

# Slipper-Orchid Culture

## Growing Award-Winning Flowers in Central Florida

BY FRANK SMITH



ABOVE *Paphiopedilum* St. Swithin 'Crystelle', FCC/AOS (*philippinense* × *rothschildianum*), scored 92 points at the 60th Miami International Orchid Show, where it won Grand Champion. Five flowers were borne on each of the two 3-foot- (90-cm-) tall inflorescences. Grower: All plants illustrated in this article were grown by Krull-Smith.

OPPOSITE *Paphiopedilum rothschildianum* 'Atticus', AM/AOS, won best in its class and Reserve Grand Champion at the Miami International Orchid Show in 2004. Although the author has won two FCCs on other clones of this species, he prefers this one because of its petal angle and flower placement. It scored 87 points.

AS I SURVEY THE THOUSANDS OF paphiopedilums blooming in my greenhouses this spring, I marvel at how much has changed since I first came to Florida a little over 25 years ago. Then, anyone would have been hard pressed to find more than a couple of slipper orchids at any of our local orchid shows. The common belief was that it just wasn't practical or possible to grow paphiopedilums well in Florida.

Entering the AOS judging program as a student judge in 1980, I traveled throughout the country to gain experience at orchid-show judging. It was then that I fell in love with paphiopedilums. This was the time when vinicolor paphiopedilums were arriving on the scene, taking the paphiopedilum world by storm and causing new excitement among orchid breeders worldwide. One of these vinicolors had a profound and lasting influence on my early hybridizing efforts: *Paphiopedilum* Vintner's Treasure 'Eureka', AM/AOS (*Kowloon* × *callosum*), given to me by Frank Hughes of Santa Cruz, California. I owe much of my success in paphiopedilum hybridizing to the generosity and mentoring bestowed in the early days by Hughes and, in later years, to Terry Root of The Orchid Zone in Moss Landing on Monterey Bay, California.

*Paphiopedilum* Vintner's Treasure proved to be an excellent parent, producing many outstanding hybrids, the most significant to date being the highly decorated *Paphiopedilum* Satchel Paige (Vintner's Treasure 'Eureka', AM/AOS × *wardii*), which received the American Orchid Society's Award of Quality and has been recognized internationally, with many cultivars receiving quality awards. In addition to outstanding flower quality, virtually all cultivars exhibit extreme vigor in excess of either parent. These qualities are readily passed to its progeny, making *Paph.* Satchel Paige a fantastic parent. Among the best of

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TOP LEFT *Paphiopedilum* Satchel Paige 'Jim Krull', AM/AOS (*wardii* × Vintner's Treasure), passes its heat tolerance on to its progeny, such as *Paphiopedilum* Rory Jones and *Paphiopedilum* Scott Ware. This vigorous plant is easy to grow, making it a good choice for novices.

TOP RIGHT *Paphiopedilum* Scott Ware (Satchel Paige × Cecilia Devine) produces many cultivars with nearly black flowers and foliage. This grex received an Award of Quality, one First Class Certificate and several Awards of Merit. The clone 'Atticus', AM/AOS, is shown here.

ABOVE *Paphiopedilum* Rory Jones (Satchel Paige × *sukhakulii*) has won an Award of Quality and several AMs, including 'Uncle Frank', AM/AOS. The *Paph.* Satchel Paige parent contributed heat

tolerance to this hybrid. This plant was exhibited by Ryan Kowalczyk. OPPOSITE TOP LEFT A remake of *Paphiopedilum* Macabre (*sukhakulii* × Voodoo Magic) by Terry Root. With this grex Krull-Smith has won an Award of Quality, three First Class Certificates and several Awards of Merit, including this one, 'Miami', AM/AOS.

OPPOSITE TOP RIGHT *Paphiopedilum* Mulyk's Macabre 'Krull-Smith', AM/AOS (Ruby Peacock × Macabre), was one of several seedlings of this grex the author bought from Terry Root at The Orchid Zone.

OPPOSITE *Paphiopedilum* *sukhakulii* 'Jim Krull', AM/AOS, scored 85 points when shown at the 60th Miami International Orchid Show.

these hybrids is *Paphiopedilum* Scott Ware (Satchel Paige × Cecilia Devine), which recently received an Award of Quality, many AMs and one FCC. Another excellent *Paph.* Satchel Paige hybrid that has recently received an Award of Quality and many AOS quality awards is *Paphiopedilum* Rory Jones (Satchel Paige × *sukhakulii*).

