

The Orchid Grower



Orchids are the second hottest potted flowering plant in the United States. Find out how to cash in on the exotic crop everyone wants in this four-part series.

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ORCHIDS, orchids, they seem to be popping up everywhere. They're on television, in home and garden magazines and at your local mass merchandiser. And they're not just for the rich and famous anymore. They are now one of the hottest potted flowering plants to purchase.

Why? There are many positive attributes to potted flowering orchids. For one, they are tropical plants that are still considered unique, stylish and exotic. Phalaenopsis, or the moth orchid, has flowers that can last for months, and they are relatively easy to care for and reflower in the home. And, because commercial production has become more efficient, costs have gone down, making them an affordable alternative to other flowering crops.

Phalaenopsis orchids are nothing new – they have been grown and enjoyed for decades. Once prized primarily by orchid hobbyists, they were expensive to purchase and not usually available outside of specialty shops or orchid venues. Over the past 20 years, production information generated by growers and researchers has advanced to the point that phalaenopsis can be scheduled in flower en masse for specific markets. In addition, hybridization by breeders has led to orchids with more desirable traits.

This article is the first of a four-part series that focuses on commercial production of flowering phalaenopsis or-



Three flowering orchid plants are put together in a decorative container in Japan. Flower spikes are wired to create a very showy floral display.

chids. Unlike some production guides, this series of articles contains research-based information, much of which has been generated at Michigan State University and Texas A&M University. There are still many “wives tales” on how to grow orchids, but this is our attempt to set the record straight.

This article provides introductory information on phalaenopsis and options for starting material and propagation. The second and third articles will focus on cultural and environmental methods for vegetative growth and flowering of phalaenopsis plants. The series will culminate with an example of a detailed phalaenopsis production schedule.

A Hot Crop

It might surprise you that potted

flowering orchids are the second-most valuable potted flowering plant produced in the United States. In 2004, the wholesale value sold in the United States was estimated at \$127 million by the USDA. About 80 percent of this value was for phalaenopsis. California, Florida and Hawaii produce more than 85 percent of all the orchids sold in the United States, with wholesale values reported at \$48 million, \$40 million and \$17 million, respectively.

Phalaenopsis dominate the orchid market because of their long-lasting flowers, wide range of flower colors, ease of care and ease to schedule into flower. Additionally, flowering phalaenopsis command a considerably higher wholesale price when compared to more traditional potted plants.

Phalaenopsis are not just popular in North America; for the past few years, they have been the most valuable potted plants sold at the Dutch flower auctions. They are also highly prized gifts throughout Asia, especially in Japan.

An International Marketplace

Phalaenopsis are produced throughout the world, but most notably in Germany, Japan, the Netherlands, Taiwan, Thailand and the United States. Outside of the United States, many young plants are propagated and grown in the Netherlands, Taiwan and Thailand.

Similar to poinsettia, greenhouse growers obtain orchid genetics from companies that have been intensively breeding for desirable flowering and plant characteristics. Many companies are breeding for specific flower colors

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and color patterns, multi- and single-branched flower spikes, and most recently, fragrance. Some of the larger breeding companies and young plant producers are Altria, Floricultura, Formosa, I-Shin, Taiwan Sugar, Twyford and Yupin. Growers should consider evaluating the genetics from several sources to determine how cultivars perform and which best suit their market.



Left: Phalaenopsis propagated by tissue culture in Thailand. Plants are grown in flasks for 10 to 12 months before first transplanting.

Right: After removal from the flask, plants are grown at 80°F to 90°F (27°C to 32°C) in either flats or small containers.



Plant Material

There are literally hundreds, if not thousands, of phalaenopsis hybrids and clones available for purchase. Breeding continues at a rapid pace, and a popular cultivar available today may not be commercially available in just a few years. Flower colors include white, yellow, green, apricot, pink, magenta and dark maroon. Flowers can be of one color or two, with different colored centers or margins or with various patterns including spots and stripes. The newest harlequin flowers are white with irregular purple blotches.

Although some phalaenopsis are produced from seed, an increasing majority are cloned from a growing point, or meristem. These plants are called "mericlones." The cloning process reduces variability from plant to plant, so populations have similar growth and flowering characteristics.

Phalaenopsis are propagated in laboratories by tissue culture, and are usually grown in flasks for 10 to 12 months under low light (maximum of 50 to 100 footcandles, or 10 to 20 $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$) (Figure 3). When young plants reach a leaf span of about 2 inches (5 cm), they are taken out of the flasks and transplanted into flats or small pots containing a fine bark- or sphagnum-based media.

Once plants are removed from their flasks, they are grown for 20 to 25 weeks at 80°F to 90°F, (27°C to 32°C) until they are ready for transplanting into a larger container. Vegetative growth is promoted by

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high temperature (80°F to 90°F), and thus most plants are grown until maturity in tropical and subtropical environments. Plant size, or maturity, is often expressed as the leaf span from one end of a leaf to the opposite leaf end. As young plants develop, each new leaf becomes larger than the previous one. After transplanting to a larger container, plants may need another 20 to 25 weeks before being capable of spiking.

Subsequent growth continues at these high temperatures to inhibit flowering and promote rapid leaf development. Plants must be large enough, or mature, before they are capable of flowering. Although differences exist among cultivars, most cultivars won't flower uniformly until the leaf span of a population averages at least 10 inches (25 cm) wide. However, breeders are developing more hybrids and clones that mature when reaching a smaller

(15 cm) leaf span.

There are several different sizes of plant material that can be purchased, including plants in flasks, immature plants that are not of flowering size and large, mature plants without or with flower spikes. The larger the plants are, the higher the price. Phalaenopsis plants growing in media can be purchased from companies within the United States.

