

My Addiction to Miniature



Alan Koch of Gold Country Orchids is well known for his compact cattleya hybrids. Here, he tells readers his motivation for creating them, and how to best grow these petite gems.

MY ORCHID ADDICTION STARTED many years ago as a college student. My freshman botany professor gave a lecture on orchid pollination that opened my eyes to the wide variety in the orchid family. I had been given three cymbidiums by an aunt, and following the lecture I went to a local orchid vendor and made my first purchase of orchid plants. And so the obsession began.

Like many growers, my first purchases were based on what I liked, not where I was growing. There were many fatalities in the early years, but soon my small apartment was taken over by the orchids. As my addiction became more serious and my orchid collection grew, I learned that environment was an important factor in successful home orchid growing. I moved into a larger apartment with a south-facing covered balcony, and much better light in the living room for my orchids. It never occurred to me to

stop buying more orchids. The obsession continued and I moved to a house and put in a very nice greenhouse, but once again the greenhouse wasn't large enough for my growing collection and I had to move again. I rented a large commercial greenhouse for a time, but I finally came up with the solution — 10 acres (.04 sq km) of land.

Today I have three commercial double-wall polycarbonate computer-controlled greenhouses with rolling benches. Our nursery is located in the foothills of the Sierra Nevada Mountains of Northern California, in a beautiful citrus belt that the 49ers (the gold miners, not the football team) called the Thermal Lands because of its milder winters. Our challenge during the summer is low humidity, so when building the greenhouses, we put down 12 to 18 inches (30 to 45 cm) of crushed rock to buffer the effects of the outside dry air. Our greenhouses are 21 feet (6.5 m) tall and designed with a large internal air volume to moderate the temperature swings. The majority of the orchids are in clay pots with New Zealand Sphagnum moss, which raises the humidity around the plants slightly; however, plants that need to dry more quickly are mounted or grown in baskets.

OBSESSION WITH MINIATURES

In the mid to late 1970s, I started to see a few articles in the *AOS Bulletin* (now *Orchids*) about miniature species and miniature cattleyas. Having run out of room (again), I started to replace the larger cattleyas, dendrobiums and oncidiums with the plants about which I was reading. I started with *Cattleya Small World* (*aclandiae* × *luteola*) and *SophrOLAELIA Psyche* (*L. cinnabarina* × *Soph. coccinea*), plants that I still have today. I soon found myself looking at the ads in the back of the *Bulletin* before I read the articles, and began to purchase plants from the advertisers. I was assembling a fantastic collection of miniatures before long and found with the miniature cattleyas that the flowers lasted longer than their larger relatives,

Cattleyas

TEXT BY ALAN KOCH/PHOTOGRAPHS BY GREG ALLIKAS



OPPOSITE Alan Koch of Gold Country Orchids surrounded by cattleyas in his greenhouse in the Sierra Nevada Mountains of Northern California.
THIS PAGE *Laelia lucasiana* CAPTION TO COME Grower: Gold Country Orchids.



the colors of the flowers were brighter and the plants bloomed more often. I had found my niche.

I was blessed to be in California, as was able to meet and talk to a veritable who's who of orchid breeders, people like Hugo Freed, Earnest Hetherington, Joanne Brown, Herb Hager and Bob Jones, to name a few. They freely shared their vast knowledge with me and I know their mentoring helped me become a better grower. My good fortune continued, and while selling at the Santa Barbara International Orchid Show in 1981, my sales booth happened to be next to that of Frank Fordyce of Fordyce Orchids. Over the course of the show we became friends and he has had the greatest influence on me by inspiring me to focus my breeding program on miniature cattleyas.

A trip to Hawaii in the spring of 1985 convinced me of the best way to breed orchids. I visited a relatively new nursery called H&R, located on the windward side of Oahu. Roy Tokunaga (the "R" in H&R), had worked for years at E&R Orchids of Hawaii, learning many of the techniques he was now employing in his own nursery. He proudly showed me around the beautiful nursery, and we shared what we were doing and what we hoped to accomplish. Tokunaga invited my wife and me to dinner and a friendship developed, with family, food and orchids. After several hours of talking about orchids, our wives proclaimed us

ABOVE *Sophrolaeliocattleya* Sierra Perfection 'Perfect Circle' (Sierra Doll × Sc. Carol Lynn), registered by Gold Country Orchids in 2004.

clones, identical twins separated at birth. Over the past 22 years, Tokunaga and I have exchanged our knowledge, sharing both successes and failures. The greatest information he shared with me that first evening was papers he had saved from Haruyuki Kamemoto, PhD, one of his college professors at the University of Hawaii. It was from these papers that I discovered the importance of genome breeding and how to apply this to the *Cattleya* alliance.

