UK COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY — COLLEGE OF AGRICULTURE

Field Nursery Production

Introduction

Field nurseries are the traditional method of producing and marketing ornamental trees, shrubs, fruit trees, and perennial flowers. Until the mid 1900s nearly all nursery crops were produced in the field. Even with the advent of above-ground container production and pot-in-pot, field nurseries are still widely used. Some of the advantages of field production over other production methods: less demanding in terms of maintenance and labor during the growing period, plants do not require winter protection, and lower start-up costs.

Marketing

Nursery crops may be marketed in a number of ways. RETAILERS produce and market directly to the homeowner. This type of business requires a retail outlet along with the on-site growing area and must be conveniently located for consumer access, generally near large urban areas. WHOLESALERS produce plants that are sold to other nurserymen, landscapers, or retailers. LANDSCAPE NURSERIES produce plants for their own in-house landscaping service, but may have a retail outlet. Plants can be sold locally to a farmers market at retail prices. Mail order and Internet markets for bare root plants involve nationwide sales and shipping and can extend the market area to include international markets. A phytosanitary certificate from the Kentucky Office of the State Entomologist is required to ship plants or plant parts across state lines or internationally.

Market Outlook

Nationwide, the nursery business experienced steady growth through 2006. The Kentucky wholesale nursery industry was a $35.6 million business in 2005 and had been expanding at a rate of 3 to 6 percent annually since 2000. Increases in housing starts and the growing number of hobby gardeners helped fuel this expansion. However, wholesale and retail nursery businesses are affected by new home construction, as well as overall economic health, and the nursery industry was hit hard by housing and economic slowdowns in 2008. Nursery producers will want to develop a business plan that takes into account the potential for a slowing economy and uncertain housing market such as that experienced in 2008.

Production Considerations

Site selection

The primary consideration in selecting a site for field nursery production is the soil. Not only must the soil be well-drained, but it must hold together around the roots when

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plants are dug for ball-and-burlap. Production of bare-root plants requires a soil that will easily fall away from the roots. Fields should also be free of large stones or hard pans that could interfere with root development. A source of clean, pest-free water is another important consideration. The ideal site will have a slightly sloping topography for proper air drainage and offer water drainage to a pond or retention basin for recycling back to the crop. 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.

Maintenance

Shade trees are often top-pruned in both winter and summer to ensure that a central leader is maintained and the shape of the head of the tree is in proportion to the trunk. Shrubs are pruned regularly to establish a height and density for the planned market.

Plants grown for the landscape trade tend to require specialized pruning. Inexpensive plants for the discount trade may be allowed to grow looser and taller before pruning, thus enabling them to get to size quickly. Trees may need to be staked to maintain a straight trunk. Some growers root prune either routinely or prior to harvest to help trees survive digging and transplanting.

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 integrated pest management (IPM) strategies, such as planting resistant cultivars, scouting, and practicing best management practices.

Harvest

The time it takes for plants to reach a saleable size will vary depending on the type of plant and growing conditions. In most ball-and-burlap operations, plants are harvested 3 to 5 years after planting. Nursery crops grown in-ground are ideally harvested during the dormant season to minimize transplant stress; however, it is not uncommon for digging to continue through the summer as well.

Harvest is also determined by the stage of development to be marketed. Plants may be sold as liners, whips or finished plants. The term LINER refers to any plant placed ('lined out') into a production system so it can be grown to a larger finished plant. WHIPS are plants consisting of a straight stem with little branching. FINISHED PLANTS, the final stage of production, have all the characteristics expected in the market place: form, size, branching, and trunk size.

Plants are harvested either by hand or with a mechanized tree spade. The root balls of ball-and-burlap trees are placed into burlap-lined wire baskets. Smaller trees can be harvested bare root.

Labor requirements

While labor demands for field-grown nurseries are considerably less intensive on a per acre basis than other production methods, it is the single greatest production expense in this type of nursery. A common rule of thumb is to employ one worker for every 7 to 8 acres actually in production.

Economic Considerations

Beginning a nursery business requires a large capital investment, even if land does not need to be purchased. Expenses include: equipment, buildings, supplies, plant material, and the installation of an irrigation system. Additional costs include labor, utilities, insurance, licenses, and inspections. The minimal size for a field nursery to be economically profitable is 200 acres.

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 to 5 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. Below are 1996 University of Kentucky budget estimates for field production and an estimated cost range for a similar operation in 2008.

Selected Resources

- Introduction to Field and Container Nursery Production (University of Kentucky) *Power Point presentation*
http://www.uky.edu/Ag/NewCrops/adcintro_files/frame.htm
- Kentucky Office of the State Entomologist (University of Kentucky)
http://www.uky.edu/Ag/NurseryInspection/
- Marketing Your Nursery (University of Kentucky, 2008)
http://www.ca.uky.edu/HLA/Dunwell/marketingyournursery.html
- Nursery Crop Production (University of Kentucky)
http://www.ca.uky.edu/HLA/Dunwell/Nlgetstart.html
- Nursery Crops Development Center (University of Kentucky)
http://www.ca.uky.edu/HLA/Dunwell/win1.html
- Soybean Cyst Nematode: A Potential Problem for Nurseries, ID-110 (University of Kentucky, 1992)
http://www.ca.uky.edu/agc/pubs/id/id110/id110.pdf
- Trees, Shrubs, Ground Covers and Vines Suitable for Kentucky Landscapes, HO-61 (University of Kentucky, 1997)
http://www.ca.uky.edu/agc/pubs/ho/ho61/ho61.pdf
- Best Management Practices for Field Production of Nursery Stock (North Carolina State University)
http://www.bae.ncsu.edu/programs/extension/ag-env/nursery/

Item	1996 Costs	2008 Estimates
Capital requirement	$210,840	$255,550 to $290,000
Machinery/equipment operation	$26,370	$32,960
Fixed costs	$352,880	$380,000 to $420,000
Fixed costs per plant	$18.58	$20.00 to $22.10
Variable costs	$97,790	$112,500 to $137,500
Variable costs per plant	$5.15	$5.93 to $7.24
Total costs	$450,670	$492,500 to $557,500
Total costs per plant	$23.73	$25.92 to $29.34

- Best Management Practices Guide for Producing Nursery Crops (Southern Nursery Association, Atlanta, 2007) *Order from The Kentucky Nursery and Landscape Association* knla@mis.net
- Nursery Crop Science Website (North Carolina State University) http://www.ces.ncsu.edu/depts/hort/nursery/
- Nursery Field Production (University of Tennessee, 2002) http://www.utextension.utk.edu/mtnpi/handouts/Field%20Prod%20rev%20w%20equip.pdf
- Production and Marketing of Field-Grown Trees in Georgia (University of Georgia, 1999) http://pubs.caes.uga.edu/caespubs/pubcd/B1115-w.htm
- Sustainable Small-scale Nursery Production (ATTRA, 2008) http://www.attra.org/attra-pub/nursery.html
- Tennessee Commercial Nursery Production Information (University of Tennessee) http://www.utextension.utk.edu/mtnpi/handouts.html

Photos courtesy of Derrick Hammons, University of Kentucky *Issued 2004; Revised April 2009*