UK COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY — COLLEGE OF AGRICULTURE

Propagation Nursery

Introduction

Propagation nurseries are in the business of breeding and marketing ornamental trees, shrubs, fruit trees, and perennial flowers as pre-finished plant material (liners). Many wholesale nursery operations have their own propagation areas where stock plants are produced for in-house use. In this case, the propagation nursery is just one aspect of the whole nursery business. Some nurseries specialize in growing and selling pre-finished plants to other growers, making the propagation nursery their sole business.

Marketing

Propagation nurseries generally market their plant material through wholesale outlets, often on a contract basis. Wholesalers produce plants that are sold to other nurserymen, landscapers or retailers. Mail order and internet markets involve nationwide sales and shipping and can extend the market area to include international markets.

Market Outlook

Nationwide, the nursery business has experienced steady growth in the past two decades. In Kentucky, the nursery industry was a $30-million dollar business in 2002, and continues to expand at a rate of 3 to 6 percent annually. An increase in housing starts and the growing number of hobby gardeners has helped fuel consumer demand.

Production Considerations

Site selection

Since a large number of plants can be propagated in a small area, propagation nurseries do not necessarily require large acreages. Site selection will depend on many factors, including production method and crops grown. Plants can be propagated in outdoor beds, propagation frames, various types of greenhouse structures, and tissue culture labs. In addition to the growing areas, space for soil preparation, potting and shipping will be needed. An adequate, clean, pest-free water source must be available.

Propagation in outdoor beds will require a well-drained, loose soil that is well aerated. The site should have good air circulation and a slightly sloping topography for excess water runoff. Frost pockets and windy locations should be avoided. Potential growing sites should be tested for soybean cyst nematode infestation as the presence of this pest in the soil could severely limit out-of-state export. Outdoor beds will require winter protection in Kentucky.

Artificial soil mixes are generally used for propagation in frames and greenhouse structures, making the type of native soil present less important. A fairly level location should be selected for these structures. Greenhouses should be built in an east-west orientation and ventilation will be essential.

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The production of cuttings will require an intermittent mist system, regardless of whether production is outdoors or in a closed greenhouse. Bottom heat will be necessary for fall and winter propagation.

A tissue culture lab will require a facility equipped with refrigeration, some type of sterilizer, incubators, accurate scales for weighing chemicals, glassware, and pre-packaged culture media. The lab should be equipped with well-trained, experienced personnel.

Production methods and crop selection
Plants can be propagated by seeds, cuttings, grafting, plant division and tissue culture. The method employed will depend on the plant species; however, the most common means is by cuttings. Most propagation nurseries grow a variety of plants with known high market demand; others may specialize. Some specialty nurseries propagate native plants or uncommon cultivated plants. This type of specialized production can serve niche markets and is especially well-suited for the small grower.

Pest management
Methods of weed control can include a combination of hand weeding, mowing, mechanical cultivation, mulching, ground cloth, and chemical methods. Insect and disease management requires IPM strategies, such as planting resistant cultivars, scouting, and employing best management practices.

Harvest
Under the proper environmental and management conditions, as many as three crops of woody ornamentals can be propagated annually in the same production space. Some cuttings can be ready to sell as liners in 10 to 12 weeks. Plants can be sold bare-root, in flats, or in plastic pots.

Labor requirements
Labor and management requirements for propagation nurseries are very high. In addition, there are peak periods in production when labor demands are even more intensive. Trained labor is required for all aspects of production and harvest.

Economic Considerations

Beginning a nursery business requires a large capital investment, even if land does not need to be purchased. Expenses include equipment, buildings, cold storage, supplies, plant material, grading for drainage and the installation of an irrigation system. Some type of greenhouse or propagation structure equipped with a mist system will be needed. Additional costs include labor, utilities, insurance, licenses and inspections.

A grower must be prepared to make substantial investments for several years before realizing any positive returns. It can take 2 to 4 years of operation before significant returns can be expected and an additional 3 years before showing a profit. In addition, the nursery operator will need to be able to handle the cash flow ups and downs associated with seasonal sales.

More Information

- Soybean Cyst Nematode: A Potential Problem for Nurseries (University of Kentucky, 1992)
http://www.ca.uky.edu/agc/pubs/id/id110/id110.pdf
- Nursery Crops Development Center (University of Kentucky)
http://www.ca.uky.edu/HLA/Dunwell/win1.html
- Nursery Crops Science Web site (North Carolina State University)
http://www.ces.ncsu.edu/depts/hort/nursery/
- NurseryWeb (University of Maryland)
http://www.nursery.umd.edu/
- Production and Marketing of Field-Grown Trees in Georgia (University of Georgia, 1999)
http://pubs.caes.uga.edu/caespubs/pubcd/B1115-w.htm
- Propagating Deciduous Fruit Plants Common to Georgia (University of Georgia, 1999)
http://pubs.caes.uga.edu/caespubs/pubcd/B818.htm
- Propagation of Woody Ornamentals by Cuttings (University of Florida, 1998)
http://edis.ifas.ufl.edu/BODY_EP030

• Woody Plant Liner Production Review (University of Florida, 1994) http://edis.ifas.ufl.edu/BODY_AC030

• *Plant Propagation: Principles and Practices* (7th ed., 2002) by H.T. Hartmann, D.E. Kester, F.T. Davis, Jr., and R.L. Geneve. Prentice Hall, N.J.