Years ago, breeders kept everything close to the vest and would not share information. Today's growers and breeders are more open; Tokunaga and I readily share information with others working with cattleyas, such as Gene Crooker of Carter and Holmes in Newberry, South Carolina, Mike Bleitz of Exotic Orchids of Maui, and many others. Working with these friends has been rewarding in so many ways, as new miniature cattleya hybrids are created and then improved upon.

CULTURE BASICS Most hybrids are easier to flower than the species behind them, and usually flower more often. *Cattleya luteola* and *L. pumila* are both easy to grow, but most people try to grow them too bright. Light seems to be the number-one reason people don't flower their miniature

cattleyas. When growing in windowsill conditions, your plants should be as close to the window as possible, without letting the leaves feel warm to the touch at the hottest part of the day — not on a coffee table 3 feet (.9 m) from the south window or in the center of the room. A south or east window is always preferred; however, a west window will work sometimes if it isn't too warm. When growing under lights, keep moving the plant up closer to the light until the leaves no longer feel cool to the touch. This is commonly referred to as "the touch test," and the plant will indicate when it is in as bright a light as it can handle. The leaves will start to feel warm to the touch as the plant can no longer pull enough water up to cool itself. This can be applied to greenhouse growing as well. When miniature cattleyas are receiving too much light many of them will turn red, a build up of anthocyanin pigment in the leaves. It is also true that if you are growing in low humidity, the plants can't take as much light, so when growing indoors, we highly recommend the use of humidity trays. We try to maintain about 60 percent humidity, which prevents the plants from drying out too quickly. There is no reason to mist orchids in the home because the humidity trays are much more efficient. If you are growing in a greenhouse, you should mist your orchids only early in the day so they will dry off before evening. Make sure the plant is not sitting in water, as cattleyas do not grow well with "wet feet."

Watering is one of the most important things and yet it is the hardest thing to teach a new employee at the nursery. We have hard water and most of the miniature cattleyas will struggle if there is a build-up of salts in the medium. We use a long water cycle about once a month (often referred to as leach watering) to keep from getting a build-up of salts. We will let the overhead sprinklers rain down on the plants for 30 to 45 minutes. As a general rule, the harder your water, the longer your water cycle should be. We grow quite a few species that are sensitive, so we keep bottles of distilled water in the nursery to pour through the pots of these plants after we have finished watering.

Air movement is also an important factor on how bright you can grow your plants. If you have good air movement in your growing area, the plants will be

Hybridizing Miniature Cattleyas for Hobby Growers

BREEDING cattleyas for the hobby grower is my passion. Growing orchids should be a fun and rewarding hobby. The plants you grow should thrive and flower well in a greenhouse, under lights or on a windowsill. Many of the plants we started with more than 30 years ago would flower only once a year or would not flower at all unless they were subjected to temperatures below 55 F (13 C) for two weeks, not a friendly environment for the home grower. When we started our breeding program, we set out to find parent plants that would flower in lower light, did not need arctic conditions to initiate flowering, and bloomed twice or more a year. Some plants that seemed obvious to start this project included *Laelia* (syn. *Sophranitis*) *pumila*, *Cattleya luteola*, *Cattleya walkeriana* and *Sophranitis coccinea*. One such plant fell into our lap when we were given a division of *Laelia* (syn. *Sophranitis*) *alaorii* 'LASCA' from the Los Angeles State and County Arboretum.

