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# Nursery Crop Selection and Market Implications

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## Introduction

Each year, one of the first questions both seasoned and new nursery producers, managers and owners asks is, “What plants should be propagated and/or grown in the upcoming season(s)?” Answering this question requires a complex equation of inputs ranging from the type of nursery operation that exists to physical location and market trends. For this reason, the answer to this question varies for each person or business. This publication describes several important factors that must be considered to properly assess which ornamental crops should be grown and which market niches exist that may dictate crop selection.

A nursery is often defined by its method of production (e.g., container or field), its market (e.g., landscapers, wholesale or retail), the crops grown (e.g., a tree nursery or perennial nursery) or the sizes of plants sold (e.g., a liner nursery or balled and burlapped [B&B] tree nursery). Crop selection is a critical component of nursery production, marketing and sales. The types and diversity of crops and plant sizes have a great impact on a nursery’s ability to market plant material to the appropriate target audience and realize maximum profitability (i.e., economic sustainability). The types and sizes of crops grown may influence the following:

- **Nursery size:** Liner nurseries (propagation nurseries) take up much less space than large-container or B&B tree production; as a result, the property needed for a liner nursery is much smaller.
- **Production requirements:** Cold-sensitive crops and container-grown crops may require greenhouses or winter protection, whereas cold-hardy

plants or field-grown trees may not require any specialized structures.

- **Market:** Liners are sold to other nurseries, whereas larger plants, also called “finished,” may be destined for retail sales or landscape contractors.
- **Location:** A nursery selling to garden centers is best located geographically close to them, typically in suburban or urban areas, whereas a liner nursery does not have this requirement.

Conversely, the location of a nursery may dictate its most profitable potential markets and crops due to efficiency factors. For example, if a potential nursery owner holds land near an urban area, the geographic proximity to a population center is best adapted to retail sales and landscape contractors.

## Considerations for Nursery Crop Selections

Physical input costs (containers, fertilizer, chemicals, water, etc.) are not the only factors related to crop selection. Other major factors that may influence crop selection include market trends, environmental issues, production costs, location, marketing, shipping, government regulations and energy costs. In general, these factors can be grouped into those that increase the cost of production and those that decrease the cost of production. Those factors that increase the cost of production lead to a higher per-unit cost, resulting in the need to grow a higher-value crop or increase prices. Conversely, those factors that reduce per-unit cost result in less of a need to grow high-value crops (e.g., patented plants) and allow crops to be sold at a competitive, lower cost.

## Market Considerations

One of the first rules of business is to know the potential markets. Any business, including a nursery, should first determine who its customer(s) will be, where its available markets are in relation to its customer base and what products it might produce for those markets. It is best to first identify a market and then develop a nursery plan (strategy) to produce and sell to that market. Many nurseries are started based on one of two incorrect assessments: (1) that the owner's personal favorite plants will sell exceptionally well or (2) that a nursery can be a method of getting rid of excess plant materials from personal plant collections. Overall, if a market for the product is not first identified and properly exploited, that nursery is rarely successful in the long term.

Current markets for plant material produced in ornamental nursery operations include the general public, landscape contractors, independent or chain retailers, other production nurseries (re-wholesale), brokers, government agencies or a combination of these. Production nurseries that sell to the general public may do so via an affiliated retail nursery or by mail order.

Production nurseries selling to retail operations may further specialize in sales to independent retail garden centers, chain retail garden centers or "big box" stores. Sales to retail garden centers typically call for a more diverse group of plant species and higher-quality, higher-priced products in a greater selection of cultivars and sizes. This market type usually involves many different customers in various locations needing different products at different times. Often, a production nursery servicing retail garden centers has its own trucks for delivering plants. A "big box" market involves high-volume sales to a chain of retail stores. This type of customer often demands smaller price margins and may pay only on consignment sales while also requiring the production nursery to reimburse the retailer for product losses or returns. These constraints typically require high-volume sales, high production efficiencies and minimal production time, all of which may lead to slightly lower quality control in production.

The landscape contractor, retail and direct-sell markets typically require a nursery location near an urban center to reduce shipping costs and maximize profits and the number of potential customers. Nursery location

is not as critical for mail-order sales or sales to other nurseries, brokers or government, though proximity to customers and major highways reduces shipping costs.

