Catasetum and Cycnoches — Part 7 — Problems Commonly Encountered

SINCE GROWING CONDITIONS, particularly light and temperature, arc for the most part determined by the type of growing area or arrangement, now would be an appropriate time to discuss how well catasetums and cycnoches adapt to the most common growing environments. Those hobbyists who grow under artificial light should not rule out adding cycnoches and catasetums to their collections — but let me qualify that statement!

LIGHT REQUIREMENTS

Members of these genera flower best when provided with fairly high light conditions during growth. All six of the successful *Catasetum* and *Cycnoches* growers polled for this series provide "cattlcya to vanda" light conditions for their catasetums and cycnoches. Here we arc confronted with a problem of terminology: how do we define light conditions when discussing culture? Oftentimes growers and horticultural writers will define light conditions in terms of footcandles, units of illumination measured by a light meter. Yet the average grower (myself included) docs not own a light meter, or does not realize that its readings can be misleading (ask any accomplished photographer). As Ned Nash stated in the BULLETIN earlier this year in his excellent series on *Callleya* culture, "... close observation of plant growth is a better indicator of proper light conditions than reliance on a light meter. Here at the nursery we use a light meter to confirm our observations. With a little practice, one can walk into a greenhouse and 'feel' if the light is right." (Nash, 1983, page 130)

This is excellent advice for growers who use natural light for their orchids. Those who have made the switch from natural to artificial light for growing orchids will understand what I mean when I say that I remain astounded to this day that any plant can flower under artificial light — because the light cast by a row of four fluorescent tubes in a conventional light garden just doesn't compare with that of the mighty sun, even through heavy shading! Fortunately for all orchids grown under artificial light, light has a cumulative effect on plants, and though the intensities are comparatively low under conventional fluorescent tubes, the fact that underlights growers can control and extend "day length", the number of hours the lights are one each day, means that they can flower many orchid genera.

But can catasetums and cycnoches be successfully grown under artificial light? Under high-intensity lights they certainly can (see page 1263 of this issue). Growers using the more common fluorescent lighting have likewise had success. One grower reports having flowered a large group of *Catasetum* Orchidglade seedlings within 18 months out of flask — growing them exclusively under conventional lights. She notes that during this time the plants never stopped growing; but once she began summering them outdoors after they reached flowering size, they assumed a more typical cycle of growth with a more pronounced period of rest (Cohen, 1983).

Hobbyists have been and will be able to flower catasetums and cycnoches under fluorescent lights and on windowsills, but the flowers are likely to be few in number, far fewer than what plants of these genera are capable of producing. Yet these growers can use the cyclical nature of *Catasetum* and *Cycnoches* growth to their

advantage. Naturally, when these plants have completed growth and are beginning to lose their leaves, they do not need as much light as when they arc in active growth. Fortunately, the former generally occurs in the fall and winter, the latter in the spring and summer. Many growers side-step the limitations of conventional lights for their orchids which require higher light by "summering" these plants outdoors. Catasetums and cycnoches, because of the nature of their growth, adapt especially well to this routine. One northern grower polled maintains his catasetums and cycnoches in a greenhouse during the fall, winter and spring, but because his greenhouse is too shaded in the summer he moves the plants outdoors, providing some shading at first until the plants "harden off," then allowing the plants to receive six or more hours of direct sunlight the rest of the summer until temperatures dip below 60°F towards the end of September, when he once again brings the plants indoors (Turner, 1983).

Of course, summer sunlight in New York is a good deal less intense than that of Florida! All three commercial growers in that largely sub-tropical state polled for this series provide at least 50% shading year around for members of these genera (Fuchs, 1983; Krull & Smith, 1983; Lodyga, 1983). One grower provides 60-70% shading because "intense light produces female flowers" (Lodgya, 1983). While, in the United States northwest, another grower gives his catasetums and cycnoches "as much [light] as the plants can safely tolerate — about the same as 'catts'. I find that strong light promotes erect growths of heavy substance; that is, the foliage is turgid. I grow them high, on upper benches, some fairly close to the glass" (Riopelle, 1983). Another notes, "Catasetums seem to require more light than cycnoches, therefore I grow them higher up in the greenhouse" (Fuchs, 1983).