Laelia pumila and *Cattleya luteola* were obvious candidates because they both bloom at least twice a year and do not need a chill to flower. Another important point was they would flower in about the same light as a phalaenopsis or, in the case of *C. luteola*, even less. *Cattleya walkeriana* requires bright light to grow and flower, but blooms autumn and spring with long-lasting fragrant flowers. Because these plants would flower without a chill, we tried making a few crosses with them and determined that the need for bright light to grow and flower was recessive when crossed to plants that would flower in lower light. We knew there were a lot of problems with *Soph. coccinea* when we decided to use it for our breeding program, but there were too many advantages to ignore. *Sophranitis coccinea* is a notorious cool grower that does not do well in bad water. We obtained a low-elevation form of the species that grew warmer and crossed it with the higher-elevation form that had better color and shape. Over seven generations, we bred for warmth tolerance in this beautiful species and developed a race that was far easier to grow and flower and could survive our very hot summers in the Sacramento Valley. This was a key plant to our breeding program due to its full round flowers of large size when compared to the



CHARLES MARDEN FITCH

ABOVE *Sophrolaeliocattleya* Sierra Gem 'Pure Gold', HCC/AOS (Hazel Boyd × *Sl. Pole Star*). Grower: Gold Country Orchids.

size of the plant, as well as its ability to flower several times a year and tendency to send multiple front lead growths. The big surprise to us was *L. alaorii*. We knew it flowered well without a chill and that it did not require bright light to flower, but we didn't know it would flower three to four times a year. We now have a large plant that is in flower from March through the end of November. It seems to flower from every new lead it produces with the exception of the ones produced in the winter. Our first cross was to put it on *Soph. coccinea* as the primary bloom season for it is when *L. alaorii* isn't in flower. We discovered *L. alaorii* was color recessive, yielding reds, oranges and bright coral flowers. The cupped shape also was recessive, which led us to name this new hybrid *Sophrolaelia* Coral Orb due to its full round flat flowers.

For modern miniatures, we needed tetraploid plants of primary hybrids to build a successful breeding program that would last many years because their genetics are more stable and their progeny more consistent. We would look for tetraploid species to purchase or make sibling crosses of species and treat them with colchicine or orzalin to induce tetraploid plants. Another method was to make a primary hybrid between two species and chemically treat the offspring with colchicine or orzalin to get tetraploid plants. We crossed a tetraploid *Soph. coccinea* with a tetraploid *L. pumila* to remake *Sophrolaelia* Orpetii. This has been one of our most important building blocks because it has large, flat, rich fuchsia-pink flowers that

bloom two to three times a year. Hybrids from *Sl. Orpetii* are free flowering, have long-lasting flowers and are of above-average quality.

Laeliocattleya Mini Purple, a cross of *C. walkeriana* with *L. pumila*, is another one of the key building blocks with large flowers that are long-lasting on compact-growing plants that flower twice a year. This has been a wonderful parent for autumn- and spring-flowering lavender and splash-petal crosses. For yellow to red progeny, we use either *Sophrocattleya* Beaufort, a cross of *C. luteola* with *Soph. coccinea* or *Sophrolaelia* Pole Star, a cross of *Laelia briegeri* with *Soph. coccinea*. Either of these combinations allows us to achieve multiple flowerings per year, bright rich colors and long-lasting flowers.

Sophrolaelia Pole Star has proven to be the surprise winner among the numerous building blocks that we have developed. The plant is compact in its growth habit and will start to flower in 1-inch (2.5-cm) pots. The flowers are held above the foliage on a stiff upright inflorescence that will carry up to six 2-inch (5-cm) flowers with colors from pure yellow to pure red and all the sunset tones between. The flowers are long lasting; up to 10 weeks in the winter and spring and six to eight weeks in the summer. It has been a consistent parent, giving above-average progeny that seem to take on the best attributes of both parents. Our favorite hybrid from *Sl. Pole Star* to date is with *Sophrolaeliocattleya* Hazel Boyd to make *Sophrolaeliocattleya* Sierra Gem. The best thing about this hybrid is the exceptionally long-lasting flowers of excellent substance held well above the foliage. The growth of the plant is also important in that the *L. briegeri* behind the *Sl. Pole Star* even cleans up the twisting growth of *Slc* Hazel Boyd.

