Growing the Best Phalaenopsis

Part 1: An Introduction to Potted Phalaenopsis Orchids

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TOP Three phalaenopsis plants are put in a decorative container in Japan. Wired flower spikes create a showy floral display. ABOVE A grouping of miniature multiflora phalaenopsis. Grower: Sogo Team Co.

OPPOSITE Phalaenopsis are capturing the high-end retail market, where they can be purchased in decorative containers with attractive packaging. These plants were being sold in England.

FLOWERING ORCHIDS HAVE BE-come one of the most popular and trendy potted plants to purchase in many countries throughout the world. Orchids seem to be everywhere — on television, in home and garden magazines and at your local mass merchandiser. Why? As readers of *Orchids* magazine, most of you already realize the many positive attributes about potted flowering orchids. Phalaenopsis, or the moth orchid, has flowers that can last for months, and is relatively easy to care for and reflower in the home. In addition, commercial production has become more efficient and thus production costs have gone down, making phalaenopsis an affordable plant for orchid hobbyists, connoisseurs and amateurs alike.

Phalaenopsis plants have been grown and enjoyed for many 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 to flower in mass quantities throughout the year, especially for sales at holidays. In addition, hybridization by breeders has led to orchids with more desirable traits, flower colors and flower sizes. This has opened the door for more consumers to enjoy orchids and perhaps catch orchid fever.

This article is the first of a four-part series that focuses on the cultivation of phalaenopsis. The series contains research-based information, much of which has been generated at Michigan State University and Texas A&M University. There are still many myths on how to grow orchids, but this is our attempt to set the record straight. This series of articles was originally published in *Greenhouse Grower* magazine, and has been modified for orchid enthusiasts with a wide range of growing experiences.

This first article provides introductory information on pha-

laenopsis 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. The series will culminate with an example of a detailed phalaenopsis production schedule.

RISE IN POPULARITY Flowering orchids have become the second-most valuable potted flowering plant produced in the United States. In 2005, the wholesale value of potted orchids sold in the United States was estimated at $144 million by the USDA. However, this statistic includes only commercial greenhouses that have sales of at least $100,000 per year. Therefore, the orchid industry is much larger than the USDA statistics indicate.

Phalaenopsis are not just popular in North America; for the past several years, they have been the most valuable potted plant sold at the Dutch flower auctions. They are also highly prized gifts throughout Asia, especially in Japan. The presentation of the gift is important, and thus great care is taken to ensure a stunning flower display. Luxury orchids are also making theirway into Europe and the United States, where orchids are displayed in decorative containers and high-end packaging.

Phalaenopsis are produced throughout the world, most notably in Germany, Japan, the Netherlands, Taiwan, Thailand and the United States. Many young plants are propagated by tissue culture in the Netherlands, Taiwan and Thailand, and then are exported to other countries (including the United States) for subsequent growth and flowering. There are hundreds, if not thousands, of phalaenopsis hybrids and clones available for purchase. Orchid propagators have been intensively breeding phalaenopsis for desirable flowering and plant characteristics including specific flower colors and color patterns, multi- and branched flower spikes, and most recently, fragrance.

Breeding continues at a rapid pace, mainly in Taiwan, and a popular cultivar

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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, white or yellow with irregular purple blotches, can command a premium price.

PROPAGATION 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 that populations have similar growth and flowering characteristics. The cloning process also helps ensure consistent flower colors and patterns, whereas plants raised from seeds are more variable.

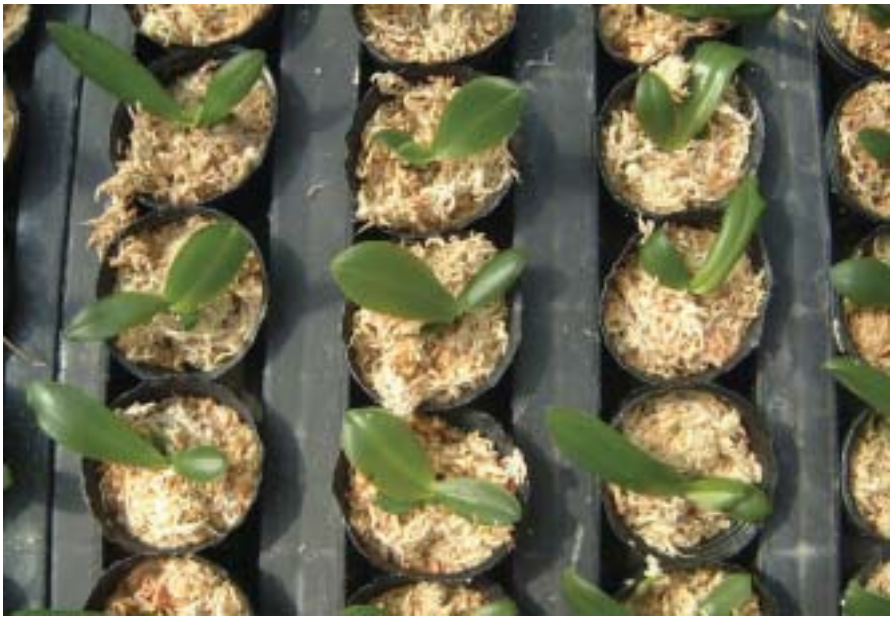
Phalaenopsis are propagated in laboratories by tissue culture, and are usually grown in sealed flasks for 10 to 12 months under low light. However, many propagators now place these flasks in greenhouses having much higher light than in the laboratory. When young plants reach a leaf span of about 2 inches (5 cm) or larger, they are ready to be taken out of the flasks and be transplanted. Many plants are shipped while still in flasks because it is relatively easy to ship flasks, and because of restrictions with importing plants growing in a bark- or sphagnum-based media.