**HYBRIDIZING** Over the last 25-plus years, I have sought out the best cultivars to use for breeding. As Hughes told me early on, "You only breed the best to the best." By adhering strictly to this advice we have, in a relatively short time, improved the quality of many *Paphiopedilum* species to a level never imagined just a few short years ago.

When paphiopedilums first caught my attention in the early 1980s, I developed a special interest in the brachypetalums, especially *Paphiopedilum godefroyae* var. *leucochilum*. When news of several good collections of var. *leucochilum* in Thailand caught my attention, I asked Robert Fuchs of Homestead, Florida, if he would find some plants for me on one of his trips there. He agreed, and upon returning from his next trip, presented me with seven var. *leucochilum* specimens. Five generations later, never forgetting Hughes' advice, some of the finest plants of *Paph. godefroyae* var. *leucochilum* have emerged, with significantly improved size, substance, color and form.

My new line breeding of *Paphiopedilum lowii* was produced by applying much the same formula. The seedlings from this cross ('Krull-Smith', AM/AOS × 'Super Fly', AM/AOS) recently received an Award of Quality and more than 12 quality awards. By selecting only the best of the seedlings from each subsequent generation, we see continual improvement in size, shape, flower count and vigor.

Terry Root provided one of the most dramatic examples of species improvement with his mating of *Paphiopedilum rothschildianum* 'Rex', FCC/AOS, to another outstanding *Paph. rothschildianum* cultivar, 'Mont Millais', FCC/AOS. This grex received an Award of Quality, plus many FCCs and AMs over the past five years. In addition to improved characteristics such as those previously mentioned for other species, this grex of *Paph. rothschildianum* produced many cultivars that reached blooming stage several years earlier than what is considered normal for this species.

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## Clones of *Paphiopedilum godefroyae* var. *leucochilum*



'Krull's Round Robin', AM/AOS  
Photograph Dan C. Backhaus



'Matt Saftenberg', AM/AOS  
Photograph Donald F. Wilson



'Krull's Leopard', AM/AOS  
Photograph Greg Allikas



'Magnificum', AM/AOS  
Photograph Johanna Willink



*Paphiopedilum Crystelle* 'Krull Smith', AM/AOS  
(Double Trix × *rothschildianum*)

This 8¾-inch (22-cm) flower was borne on a first-bloom seedling in a 4-inch (10-cm) pot only three years out of flask. The grex name *Crystelle*, which the author often uses as a clonal name, honors his mother.

Photograph Frank Smith

I believe these new improved cultivars of species will create a new level of hybrids, redefining many of the standards set in the past. *Paphiopedilum rothschildianum* 'Crystelle', FCC/AOS, which I purchased from Root in 2001, was crossed with *Paphiopedilum* Double Trix (S. Gratrix × Double Shot) hoping to increase size and improve the form of hybrids using brachypetalums and *Paph. rothschildianum*. The first seedling flowered only three years out of flask. I believe this cross achieves a new standard for this type of hybrid, as this first-bloom seedling — the first of the cross to flower — received an Award of Merit from the American Orchid Society and was recognized as the Best *Paphiopedilum* at the 2006 Ft. Lauderdale Orchid Show.

I hope this account of my own experience will encourage everyone to reach deep inside and call upon his or her creativity to make new and exciting hybrids. Flowering seedlings is a huge part of the wonder and excitement we experience with growing orchids, but while we strive to create these wonderful plants, we must also aim to grow them well along the way in order to see them bloom at their best.

**CULTURE** Plants are no different from us when it comes to their need for nutrients and the proper environment to survive and thrive. I began learning this lesson early in life growing up on our farm in North Carolina. I was four years old when my mother dressed me in warm clothes one chilly winter morning, explaining to me that we were going to plant the new pecan trees that had just arrived in the mail. After I climbed into my little red wagon, she pulled me to the cow barn where she filled bushel tubs with cow manure. She patiently described to me how we were going to put the manure deep into the holes under the new little trees because they were going to need food to grow. My mother promised that if we did everything right, these little twigs would one day be strong trees big enough to produce pecans. Today, those pecan trees are more than 50 feet (15 m) tall and have been producing pecans for more than 30 years.

*Paphiopedilum*s and phragmipediums also need to be properly planted and fertilized on a consistent basis if we want to get them to remain healthy and flower. The maintenance program I've followed successfully for

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ABOVE LEFT *Paphiopedilum* Moustache 'Crystelle', FCC/AOS (*philippinense* × *St. Swithin*), is from a remake of this cross the author created using *Paph. philippinense* 'Alford', AM/AOS, which he received from Charles Alford. This grex has received several awards, including two First Class Certificates (2004 and 2005), an Award of Quality and a Certificate of Cultural Excellence.