## Nursery Location

Nursery crops and markets often influence nursery location. Placing nurseries near urban areas offers advantages of access to highways and transportation (reducing shipping costs), markets (facilitating sales to landscapers and retailers) and modern communications technology (allowing greater use of Internet, broadband, advanced mobile devices, etc.). These factors reduce production costs, particularly shipping costs associated with receiving inputs and delivering finished products as fuel prices continue to rise. Reducing shipping costs leads to subsequent increases in profit margins. Because per-unit shipping costs rise with the increasing size and weight of plants, it is particularly important to locate large-container and B&B nurseries as close to the consumer as possible. However, smaller, lighter plants have a lower per-unit shipping cost, making it less imperative for them to be located near the end user.

Conversely, land costs and property taxes are typically much higher in urban areas compared to rural areas. Urban counties also may have more stringent regulations on use of land, water and pesticides. Additionally, payroll costs are often much higher near urban areas, where competition for unskilled labor is greater. These factors increase production costs and result in the need to grow higher-value crops or increase prices. However, urban and suburban areas may provide a better market for nursery land if a grower decides to liquidate assets.

## Crop Costs

Plant costs are often overlooked when growers are planning the type and quantity of species and cultivars to grow. Seed, bulb, plug, liner and whip (young tree liner) costs vary with the crop and size at purchase. In the past, many nurseries identified the plants that could be propagated with a high success rate and obtained propagules from these species/cultivars by collecting seed or rooting cuttings taken from stock plants or plants currently in production (see Table 1 for examples). Only those plants with low propagation success rates were bought as seedlings or rooted liners. The ability to grow crops from seed or cuttings lowers input costs, whereas purchasing liners raises produc-

tion costs slightly. While these activities still dominate the ornamental production market, fees must be paid to grow and/or sell patented or trademarked plants, regardless of whether they are rooted on-site or purchased as liners. Licenses may be needed to participate in branding programs, or these programs may require purchases of costly branded containers or special labels. These fees substantially raise the production cost of a particular new cultivar; however, growers often receive a higher sales price for patented and/or trademarked plants.

**Table 1. Examples of genera/species easily propagated by seed or vegetative cuttings.**

| Easily Propagated via Seed                              | Easily Propagated via Vegetative Cutting       |
|---|--|
| Oaks<br>( <i>Quercus spp.</i> )                         | Mallow<br>( <i>Hibiscus spp.</i> )             |
| Tulip Poplar<br>( <i>Liriodendron tulipifera</i> )      | Hydrangea<br>( <i>Hydrangea macrophylla</i> )  |
| Redbud<br>( <i>Cercis canadensis</i> )                  | Spirea<br>( <i>Spiraea spp.</i> )              |
| Coneflower<br>( <i>Rudbeckia spp.</i> )                 | Forsythia<br>( <i>Forsythia x intermedia</i> ) |
| Indigo<br>( <i>Baptisia spp.</i> )                      | Weigela<br>( <i>Weigela florida</i> )          |
| American beautyberry<br>( <i>Callicarpa americana</i> ) | Common fig<br>( <i>Ficus carica</i> )          |
| Needle palm<br>( <i>Rhapidophyllum hystrix</i> )        | Lantana<br>( <i>Lantana camara</i> )           |

### Production Costs

Production costs are an important consideration. Supplies such as plants, containers, substrate, fertilizer, chemicals and other items represent about 26 percent of operating expenses (Hodges and Haydu, 2001). Often it is advantageous to locate a nursery near suppliers of these production components to reduce shipping and other costs. An alternative is to locate a nursery near other nurseries to cooperate on group purchases to reduce shipping costs and obtain better prices on bulk purchases. In both of these cases, production costs will be reduced on a per-plant basis.

Crop selection also may affect operating costs. Production of certain crops, such as bedding plants and floral crops, may require large amounts of water, fertilizer or pesticide — inputs that are increasingly expensive and considered less sustainable. Additionally, many bedding plants and floral crops require substantial infrastructure, including greenhouse structures, heating

and cooling systems, fertilizer injection systems and lighting systems. All of these factors increase per-unit cost. In contrast, crops such as cold-hardy container-grown shrubs or in-ground trees require much lower amounts of these supplies and less infrastructure, thus reducing per-unit cost. However, container shrubs and in-ground trees have a longer crop production time (one to four years or more) and markets are more limited because shrubs and trees are typically long-term landscape plants, whereas annuals and perennials must be replanted frequently.

