Propagation of Four American Carnivorous Plant Genera: *Pinguicula, Drosera, Dionaea,* and *Sarracenia*

James L. Booman
2302 Bautista Avenue, Vista, California 92084

Carnivorous plants come from genera that have little in common. The fact that these different plants developed similar methods to digest or utilize nutrients from animals is a classic case of parallel evolution.

The single greatest threat to the survival of these plants in the wild is destruction of habitat. Fire suppression and drainage ditches in pine plantations have probably eliminated more acreage of flytrap (*Dionaea*) habitat than any other actions in the last 30 years. Urban encroachment destroys habitat as well. Poaching, while significant, is a smaller factor than irreversible loss of habitat (Boyer, 1995).

Luckily, most of these interesting plants can be propagated artificially. Although we are on the West Coast, we are at a similar latitude and have the same temperature spreads as the native areas on the East Coast of the U.S. Our abundant light seems to help us maintain a year-round program of growing these plants commercially in Southern California (Vista, CA).

Venus flytraps (*Dionaea muscipula*) are the most popular of the carnivorous plants. They propagate easily in a number of different ways. Freshly harvested seed germinates readily without special care. Scatter the shiny black seeds on the top of clean peat moss. Do not cover the seed. Water from the bottom. Most every seed will grow in 4 to 6 weeks. Detached leaves from mature plants will produce adventitious sprouts along the midrib, though this is not reliable enough for us to use it commercially. Rhizomes will extend out through drainage holes in cell trays. These can be snapped into multiple pieces, each of which will grow a new plant. Flower stalks often produce aerial bulbs. Tissue culture yields a rapid and year-round supply for us. It allows us to propagate select clones with daylength neutral growth, high color, large trap size, and persistent foliage. We plant into community flats, then into plug trays. Tissue culture media references are listed in I.P.P.S. Proceedings (vol. 35:285).

Drosera species propagate easily. We propagate *D. adelae* by cutting the thick black roots into 1-cm pieces and burying them 5 mm under clean peat. We seldom use leaf propagation; but, it works as well. Detach a leaf. Lay it on the top of clean wet peat. New plants will develop between the tentacles. We prefer seed propagation. The dust-like seed keeps for years refrigerated at 40F, and germinates within 3 weeks. We sow the seed on the top of sterile peat, and bottom water until germination is complete.

Pinguicula can be grown from seed. We prefer leaf cuttings to maintain cultivar lines. Detached leaves placed on top of clean peat will callus and produce numerous new plants at the cut edge.

Sarracenia can be propagated by tissue culture. We use this method to maintain cultivars. Our preferred method of propagation is from seed. Most species and hybrids are self-fertile. Pollinating the flowers insures good seed set, often yielding 500 seeds per pod. Cold (40F) wet stratification for 30 to 90 days breaks dormancy. Seed sown 5 mm deep in clean peat germinates in 4 to 6 weeks at 60F.

We attempt to duplicate conditions found in the wild when growing these plants.

Our soil tests conducted in 1995 corroborate those of a 1977 USDA Soil Conservation Service survey of Murville soils in New Hanover, North Carolina (Anonymous, 1977). The fine black sand soils where these plants grow in North Carolina have a pH between 4.3 and 4.5 with an E.C. of 0.1. Organic to mineral (sand) ratios run 1 lb to 7 lb on a dry weight basis. Bulk densities run about half of that of a loam soil, based on dry matter per cubic yard. Iron runs 1.8 lb cu yd^{-1} and nitrogen runs 1.6 lb cu yd^{-1} of dry matter.

LITERATURE CITED

Anonymous. 1977. USDA Soil Conservation Service in cooperation with North Carolina Agric. Exp. Sta. and the New Hanover County Board of Commissioners. April, 1977. Soil Survey of New Hanover County North Carolina.

Boyer, M. W. 1995. Inventory of Venus Flytrap in North Carolina 1991-1992, Report to the Plant Conservation Program and to the Natural Heritage Program, Division of Parks and Recreation, North Carolina Department of Environment, Health and Natural Resources. Plant Conservation Program, Plant Industry Division, North Carolina Department of Agriculture.

Propagating Palms from Seeds

Donald R. Hodel
University of California, Cooperative Extension, 2 Coral Circle, Monterey Park, California 91755-7425

Optimal germination of palm seeds is attained by using mature, fresh, clean seeds; a disease-free, moist but well aerated medium; clean containers and benches; and maintaining temperatures of 30 to 35C and relative humidity of 90% to 100%.

INTRODUCTION

Although some palms can be propagated vegetatively, such as those with clumping stems, or through tissue culture, nearly all palms can be propagated by seeds. Commercial seed propagation of palms is relatively inexpensive and easy, and germination is usually rapid and high if one adheres to several principles. These principles include using only mature, fresh, clean seeds; planting in a disease-free, moist but well aerated medium; using clean containers and benches and keeping them clean; and maintaining appropriate temperature and moisture levels.

SOURCES AND HANDLING OF SEEDS

Plant only clean, fresh seeds from mature fruits. Obtain seeds from reliable, reputable suppliers or collect them yourself. Collect seeds from forms or strains of individuals with desirable characteristics, such as color, vigor, conformation, etc. Check a representative sample of seeds of unknown origin by a visual examination of the embryo. Healthy, viable embryos will mostly be moist, firm, white to yellow, and full, not shrunken from the endosperm. A float test is sometimes also used for assessing viability, but it is not always reliable.