TEMPERATURE REQUIREMENTS

As mentioned before, catasetums and cycnoches arc regarded as warm-growing genera due to their tropical, low-altitude natural habitat. Whatever their origins, a grower need only expose a member of these genera to persistent temperatures below 60°F (15°C) for a matter of days before indications of harm become evident. The sensitivity of these genera to cool temperatures depends on the stage of growth and the plant part exposed. Typical of all plants, the *Catasetum* or *Cycnoches* inflorescence, with its buds, is the most sensitive portion of the plant to cooler temperatures — at least while it is developing. Temperatures near 55°F (13°C) almost every night — and often, during cloudy weather, during the day — stopped the development and led to the death of the *Cvcnoches* inflorescence illustrated in FIGURE 1, photographed during a typical early fall in New England. Paradoxically, that same range of temperatures will extend the life of the flowers once they are fully developed and open.

Prolonged periods of cool temperatures, particularly in combination with high humidity (as is so often the case in greenhouses), can affect the leaves as well. The *Catasetum pileatum* leaf pictured in FIGURE 2, weakened by a long period of cool, cloudy and damp weather in the fall, manifested the most marvelous (pathologically speaking!), ooze-filled, brown blisters. The primary infectious agent was identified as the leaf-spotting fungus *Cercospora epipadidis*. The damage caused by this fungus in turn allowed easy access for a secondary infection of bacteria (Burnett, 1981). Nevertheless, the real cause of this malady — as is the case wilh so many diseases for plants and animals alike — was the initial weakening of tissue due to inanimate forces, in this instance to an error in culture: temperatures which were allowed to go too low in combination with humidity which was too high.

Photography: Stephen R. Batchelor
FIGURE 1 — A mature *Cycnoches chlorochilon* pseudobulb aborts its inflorescence in response to cool temperatures.

Whether due to fungal or bacterial attack, or an internal response to external, adverse conditions, recently matured growths of catasetums and cycnoches exposed to cool temperatures are likely to prematurely lose their leaves and enter a well-defined period of rest until temperatures are once again favorable for growth, causing then the expansion of an eye at the base. In this leafless state of rest, the plants are much more tolerant of cool, even cold temperatures. Several of the growers polled for this article note that their plants have endured temperatures during the winter near 40°F (4°C) without damage (Lodyga, 1983; Soule, 1983). That same temperature during a spring cold snap, unusual for peninsular Florida, destroyed all new *Catasetum* and *Cycnoches* growth for one grower (Krull & Smith, 1983).

Photography: Stephen R. Batchelor
FIGURE 2 — A *Catasetum pileatum* leaf suffers from infections of *Cercospora epipactidis* during a period of cool and damp conditions. Texting: Harry C. Burnelt

Being "warm growers," catasetums and cycnoches are more accepting of excessively warm temperatures. Plants of these genera grown in Florida often experience temperatures near 100°F (38°C) in the summer, especially in greenhouses without abundant ventilation or cooling. The Floridian growers polled point out that the plants sustain no damage under these conditions (Fuchs, 1983; Lodyga, 1983). One grower in the northeast has had his plants of these genera experience equally high temperatures on occasion, and he notes that their thin leaves resist the heat buildup so encouraged by bright, hot conditions (Soule, 1983). Air movement, however, along with good humidity, are the moderating factors in culture, and need to be well enhanced during conditions such as these. Proper humidity and air movement at all times, as with all orchids, is necessary for successful *Catasetum* and *Cycnoches* culture.