ABOVE *Paphiopedilum* Moustache 'Gandalf', AM/AOS (*philippinense* × *St. Swithin*), is another fine example from this outstanding grex.

LEFT *Paphiopedilum* Jan Ragan 'Crystelle', AM/AOS (*St. Swithin* × Michael Koopowitz), a new hybrid being registered, is named for Florida orchid grower Jan Ragan.

*Paphiopedilum sanderianum* is one of the grandparents of this grex, which is easy to grow and flower.



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TOP Remakes of *Paphiopedilum* Delrosi (*delenatii* × *rothschildianum*) have yielded plants that flower earlier than previous grexes, such as ‘Glowing Rose’, AM/AOS, which shows intense color and a glossy rose-colored background.

ABOVE *Paphiopedilum* Fanaticum ‘Crystelle’, AM/AOS (*malipoense* × *micranthum*), can bear several flowers with incredible coloring in a small container.

OPPOSITE ABOVE LEFT Frank Smith made the cross *Paphiopedilum* JEM’s Perfect Angel (*glanduliferum* × Angel Hair), which was registered by JEM Orchids in Delray Beach, Florida. The clone ‘Krull-Smith’, AM/AOS, is shown here.

OPPOSITE TOP RIGHT *Paphiopedilum stonei* ‘Crystelle’, AM/AOS, is from a group

of seedlings obtained from Terry Root. Wide dorsal sepals, the number of flowers per spike, petal width and intense color add up to incredible flowers that need to be seen live to be fully appreciated.

OPPOSITE MIDDLE RIGHT When *Paphiopedilum micranthum* became available in the 1980s, Krull-Smith flowered more than a thousand of them, including ‘Krull’s King’, FCC/AOS, which was exhibited at the 1988 Ft. Lauderdale Orchid Show.

OPPOSITE BELOW LEFT *Paphiopedilum lowii* ‘Miami’, AM/AOS, from a sib cross of ‘Krull-Smith’, AM/AOS, and ‘Super Fly’, AM/AOS, that also earned an Award of Quality.

OPPOSITE BELOW RIGHT Plants of *Paphiopedilum lowii* in 12-inch (30-cm) pots in the author’s greenhouse.

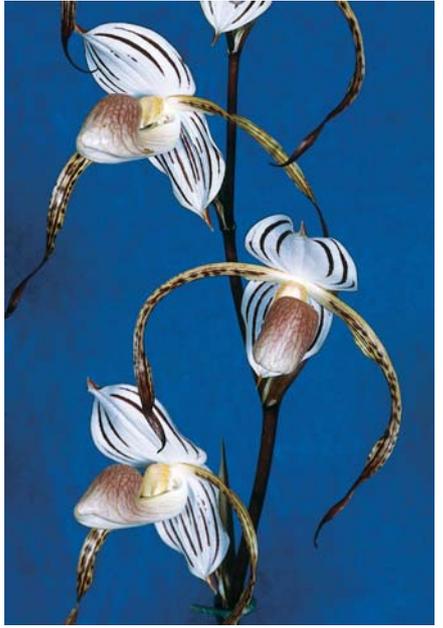
more than 20 years involves some basic fundamentals and a simple set of easy-to-follow steps to be taken consistently at the same time every year.

**Medium** The potting mix I use is fairly porous, consisting of five parts medium fir bark, two parts Canadian peat and one-part each charcoal, extra-coarse Sponge Rok #4 and 1/2-inch (1.25-cm) Stalite. Combining these components in these proportions produces a mix that provides support for the roots while allowing them to breathe and resists becoming water-logged.

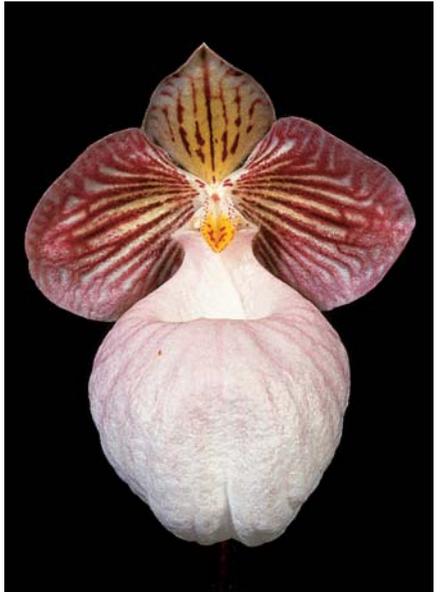
**Watering** When watering paphiopedilums, I prefer to use a Dramm 1000 (redhead) breaker with fairly strong pressure to facilitate the mixture of air and water while creating a gentle stream. I stand about 7 or 8 feet (2 or 2.5 m) away from the plants while watering so that the pressure will not damage the leaves but the volume is still ample enough to pull air into the roots. Our water temperature here in Central Florida is approximately 70 F (21 C) year round, making it unlikely plants will experience shock from a sudden bath of cold water. My watering schedule is adjusted for and completely dependent on the weather. Bright and sunny weather causes the plants to dry out more quickly, necessitating more frequent watering. Most importantly, I never let my paphiopedilums completely dry out.