A few years ago we crossed *L. lucasiana* 'Maria Christina', AM/AOS, with *Cattleya harrisoniae* (syn. *harrisoniana*) var. *violacea* and treated the plants with a chemical to induce tetraploids. The seedlings that have been flowering from the cross have been deep fuchsia-pink to sparkling purple with a sulphur-yellow lip. The compact and upright plants have four to six 3-inch (7.5-cm) flowers held well above the foliage that last six to eight weeks, depending on the temperature. The plants flower at least twice a year, which makes this an excellent addition to our breeding program. — Alan Koch.



able to handle more light. We have fans going 24 hours a day, which lets the plants dry out more quickly and helps to reduce disease. Plants are living, breathing organisms and benefit from buoyant air. Since most of the miniature cattleyas do best when allowed to dry out between watering, the fan is a great asset, but use one in proportion to your growing area. A soft, gentle breeze is all you are trying to duplicate, not a hurricane.

Nutrition will separate the good grower from the outstanding grower. We always water our plants prior to applying fertilizer. We use a five-week watering rotation all year long. In week one, we apply a balanced fertilizer as a drench. We use a blend that we have developed for our own water quality. However, if you have a small collection

ABOVE Name to come/need caption.
Grower: Gold Country Orchids.

we suggest a 20-20-20 formula. If you have a large collection and good water quality, we suggest the Michigan State University formula for reverse osmosis (RO). If your water is hard, you might try the MSU formula for well water.

During week two, we apply a micronutrient package as a foliar feeding after watering. Most foliar feeding occurs under the leaf, so it is important to get your spray under the leaves. We use a commercial spray that is not available to the general public. However, we recommend Flora Micro

and Flora Micro for Hard Water from General Hydroponics for the home orchid grower. These are highly purified concentrates for micronutrition.

In week three, we go back to a drench feeding with the balanced fertilizer. It is important to note that macronutrition, such as nitrogen, potassium, phosphorous, calcium and magnesium, is best absorbed by the root system of your orchid, whereas the micros are absorbed more efficiently by the macropores found under the leaves.

During week four we go back to the foliar feeding of the micronutrients; however, this time, we add seaweed extract to our spray. Sea kelp aids in the absorption of nutrients and has vitamins and hormones that support and strengthen hearty, thriving plants.

In week five, all we do is a thorough leach watering. Late spring through early autumn we use the fertilizer at full strength, and during the rest of the year we cut back to three-quarter strength because we do not have the same light intensity. By the middle of winter we are down to half-strength solution.

We repot plants every two years to prevent salt build-up in the medium. We use high-quality sphagnum moss from New Zealand and use a collaring technique when we pot. We wrap a circle of the moss around the top of the plant so that it just fits into the clay pot and the bottom half of the pot is empty with the exception of a few roots. Other mixes will work well as long as you include some organic medium in your mix.

Orchids don't require a lot of tender loving care, but they can't be treated like the common houseplant either. I am thankful that I started this obsession those many years ago, and hope that these suggestions will help you discover the joy of growing miniature cattleyas. But be careful — they are habit-forming.

BIO TO GO HERE

A Gallery of Cattleya Hybrids

Grown by Gold Country Orchids



Sophrolaelia Orpetii
'Bonanza', AM/AOS
(*Soph. coccinea* ×
L. pumila)



Sophrolaelia El Dorado Sunrise
 'Gold Country', CCM/AOS
 (Tiny Red Bullet x *L. briereri*)



JOHN STEWART

Sophrolaeliocattleya Twinkle Twinkle 'Solar Flare', HCC/AOS (Precious Stones x *C. intermedia aquinii*)



RICHARD E. FLEIG

RICHARD E. FLEIG

Sophrolaeliocattleya Gold Nugget 'El Dorado', HCC/AOS (Beaufort x Kauai Starbright)



Sophrolaeliocattleya Seagull
 Mini-Cat Heaven 'Miami Sunrise',
 HCC/AOS (Sc. Beaufort x Tangerine Jewel)

GREG ALLIKAS



JOHN STEWART

Sophrolaeliocattleya Firelighter 'Ember', AM/AOS (Bright Angel x *Sl. Orpetii*)



Sophrolaeliocattleya Brillig 'Orange Gem',
HCC/AOS (Yellow Doll x *Sl. Psyche*)