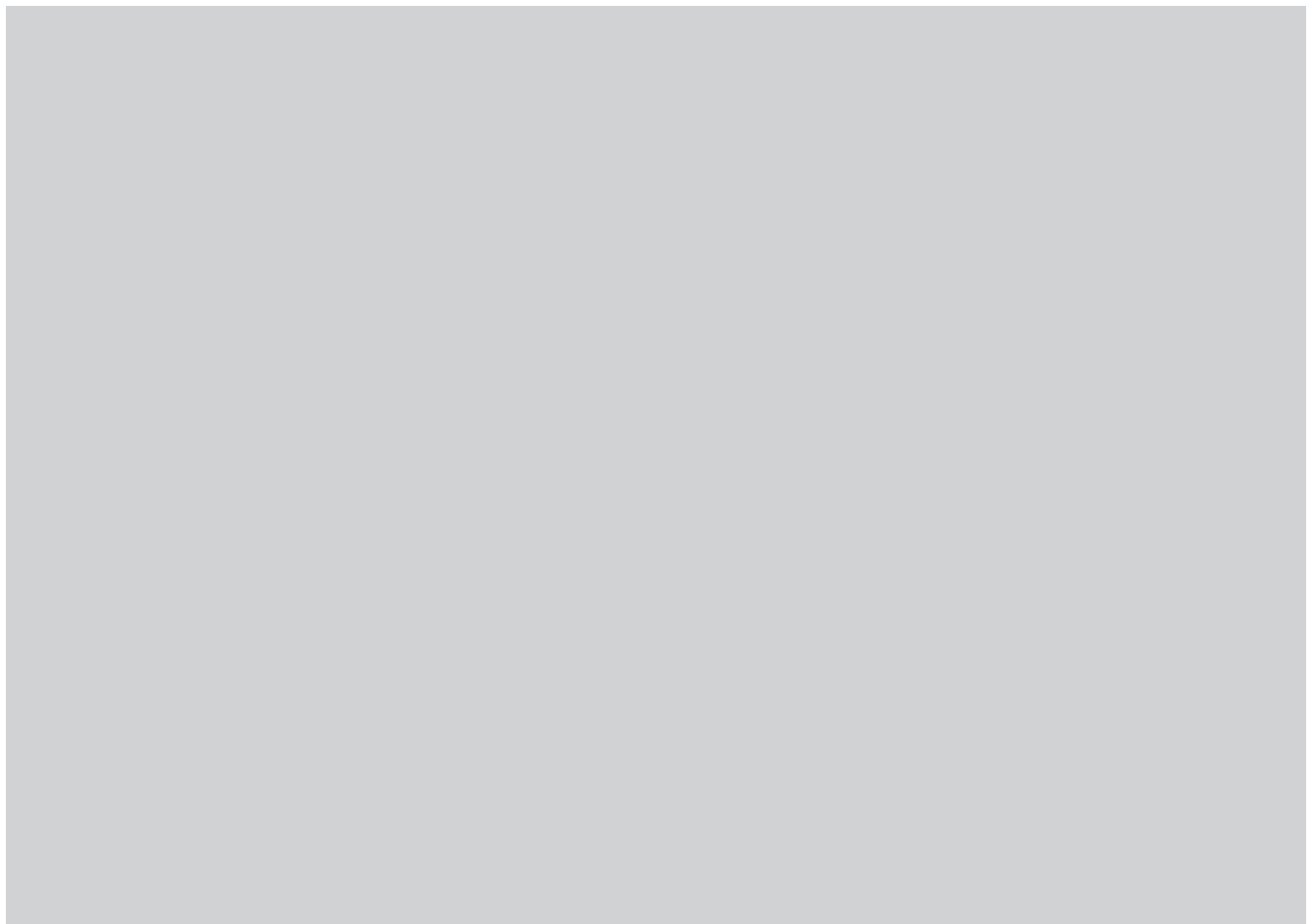
Alternatively, plants can be imported as bare-root, often from the Netherlands, Taiwan and Thailand. Growers now can import phalaenopsis in an approved growing media from Taiwan, made possible from a recent ruling by USDA's Animal and Plant Health Inspection Service (APHIS). When purchasing phalaenopsis from offshore sources, ask for the C&F price, which includes the cost for the plants and freight.

Measuring Up

The size of plant material purchased determines if and how long plants need to be grown at high temperature



Approximately 20 to 25 weeks after the first transplant, phalaenopsis are transplanted into a larger pot [here, in a 4-inch (10 cm) pot] for continued vegetative growth, or are sold as bare-root young plants.



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for additional vegetative growth. In general, the larger the plant at the beginning of forcing, the more flower buds and flower spikes (inflorescences) it will have. Although some plants will flower with less than a 10-inch (30-cm) leaf span, usually the flower spike is short with low bud count and is unacceptable to the market. In the Netherlands, two flower spikes are common per plant, yet in the United States, many plants are sold with only one spike. Plants with multiple spikes usually command a higher price, making the purchase of larger plants for forcing sometimes a cost-effective strategy.

Since transporting orchids of any kind internationally is strictly controlled by an international treaty, a domestic grower must secure the proper permits before ordering from a foreign supplier. A General Permit (\$70 for two years) and a Plant Import Permit (free) are required. These permits may

be obtained from the USDA. Also, make sure the supplier includes a copy of CITES documentation with the shipment. The CITES document is issued by the government of the exporting country to indicate that the orchid plants being shipped are artificially propagated. All imported orchids are inspected by APHIS officers at a port of entry before being released to a customs broker if found free of pests.

Look for next month's article in *Greenhouse Grower* for the second article on production of phalaenopsis. It will focus on managing the root zone (media, fertility and watering) and lighting guidelines.

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Mature, vegetative phalaenopsis grown in Taiwan are of sufficient size to flower.

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