Once plants are removed from their flasks, they are grown for approximately 20 to 30 weeks at 80 to 90 F (27 to 32 C) until they are ready for transplanting into a larger finish container. If plants are grown at cooler temperatures, they develop more slowly. In addition, over time, some young plants may begin to form a small flower spike. Because vegetative growth is promoted by high temperature, many plants are grown until maturity in tropical and subtropical environments (such as Florida and southern California). During this period of time, plants are grown under maximum light intensities of about 1,500 foot-candles. Young plants grown under higher light intensities generally have shorter but thicker leaves.

Plant size, or maturity, is often expressed as the leafspan from one end of a leaf to the opposite leaf end. As young plants develop, each new leaf becomes larger than the previous one. Subsequent growth continues at these high temperatures to inhibit flowering and promote rapid leaf development. After transplanting to a larger container, plants may need another 20 to 25 weeks before they are capable of spiking. Plants must be large enough, or mature, before they can flower. Although differences exist among cultivars, many won't flower uniformly until the leafspan of a population averages at least 10 inches (25 cm) wide. Breeders are developing more hybrids and clones that mature when reaching a smaller (15-cm) leaf span, but the actual number of leaves required to reach maturity may be similar to the larger hybrids.

Several different sizes of plants 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, the higher the price. Phalaenopsis plants growing in media can be purchased from companies within the United States. Alternatively, bare-root plants (without media) can be imported, usually from the Netherlands, Taiwan or Thailand. Commercial growers now can import phalaenopsis in an approved growing medium from Taiwan, made possible from a recent ruling by the United States Department of Agriculture, Animal, and Plant Health Inspection Service (USDA APHIS).

The international transportation of orchids is strictly controlled by an international treaty, and therefore, 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 can be obtained from the USDA. Also, make sure the supplier includes a copy of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) documentation with the shipment. CITES regulations have been changed in the recent past to allow for importing phalaenopsis hybrids and clones without accompanying CITES documentation under certain conditions. The CITES document is issued by the government of the exporting country to indicate that the



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OPPOSITE Phalaenopsis, propagated by tissue culture, are grown in flasks for 12 to 18 months before first transplanting.
ABOVE A harlequin-type phalaenopsis: *Phalaenopsis* Diamond Beauty 'Taida #1' (Haur Jin Diamond × Chingruey's Beauty). Grower: Taida Orchids.
LEFT 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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orchid plants being shipped are artificially propagated and were not illegally removed from the wild. 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. Because of these regulations, most imported orchids are brought into the United States by commercial orchid growers.

In general, the larger the plant at the beginning of forcing, the more flower buds and flower spikes (inflorescences) it will have. Although some phalaenopsis hybrids or clones will flower with less than a 10-inch (25-cm) leafspan, usually the flower spike is short and has a low bud count. In the Netherlands, two flower spikes per plant are common, yet in the United States, many plants are sold with only one spike. However, more and more plants are being sold in the United States with multiple flower spikes.

A hobbyist interested in producing a showy phalaenopsis, such as for an orchid show, could purchase young plants that have never flowered and grow them for many months at a high temperature (above 82 F, or 28 C). Assuming adequate plant culture, leaves will continue to develop, yet flowering will be inhibited. As plants produce more leaves, they develop the ability to produce more and larger flower spikes.

In next month's issue of *Orchids*, the second article in this series will focus on how growers successfully manage the root zone (media, fertility and watering) of phalaenopsis.

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OPPOSITE TOP Phalaenopsis plants that bloom at a leafspan of less than 6 inches (15 cm). Grower: Sogo Team Co.
OPPOSITE MIDDLE An example of commercial phalaenopsis production in the Netherlands. Note that most plants have at least two flower spikes.
OPPOSITE BELOW Mature, vegetative phalaenopsis grown in Taiwan are of sufficient size to flower.
THIS PAGE *Phalaenopsis* Brother Orange Runabout (Timothy Christopher × Brother Sara Gold).

GREG ALLIKAS