

# Nursery Series

## Starting a Wholesale Nursery – Part I

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### What Production System?

The production of ornamental plants can be a worthwhile and profitable business. However, before embarking on this type of venture, a person needs to evaluate what resources are necessary to start a nursery.

One of the first decisions to make is what type of production system you will use. The three types of nursery production systems are field, container and pot-in-pot (PIP). Field production can be further subdivided into balled and burlapped (BB) or bare-root (BR) production depending on the type of harvest method.

Selection of a production system is not an exclusive one. For example, a grower might choose to have 90 percent of the production in containers and 10 percent in the field. Each of these production systems has their advantages and disadvantages.

Field production tends to have three major advantages. First, field production is often less demanding than container production in terms of water and fertilizer requirements. In addition, the labor required *during* production is less intensive than container production. Field production also offers growers in colder climates the option to avoid or minimize winter protection methods.

There are several disadvantages associated with field production. A primary disadvantage is that



**Field System**

“harvesting” (digging) field-grown plants is limited to specific windows during the year, typically fall and spring. Another major disadvantage is that the harvest operation is very labor intensive. Although improvements (e.g., mechanical digging machines, staple guns replacing hand nailing) have been made in recent years, the process is still labor intensive and difficult. The type of field soils preferred for balling and burlapping operations also means that the average weight for a B&B plant is greater than for a similar sized container-grown plant. This additional weight translates into increased average shipping cost for B&B plants. For example, 5-6' field-grown pines or spruce may weigh 270 pounds each. A typical semi-truck with 148 of these trees being transported 1,000 miles will add an estimated \$21 per plant in addition

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to plant cost. Field production also offers the grower a challenge in space allocation because of random harvesting from fields or because of random plant death in production. In contrast, as plants are “harvested” for shipment in container production, the container block can be re-sorted, moved or tightened up.

The dramatic shift from field to container production over the past 40 years has been largely responsible for the unprecedented growth in the nursery industry. Container production makes possible almost year-round “harvesting” and availability of plants. Although containers offer major advantages to the consumer, they also offer growers several significant advantages. Growers gain handling convenience and increased flexibility for plant spacing not offered by B&B plants. Handling advantages in the field also translate into handling efficiencies when stacking or loading trucks. The use of container production also means that a grower could customize the growing media. The potential to modify chemical and physical properties in a container is much greater than for a field soil. Container production also allows producers to grow “transplant sensitive” crops such as Magnolia.



**Container Production**

While container productions offer many advantages, the system is not without its challenges. The type of media used in containers means that monitoring of water and fertilizer needs are more frequent than in field production. A container grower will find it difficult to leave the operation unattended during the growing season for any length of time. Switching to production in aboveground, restricted-volume containers also means that issues such as overwintering, blow-over and circling roots become significant considerations. Exposure of roots to extremes in both summer high temperatures and winter low temperatures causes stresses not seen in field-grown plants. Growers must also remember that

container-grown plants cannot be held as long as B&B plants. An unsold crop of field-grown plants can simply stay in the field; however, unsold container plants will likely require moving up (bumping-up) to a larger container size which adds cost to the final product. In general, initial land development costs (e.g., grading, bed preparation) for a container nursery are significantly higher than for starting a field nursery.

Many nurseries are now growing trees and large shrubs in aboveground rigid containers/boxes, fabric bags or air-pruning rings. Some of these methods may reduce the root circling commonly associated with rigid pots.



**Aboveground Air-Pruning Rings**

Starting in the early '90s, a hybrid production system began to appear in the nursery field. The system, called pot-in-pot (PIP), combines several advantages found in both field and container production systems. From the field production system, PIP shares the advantage of eliminating plant blow-over though plants are growing in a container, and they gain the advantage of having minimized extremes in root zone temperatures. Because the plant is actually growing in a rigid container placed in the field soil, PIP-grown plants are easier to harvest than traditional field-grown plants.

Probably the most alarming disadvantage to the PIP system is the high initial capital expense required by placing two pots in the ground. Two other minor disadvantages come to mind. First, while the flexibility in moving and spacing plants is not as efficient and convenient as traditional aboveground containers, it is more efficient than field production. Lastly, access to certain chemicals may be limited since product labels may only be labeled for straight field or container production.





Pot-in-Pot (PIP) System

## What Product Mix?

Probably the second most frequently asked question is, “What should I grow?” As with any other product, you want to thoroughly research the market that you choose to enter. Within the arena of plant production there are several questions that you need to explore. Are you going to specialize in a particular type of plant material? Categories include conifers, trees, shrubs, perennials, annuals, native plants, etc. You must also decide if you want to grow and sell propagules (e.g., rooted cuttings), liners or finished stock (#1, #3, tree-box). If you plan to ship great distances, you can be very successful selling propagules and liners. Simply identify a niche that you want to focus on. You may wish to focus on finished sizes of native plants for markets in Arkansas and southern Missouri for example. If you decide to focus on markets well outside Arkansas, you also need to address how to transport those plants. Will you be a mail-order nursery that ships by a parcel shipping service or a wholesale grower that uses common carriers?

