

# Container Nursery Production

## Introduction

The container nursery business involves the production and marketing of ornamental trees and shrubs, fruit trees, and perennial flowers grown in above-ground containers. This production method has helped revolutionize the nursery business in the last few decades. Some of the advantages of container production include: less acreage required for production, handling convenience, and a nearly year-round harvest and planting season.

## 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. **WHOLESALE** produce plants that are sold to other nurserymen, landscapers, or retailers. **LANDSCAPE NURSERIES** produce plants for their own in-house landscaping service, but may also have a retail outlet. Plants can also be sold locally at farmers markets at retail prices. Mail order and Internet markets involve nation-wide 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 dollar 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*

Container-grown plants need to be frequently irrigated, often multiple times per day, throughout the growing season. A source of clean, pest-free water is probably the most important consideration in selecting a suitable site. Since

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container production entails growing plants above ground using customized soilless growing media, the type of native soil at the site is not nearly as important as it is with field-grown crops. In general, container production requires a firm surface with good surface drainage. 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.

#### *Crop selection*

Nursery operators may choose to either produce their own planting stock or purchase seedlings and cuttings from other growers. Most nurserymen grow a variety of plants with known high market demand; others may specialize. Some specialty nurseries grow native plants or uncommon cultivated plants. This type of specialized production can serve niche markets and is especially well-suited for the small grower.

#### *Maintenance*

Pruning trees and shrubs in the production system is both an art and a science. Shade trees are often pruned in 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. Winter protection for

above-ground container-grown plants is needed in Kentucky.

#### *Pest management*

Weed control in nurseries requires efficient and effective management. Methods of 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*

Nursery crops grown in containers can be harvested any day of the year. The time it takes for plants to reach a saleable size will vary depending on the type of plant and growing conditions. In general, container-grown plants may be in propagation for 6 to 12 months. Plants then spend one year as a 1-gallon plant and one more year as a 3-gallon plant, for a total of 30 to 36 months. The length of time a plant can be grown in a container is limited. Once unsold plants outgrow their container, they will have to be repotted to a larger container or discarded.

Harvest is also determined by the stage of development to be marketed. Plants may be sold as liners, whips, or finished plants. The term LINERS once referred to plants after one year of production from seed, cuttings, or tissue culture. Today this term 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.

#### *Labor requirements*

The level of management for container-grown plants is significantly higher than in field production. A common rule of thumb is to employ one worker per actual acre of container production.

## Economic Considerations

Beginning a nursery business requires a large capital investment, even if land does not need to be purchased. Expenses include grading for drainage, gravel beds to set the plants on, equipment, buildings, supplies, plant material, and the installation of an irrigation system. A greenhouse or over-wintering structure will be needed. Additional costs include labor, utilities, insurance, licenses, and inspections. With the large overhead investment required, the minimal size for a container nursery to be economically profitable is 17 acres.

The return on a container nursery operation will be realized more quickly than for field-grown stock. However, the initial investments and production costs are much higher for container-grown plants. 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 17 acres of above-ground container 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/CDBREC/adcintro\\_files/frame.htm](http://www.uky.edu/Ag/CDBREC/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/marketingournursery.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>
- 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 Guide for Producing Nursery Crops (Southern Nursery Association, Atlanta, 2007) *Order from The Kentucky Nursery and Landscape Association*  
[knla@mis.net](mailto:knla@mis.net)

ITEM	1996 COSTS	2008 ESTIMATES
Capital requirement	\$223,170	\$265,000 to \$300,000
Machinery/equipment operation	\$15,650	\$19,560
Fixed costs	\$350,450	\$380,000 to \$420,000
Fixed costs per plant	\$16.35	\$17.72 to \$19.60
Variable costs	\$157,650	\$175,000 to \$200,000
Variable costs per plant	\$7.36	\$8.16 to \$9.33
Total costs	\$508,100	\$555,000 to \$620,000
Total costs per plant	\$23.71	\$25.89 to \$28.93

- Conventional Container Production (University of Tennessee, 2009)  
[http://www.utextension.utk.edu/mtnpi/handouts/Container%20Production/Container\\_Production\\_Handout-rev%208-09.pdf](http://www.utextension.utk.edu/mtnpi/handouts/Container%20Production/Container_Production_Handout-rev%208-09.pdf)
- Nursery Crop Science Web site (North Carolina State University)  
<http://www.ces.ncsu.edu/depts/hort/nursery/>

- Sustainable Small-scale Nursery Production (ATTRA, 2008)  
<https://attra.ncat.org/attra-pub/summaries/summary.php?pub=60>
- Tennessee Commercial Nursery Production Information (University of Tennessee)  
<http://www.utextension.utk.edu/mtnpi/handouts.html>

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*Photos courtesy of Derrick Hammons, University of Kentucky*

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For additional information, contact your local [County Extension](#) agent