The labor required to maintain a crop should also be considered. Some crops, such as topiaries or vines, need regular or extensive pruning or the application of chemical plant growth regulators, requiring greater use of skilled labor. Finally, shipping and sales of some plants require special handling to ensure plant appearance is maintained and plant breakage and plant loss during production or shipping is reduced. More man hours and employees with specialized skills increase the per-unit plant cost.

A strategy common in many successful production nurseries is to increase production efficiency by specializing in a crop type (e.g., perennials or succulents). Most plants within a crop type may have similar fertilizer, water, pesticide and substrate needs. These similar input needs can improve production efficiency because labor and management becomes similar throughout the nursery, and employees can be trained on uniform and simple tasks. Streamlining the type of plants produced also reduces plant losses because reduced complexity enables less-skilled employees to recognize problems more easily. These factors reduce per-unit production costs.

Another strategy for increasing production efficiency is to grow plants in a limited number of container sizes (e.g., only #1 and #3 containers) and use only one substrate. By focusing on two to four container sizes and a single substrate, growers can adjust production and management to optimize handling. Many different aspects of production can be standardized, including production bench size, irrigation schedules, potting machines, pesticide sprayers, pruning mechanization, shipping rack systems and other handling systems. A liner nursery is an example of a production nursery that often grows plants in a limited number of container sizes with a single substrate (e.g., 36-cell flats), but

container shrub and tree operations could accomplish this just as easily. Because fewer different containers and substrates are used, bulk purchases can reduce per-unit production cost.

Finally, nurseries might grow only pest-tolerant or pest-resistant crops, thus reducing pest management costs. Research and breeding efforts have identified many species and cultivars that are less prone to pests than commonly grown “standard” varieties or species. Examples are shrub roses resistant to black spot and powdery mildew (e.g., *Rosa Home Run*®), crapemyrtles resistant to powdery mildew and Cercospora leaf spot (e.g., *Lagerstroemia indica* × *fauriei* ‘Apalachee’), and Indian hawthorn resistant to Entomosporium leaf spot (e.g., *Rhaphiolepis umbellata* Southern Moon® PP#20730).

### Marketing Costs

The type and location of customers greatly affect marketing costs. Most retail sales require color point-of-sale tags, a comprehensive marketing plan, and perhaps a branding program to maximize exposure, impact and sales to the retail customer. Mail-order sales require sophisticated website design and increased telephone presence, both of which involve a high level of technical ability. If the grower does not possess such skills, he or she will need to hire an outside company to provide these services. Color tags, signs, containers and support of an advertising program are expensive and add to the per-unit cost of plant material. Marketing costs associated with sales to landscapers and other nurseries typically are not burdened by these marketing expenses, though there are costs associated with trade shows, websites/catalogs and plant locator services. Nursery sales may be handled by in-house sales staff (with associated labor costs) or brokers (with associated fees), or a combination of the two.

### Shipping Costs

Shipping costs are greatly affected by the weight and size of plants being sold, the cost of fuel and the distance to customers. Liners can be shipped long distances fairly economically because of their small size and relatively low weights. On the other hand, the size and weight of finished trees in large containers and B&B trees result in expensive per-unit shipping costs. Consequently, a liner producer’s location is less constrained by shipping costs than that of a finished-tree

nursery, which should be located close to the market. It should be noted that as fuel costs continue to rise, per-unit shipping costs will also rise.

### Market Niches

Crop markets may also be defined by type of plant or crop characteristics, such as bread-and-butter plants, color crops, new plants, edible plants and value-added crops. **Bread-and-butter plants** are plants commonly used in the landscape because they are considered functional, durable and reliable. Examples include dwarf yaupon holly (*Ilex vomitoria* ‘Stoke’s Dwarf’), ‘Evergreen Giant’ liriopse (*Liriope muscari* ‘Evergreen Giant’), and live oak (*Quercus virginiana*). These plants are considered readily marketable and available because landscapers often request them, and retail customers often purchase them because they are familiar to consumers. The disadvantage of this crop type is that it is widely grown (because of its ready market), leading to greater sales competition and smaller profit margins. The advantage of growing these plants is the stability and lower risk associated with growing plants accepted as staples of the ornamental trade.

**Color crops** refer to plants with especially colorful flowers, fruits or foliage. In the past, color crops were almost exclusively bedding plants and perennials, such as petunia (*Petunia* hybrids) and mealycup sage (*Salvia farinacea*). Bedding plants and perennials are often produced by nurseries as well as greenhouses, reflecting a trend toward crop convergence for ornamental production. Bedding plants and perennials are appealing to conventional nursery growers because they offer fast production of high-value plants, resulting in rapid turnover of production space. The disadvantage of these crops is that the sales window is typically a few weeks when the plant is in bloom.