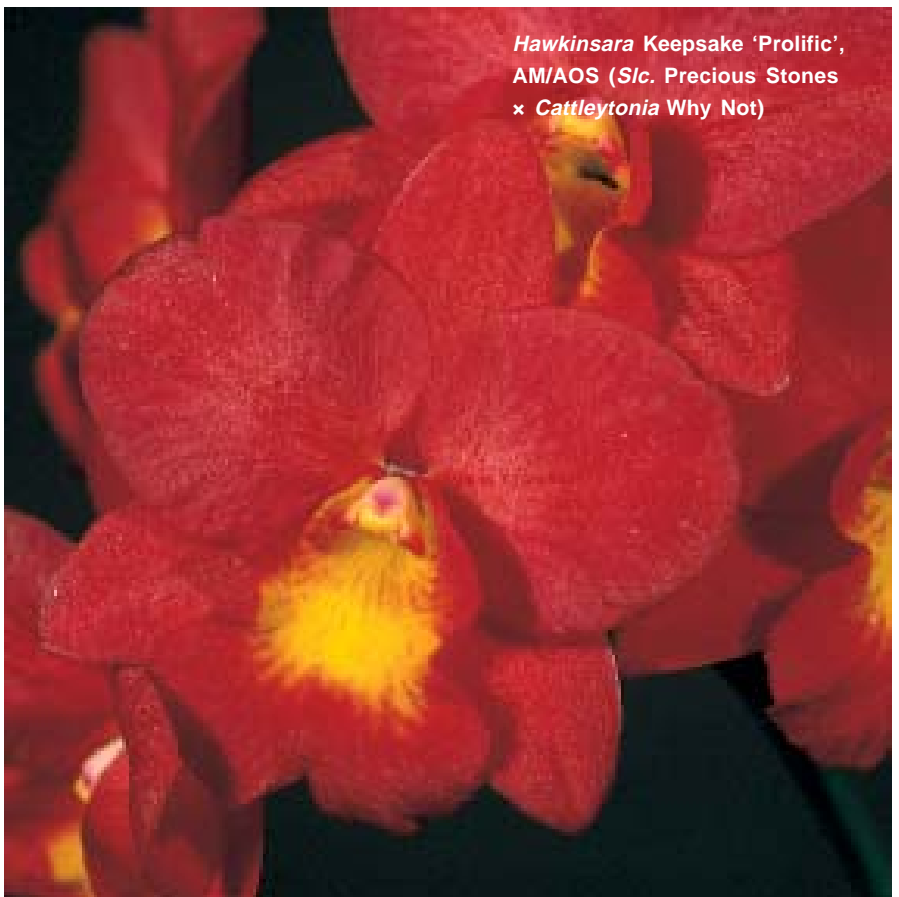
Sophrolaelia Sparkler 'Ruby Fire',
HCC/AOS (*Soph. cernua* x Jinn)



Sophrolaeliocattleya Gold Nugget 'Big Ben',
HCC/AOS (*Sc. Beaufort* x Kauai Starbright)

RICHARD CLARK

G. FULKS



Hawkinsara Keepsake 'Prolific',
AM/AOS (*Slc. Precious Stones*
x *Cattleytonia Why Not*)



Potinara Little Toshie 'Gold Country',
HCC/AOS (*Sc. Beaufort* x *Blc. Toshie Aoki*)

JOHN STEWART

ELDRIDGE HUBER



Sopholaelia Orpetii 'Garnet Sea',
HCC/AOS (*Soph. coccinea* x *L. pumila*)



CRAIG J. PLAHN, DDS

Sopholaeliocattleya Sierra Doll 'El Dorado',
AM/AOS (Pink Doll x *C. walkeriana*)



RAMON DE LOS SANTOS

Sopholaeliocattleya Dream Cloud 'Super
Nova', HCC/AOS (*C. Little Dipper* x *Sl. Orpetii*)



Sopholaeliocattleya Bright Angel
'Rojo Grande', HCC/AOS (Precious
Stones x *Soph. coccinea*)



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Laeliocattleya Case 'Gold Country',
AM/AOS (Mini Purple x *C. walkeriana*)



Laeliocattleya Samba Crown 'El Dorado', HCC/AOS (*L. sincorana* var. *coerulea* × *C. warneri* var. *coerulea*)



Sophrolaeliocattleya Pink Doll 'Little Mak', HCC/AOS (Tangerine Jewel × *L. pumila*)