform finished crop of 3-gal oaks in two growing seasons.

YEAR 1

Seed Treatment. Seed are first soaked in water overnight. The dead ones float and are removed, while the rest are dried off and placed in plastic bags for cold treatment. The bags of seed are then cold stratified in a refrigerator at 2°C (35°F). Cold stratification requirements vary between species. See Table 1 for stratification periods that we use. In the past, we have sewn seed directly into pots in the fall and left them outside for "natural" winter stratification. However, the winters in Zone 7B have proven to be too inconsistent to depend on this method.

Establishment of Seedlings. The media used is a Graco blend of new pine bark, aged pine bark (not composted), and 6B gravel (5 : 4 : 1, by volume); 1.2 kg· m^{-3} (2 lb per yd) Step Hi Mag; and 4.8 kg·m^{-3} (8 lb per yd) dolomitic limestone. We have tried several types of small containers including Rootmaker and Anderson bands. Both work very well, but we currently use the 7× 14 cm ($2^{7}/_{8}$ × 5 inch) Anderson band for its more economical price and space utilization. Pots are placed in flats on benches in a heated greenhouse. The seed are planted from January to March depending on the stratification requirements. We like to have all stratified seed planted by early February, if possible. Planting is just deep enough to cover the seed with the radicle and acorn caps oriented sideways. The temperature is kept above 3°C (38°F) to encourage growth. Harrell's 15N-4P-9K, a 10-12 month controlled-release fertilizer with micronutrients and soluble potash is broadcast at the rate of $^{1}/_{2}$ cup per flat. In the future we plan to incorporate this into the media.