In today’s markets, color is such a strong customer demand that many groundcovers, vines, shrubs and trees also have been developed with these characteristics. Notably, crapemyrtle cultivars with true red flower color (e.g., *Lagerstroemia indica* × *fauriei* ‘Arapaho’) have become extremely popular, as are newer, more floriferous gardenias (*Gardenia jasminoides*). New ornamental forms of pomegranate have colorful fruits as well as flowers (e.g., *Punica granatum* ‘Nana’). Currently, one of the most popular breeding goals is to develop shrubs and trees with variegated leaves or purple or burgundy foliage color. Variegated forms of abelia (*Abelia* × *gran-*

*diflora*), gardenia (*Gardenia jasminoides*) and Florida anise (*Illicium floridanum*) have become popular in recent years. Burgundy foliage color was achieved with loropetalum (e.g., *Loropetalum chinense* var. *rubrum* ‘Burgundy’) several years ago, and burgundy-leaved forms of crapemyrtle (*Lagerstroemia* hybrids) and redbud (*Cercis canadensis*) are being released.

The crop category of **new plants** developed as a result of an ever-sophisticated gardening public desiring plants that are new, improved or distinctive compared to run-of-the-mill bread-and-butter plants. New plants have higher profit margins because of their novelty and limited supply. However, plant and marketing costs are also correspondingly high. Furthermore, growers bear greater risk when growing and selling new plants because many new plants are insufficiently tested, and plant performance may not meet customers’ or growers’ expectations. Finally, timing is critical when choosing to grow new plants. Eventually, these plants become readily available and familiar to customers and are therefore no longer “new.”

**Edible plants** include vegetables, herbs and fruit trees but also may include other shrubs, vines and perennials with edible fruits or plant parts. Usually, these crops have a limited but ongoing base market in the form of sales to commercial fruit and vegetable producers. However, it is important to grow the species and cultivars currently in demand by commercial producers. This factor is particularly critical for tree or shrub crops that have long production cycles and must be budded or grafted with the proper cultivar.

Retail sales are another market for edible plants. However, cultivars for commercial producers often are different than those for home gardeners because homeowners prefer a longer harvesting time than commercial growers, which complicates crop selection. Finally, note that the retail market for edibles often dramatically increases during economic recessions, food crop failures and food safety crises. Some edible plants are also very ornamental (e.g., purple basil [*Ocimum basilicum* ‘Dark Opal’]), offering dual marketing opportunities.

**Value-added crops** are plants with increased value (and sales price) because of marketing or plant manipulations that increase buyers’ interest in the product. Examples include plants sold in decorative containers;

in environmentally sustainable containers; in a “series;” or with educational materials included; and those that are organically grown; are part of a decorative mixed planting in a container; are pruned as a topiary, espalier, or bonsai; are trained on a trellis; or are adorned with seasonal decorations (bows, ribbons, etc.). An additional strategy is to market plants by featuring their special characteristics. Examples of plant characteristics include: native, deer resistant, drought tolerant, shade tolerant, salt tolerant, cold hardy, variegated, pest resistant, or those that attract butterflies, pollinators, hummingbirds or wildlife. The latter strategy requires prominent plant or shelf labels to convey the plants’ special characteristics and value.

Finally, markets exist for some **specific plants** or plant types that are popular enough to have a significant customer base, allowing a nursery to focus on these plants’ specific production needs. Examples include rose, daylily, camellia, hosta, orchids and succulents. Nurseries specializing in a plant or plant group usually grow an extensive variety of species or cultivars, though actual production numbers of each may be low. These growers also provide a value-added service of being experts in the crop that is grown. Many such specialty nurseries are Internet/mail order, a category of production/retail nursery where the nursery ships plants directly to the buyer. Popularity of individual plants or plant groups usually waxes and wanes over cycles lasting many years. Nurseries specializing in one of these plants risk losing their market because of changes in popularity or sudden loss of customer interest.

## Summary

The ultimate success of an ornamental production operation hinges on the ability of that operation to successfully understand what genera, species and/or cultivars to grow on a year-to-year basis. Answering this question requires a complex equation of inputs ranging from the type of nursery operation that exists to physical location to market trends, all of which have been discussed in this publication. Answering these questions will allow you to not only understand your crop selections but also plan other short-, medium- and long-term goals for your business.

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