**Fertilizing** I recommend fertilizing with a balanced, water-soluble formula at 150–200 ppm (parts per million). Fertilizer is applied from October through May on the day after every other watering, ensuring that there are two waterings between every time fertilizer is applied. This allows any residual salts from the previous application of fertilizer to be flushed out before the next. Fertilizing is discontinued completely during the hot months of June through September because I find that the Florida heat causes the plants to take up too much fertilizer, resulting in salt burns at the tips of the leaves.

**Temperatures** Greenhouse temperatures here in Central Florida can easily reach 100 F (38 C) every day in summer. Some paphiopedilums will show signs of stress under these conditions, but I have found them to be quite resilient, bouncing back almost immediately when temperatures start to



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cool down in the autumn. To help control heat and reduce stress during the hot months of summer, the paphiopedilum houses are shaded to 1,000 foot-candles. Light levels are brought back up to 1,400 foot-candles in the autumn and maintained throughout winter and spring. During these cooler months, night temperatures are allowed to drop to 55 F (13 C) and daytime temperatures are held to a maximum of 85 F (29 C).

**Ailments** It is almost impossible to prevent pests and disease entirely, but I much prefer to treat preventively rather than be forced to deal with an infestation. In my experience, high air movement, both day and night, combined with good greenhouse ventilation will almost completely prevent fungal and bacterial problems. Occasionally when I do find a plant affected by insects or disease, I remove it from the greenhouse immediately and treat it accordingly.

By consistently following this regimen for more than 20 years, I have found that we can grow paphiopedilums to near perfection. By making allowances for geographic and climatic differences, I believe it will work for many others too.

*Frank Smith is the owner of Krull-Smith, an orchid nursery he founded in the late 1970s with Jim Krull. While one might get the impression here that he grows only slipper orchids, the author's efforts in hybridizing in Phalaenopsis and the Cattleya Alliance are just as focused, evidenced by more than 600 quality awards received to date. Smith currently serves as president of the Central Florida Orchid Society, chair of the American Orchid Society Membership Committee and is an active AOS judge. 2815 Ponkan Road, Apopka, Florida 32712 (e-mail orchidfrank@aol.com).*



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TOP LEFT *Paphiopedilum* Mystic Knight 'Florida Snow', AM/AOS (Elfstone x White Knight), was made by Terry Root and registered by The Orchid Zone in 1998.

The author, who collects large-flowered white paphiopedilums, considers it a fine hybrid. The presence of *Paphiopedilum* Skip Bartlett in its parentage imparts heat tolerance to *Paph.* Mystic Night.

TOP CENTER *Phragmipedium* Jason Fischer 'Miami Beach', FCC/AOS (Mem. Dick Clements x *besseae*), is a diploid (2n) plant that breeds readily onto other diploid phragmipediums. *Phragmipedium* Jason Fischer is good for a beginner wishing to try these slipper orchids, unlike one of its parents, *Phrag. besseae*, which has more demanding cultural needs.

TOP RIGHT Potting mix for paphiopedilums and phragmipediums.

ABOVE *Paphiopedilum* British Concorde 'Crystelle', AM/AOS (Hellas x Amanda), is one of two or three plants of this grex the author bought from Michael Tibbs at the New York International Orchid Show. This complex hybrid is easy to grow.

OPPOSITE *Phragmipedium* Grande 'Krull-Smith', AM/AOS (*caudatum* x *longifolium*), tolerates heat well and requires less water than *Phragmipedium besseae* hybrids. This tetraploid (4n) plant originally came from the Eric Young Orchid Foundation on the Isle of Jersey in the Channel Islands. It won Best Phragmipedium at the 59th Miami International Orchid Show, where the plant had a 30-inch- (75-cm-) tall inflorescence.