PESTS, DISEASES AND GROWER ERROR

Excessively high temperatures can cause problems for catasetums and cycnoches, but these difficulties are usually ones involving pests, not diseases. Many orchid growers first become acquainted with spider mites when they add a *Catasetum* or *Cycnoches* to their collection — and the experience can be so unsettling that many growers, when they hear "spider mite," think "catasetums and cycnoches!" As Ed Wright points out in his article in the October issue of this year, *Tetranychus* urticae, the red or two-spotted spider mite, is present in most orchid collections, but high temperature greatly speeds its activity, both procreative and destructive, resulting in terrific infestations during the warm and fairly dry weather of late summer and early fall, leading to the characteristic stippling of the lower and then upper surfaces of the leaves (FIGURE 3). As for the control of this pest, Mr. Wright points out that Kelthane (ed: no longer available as listed for use on orchids) is a commonly used miticide, but when he finds an incipient infestation (FIGURE 4) he employs at three-day intervals for six to eight applications a dilute solution of a soapy cleaner product available at supermarkets (Wright, 1983).

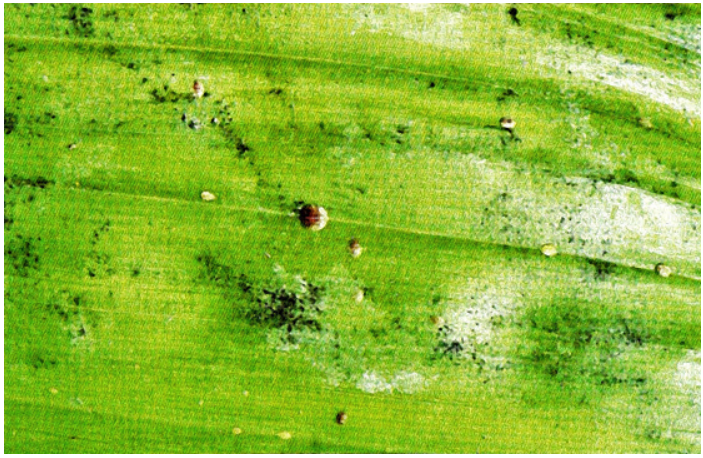
Photography: Stephen Batchelor
FIGURE 3 — After a long, hot summer in Florida, these *Catasetum* Orchidglade leaves show significant damage from spider-mite infestation.

Another equally safe product called Insecticidal Soap works on the same principle, making the leaf surface a soapy and uncomfortable place for a spider-mite haven, but also requires frequent application. Pentac wettable powder is a stronger, more effective miticide used by many of the growers polled at the rate of 1/2-l tablespoon per gallon of water, sprayed three times at three- to seven-day intervals, after which it is effective for up to two months (Fuchs, 1983; Krull & Smith, 1983; Riopelle, 1983; Soule, 1983).

Photography: Stephen Batchelor
FIGURE 4 — A flecking of the leaves is the first sign of spider-mite attack. On this *Cynoches* leaf. A comparitively huge scale insect sits immobile surrounded by minute, virtually invisible spider mites.

Warmer temperatures likewise speed up the activity of mealybug and scale, two common pests of all orchids, catasetums and cycnochcs included. Mealybug is a more secretive pest; it seems to prefer the cracks and crevasses found at the bases of leaves in the fan-like growth of paphiopedilums, for example. With time and greater numbers, mealybugs become emboldened, and emerge into view. The folds of new, immature *Catasetum* and *Cycnoches* growths are the most likely home for this pest (FIGURE 5). Otherwise, when given other genera to choose from, mealybug is likely to go elsewhere.

Photography: Charles Marden Fitch
FIGURE 5 — These mealybugs have grown nice and plump feeding on the juices of this new *Catasetum* growth



Scale, on the other hand, tends to be more of a problem with these genera, and scale insects seldom hide from view, except if they happen to find themselves on the underside rather than the topside of a leaf (FIGURES 4 and 6). Some species of scale secrete a sticky substance commonly and euphemistically called "honcydew." This secretion is ideal for the growth of "sooty mold," *Capnodium* species (FIGURE 6). This mold does no harm to the plant tissue itself, except possibly indirectly by reducing the amount of light reaching the leaf. Nevertheless, sooty mold is unsightly, and tends to persist long after scale has been eradicated (FIGURE 7). Chemical control of both scale and mealybug can be achieved by conventional insecticides (Batchelor, 1982). Just the same, the most effective means of control is to apply whichever chemical is preferred immediately after an infestation begins — and only close and frequent observation of the plants by the grower can accomplish that critical timing.