## Nursery Site Selection

Unfortunately most of us do not give adequate thought when selecting a site for a nursery business. In most cases we use the land we live on or that a family member has available. These parcels may not be the best choice for this type of business. There are at least six factors that should be considered when evaluating a potential nursery site. These are:

1. Quantity and quality of irrigation water
2. Access to transportation and markets
3. Topography and soil type
4. Access to, and type of, utilities
5. Favorable climactic conditions
6. Access to steady labor supply

When considering a potential nursery site, it is essential that you analyze the quality of your water source. State and private laboratories are geared to conduct this test for a nominal fee. You must also consider the volume of water required to start a nursery. Container nurseries require a tremendous volume of water – up to 15 acre feet per acre of production per year. Field and PIP production require much less water. Make sure you have these water quality and capacity issues resolved before you start your nursery.

The type of land depends on whether you are considering field or container production. For example, in container production we are typically growing above ground so the soil type (e.g., clay, sand, loam) is not an important issue. It is also possible to correct extremes in topography for container production and still have useable ground to place containers on.

After selecting a parcel of land for a nursery, it would be valuable to give some thought to long-term development of the parcel. In general, consider issues that provide for the least movement of plants and people. Also, give some thought to basic issues like location for loading trucks, clearance for trucks, turning radii of equipment, width of equipment and weight restrictions on access roads.

Significant consideration should be given to general employee issues such as lunchroom facilities, bathrooms and handwashing facilities.

## General Crop Scheduling

Another commonly overlooked task is taking the time to plan and schedule your production. A clear plan will ensure that you have sufficient production space and save you money when ordering supplies.

A great place to start is to consider using a computer spreadsheet to outline your production in reverse order. An example for a container production nursery is illustrated in the following table.

In this example, our production goal is to have 1,000 #3 saleable plants. Understanding the potential losses at each stage of production and the amount of space required, you can calculate how much space a particular crop will require. Even completing this exercise for a few crops will clarify in your mind the amount of space required and when it will be required. In addition to this space allocation spreadsheet, you may wish to design a production calender so that you can adequately allocate resources and anticipate when certain bottlenecks may occur.

	Cuttings	#1 can-tight	#3 1X spacing	Saleable #3
Number at each step	1,452	1,210	1,100	1,000
Production space (ft <sup>2</sup> ) required	32	350	3,400	3,400
Percent loss expected	20%	10%	10%	---

## Time Required for Production

People unfamiliar with the nursery industry often have no idea how long it takes to grow a plant to a saleable size. The answer to this question depends on the kind of plant being produced, the production system chosen, the level of management used to grow the crop and the length of the growing season. The fastest production cycle is for the small #1 container plants seen in many mass market stores and retail nurseries. These plants are usually grown for their first production season in the “liner” stage in the propagation structure. The spring of their second year they are potted in containers and grown for one growing season, becoming saleable during the end of that year. But about 80 percent of the nursery products grown are sold in the spring so they would probably remain at your nursery until February or March. In the scheduling example on page 3, the plants would spend from 6 to 12 months in propagation, one year as a #1 plant and one more year as a #3 plant for a total production time of 30 to 36 months.

It is more difficult to estimate production time for field-grown plants, but a rule of thumb for trees is to estimate that they make about one-half inch of trunk

caliper growth per year. Thus a 2-inch caliper shade tree would spend one year as a liner and require three additional years to achieve the desired size. Slow-growing plants, such as Japanese maples or dwarf conifers, may only produce one quarter to one half the growth suggested above and are, therefore, very expensive in the marketplace.

## Licenses, Permits and Regulations

Specific license and permit regulations will vary by state and county. To operate as a business, you may need to consult one or more of the following: city or county clerk’s office, city or county assessor’s office, state department of finance and administration, state department of labor, U.S. Citizenship and Immigration Services (USCIS) and the Internal Revenue Service (source of Federal Identification Number), just to name a few. Once a business expands to include employees, serious consideration must be given to rules administered by the Occupational Safety and Health Administration (OSHA). OSHA standards cover such matters as exposure to chemicals, protective gear, first aid, worker training and notification laws.

## Resources to the Rescue

Like other ventures, you are wise to do your homework and get connected within your area of interest. Make the effort to seek out other growers in your area who are willing to share their experiences with you. Join and participate in related professional organizations such as the Arkansas Green Industry Association, Perennial Plant Association and International Plant Propagators Society. Your local and statewide University of Arkansas Division of Agriculture, Cooperative Extension Service personnel are geared to help in your venture also.

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