Photography: Stephen Batchelor

FIGURE 7 — After this Cycnoches pseudobulb flowers and its leaves fall, the sooty mold, still evident, will linger no longer. The Cymbidium mosaic virus, symptomless here, however, will remain systemic in the plant as long as it lives

The common Cymbidiurn Mosaic (CyMV) and Odontoglossum Ringspot (ORSV) viruses plague catasetums and cycnoches as well. Their presence and harm is frequently insidious. There arc no indications, for example, that the Cycnoches *chlorochilon* pictured in FIGURE 7 is infected with Cymbidium Mosaic virus, which in fact it is (Wisler, 1983). One common symptom of viral infection is the yellow streaking or chlorosis of the leaves (Batchelor, 1982 b). The *Catasetum pileatum* leaf illustrated in FIGURE 8, however, tested negative for virus — despite its very prominent chlorotic streak. To quote an article on virus detection appearing earlier this year in the BULLETIN, "Due to the genetic diversity of Orchidaceae, symptom expression of CyMV and ORSV is highly variable and cannot be relied upon as a means of diagnosis" (Wisler, el al., 1983, page 256). Periodic virus-testing is usually necessary for the maintenance of a high-quality collection of orchids. Virus docs not spread in an orchid collection by its own means; it is the grower who does not practice adequate sanitation who is the "vector" for virus. In using cutting tools which are not sterile, which have previously cut plant tissue, the grower can unwittingly spread virus from a contaminated plant to a virus-free one. Once virused, orchids decline in vigor to varying degrees. Because no technique for virus eradication in orchids has been perfected, or proven reliable in scientific, published results, growers are still advised to either isolate or, preferably, to destroy all virus-infected plants (Sproles, 1983).

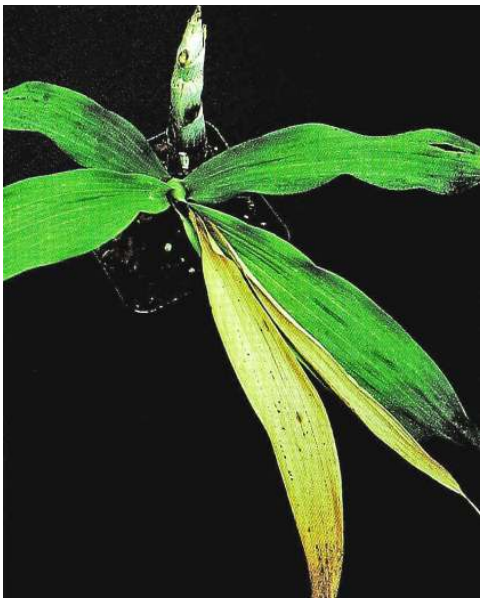
Photography: Stephen Batchelor
FIGURE 8 — A prominent, chlorotic streal on a leaf can frighten a grower into thoughts of virus contamination. Only testing can confirm or, as in this case, refute such suspicions.

Photography: Stephen Batchelor
FIGURE 9 — Growers may go out of town on Mamorial Day, but pathogens stay home with the plants. Fusarium wilt, *Fusarium oxysporum*, and soft rot, *Erwinia carotovora*, gave owner another loved one to remember on this holioday.

Orchid pathogens other than virus can be transmitted by the grower to catasetums and cycnoches. Fusarium wilt, *Fusarium oxysporum* f. *cattleyae*, can be spread from one plant to another if the same cutting tool is used on an infected plant, then used to cut any number of other, healthy plants. This fungus often invades the rhizome and pseudobulbs of a plant, either from such an unsanitary cut or through root-rot. Plants often survive such an infection for a year or longer, but gradually decline (Burnett, 1975). In the case of the *Cycnodes* Ginger Snap pictured in FIGURE 9, Fusarium wilt probably first weakened the plant, allowing then for the easy infection of the "soft rot" bacteria, *Erwinia carotovora*, causing the plant's over-the-weekend demise (Burnett, 1983).

Catasetums and cycnoches seem particularly susceptible to rot during their period of rapid growth in the spring. In part this might be due to the fact that the expanding leaves of the new growths form natural cups which hold any water that comes their way. Very young tissue is often "tender," susceptible to disease invasion, and the presence of water provides ideal conditions for infection by fungus and/or bacteria. One grower polled reduces the chance of water collecting in the crown of the new growth of his catasetums and cycnoches by draping inverted plastic sandwich bags over all new growths until they are "quite well along," trying all the while to "pot water only." If by some chance water does get into the crown of a new growth, he adds 1/2 teaspoon of Captan to this water, allowing the new growth to "soak it up" (Soule, 1983).

For bacterial rots of orchids, a spray of Physan 20 is recommended at the rate of Vi tablespoon per gallon; for fungal black rots (*Pythium* and *Phytophthora*), a drench of Truban at the rate of '/z tablespoon/gallon offers some hope of control. Fusarium wilt, however, requires a drench of benomyl (ed: not available) at the rate of 1 tablespoon per gallon (Burnett, 1975). In all cases, the key is to prevent infection through proper culture. Healthy plants resist infection by these ubiquitous pathogens, weak and unhealthy ones cannot. Once an infection establishes itself within a plant, the possiblity of control by even the most effective chemicals is greatly diminished.



Photography: Stephen Batchelor

FIGURE 10 — Malathion 50 emulsifiable concentrate at the recommended dilution took care of the scale problem — and the growing point of the pseudobulb — for this *Cycnoches*.

Not one of the chemical controls mentioned in the preceding paragraph is an oil-based emulsifiable concentrate, though some of the insecticides named earlier are available in both this form and as wettable powders. Catasetums and cycnoches, among other thin-leaved genera, are especially sensitive to dilute sprays of emulsifiable concentrates. Such sprays, if allowed to collect and remain in the crowns of rapidly expanding new growth, will concentrate as the water evaporates and cause irreparable damage in this very sensitive area of the plant. As a result, the growing point of new growths is destroyed (FIGURE 10), severely limiting growth for that year.

CONCLUSIONS

If *Catasetum* and *Cycnoches* growers could have but one goal in mind, it should be to provide growing conditions which encourage their plants to retain their leaves as long as possible during any one year or cycle of growth. Invariably, the healthiest plants of these genera are those which are in leaf virtually on a continual basis. Only after new growth has begun do they lose the leaves on the previous year's growth — and only optimum growing conditions will produce such an effect. With energy-gathering leaves nearly always at work, those who achieve this end can expect some of the most extravagant and unusual flowering within the orchid family. — *84 Sherman Street, Cambridge, Massachusetts 02140.*

CORRECTIONS

Need I tell our readers that we editors occasionally make mistakes, like other mere mortals? This self-evident truth was of little consolation to me, when I found (after the printed fact, naturally), to my horror, not one but two instances where I wrote "non-resupinate" when I meant "resupinate"! I would be most grateful and relieved if all our readers would go back to the September issue of this year, turn to pages 922 and 924, and, with the blackest and most indelible ink available, blot out of existence the "non" portion of "non-resupinate" used in association with *Catasetum* roseum and *Mormodes colossus*, since, as is evident in the accompanying illustrations, these two species and their hybrids have resupinate, not non-resupinate flowers!

ACKNOWLEDGMENTS

I would like to thank all those talented *Catasetum* and *Cycnoches* growers (listed below) who were so generous with their time and energies in answering my many questions regarding these genera. It should not come as a revelation, to my readers at least, that writers and editors don't always know everything! The information supplied by these individuals filled in the gaps of my knowledge and experience, improving the final product immeasurably.

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