Beginner's Corner

TEMPERATURE AND DORMANCY by Don Schnell

I think the question most often asked regarding temperature is about the extremes: How high or how low a temperature will my plants withstand? The answer is not at all simple and generalizations may not apply to your particular species or situations.

Generally, the upper extremes of temperature a "typical" carnivorous plant will endure without dying are related to the character of its native habitat, and whether humidity elevation also accompanies an increase in air and soil temperatures. Regarding the first factor, a cool growing plant of *S. purpurea* ssp. *purpurea* or *Drosera linearis* native to cool bogs of northern Michigan or Canada will not do as well transplanted to outdoors Florida as would a plant of *S. purpurea* ssp. *venosa* or other *Drosera* obtained much further south. Obviously, as anyone who has bogged in the north knows, summer air temperatures midday can become awfully stifling--but plunge your hand into the sphagnum and note how cool rhizomes and roots are due to the percolation of cold spring waters and the natural cooling effect of sphagnum. The problem of growing *Darlingtonia* in very hot climates has been discussed often in past issues of CPN, as another example.

The second factor involved in upper temperature extreme endurance is a bit more ephemeral and relative. Generally, many CP can endure higher temperatures during the active growing season if the humidity is also elevated. During particularly bright (and dry) days, the temperature of my *Nepenthes* house often rises to 120°F, but there is no harm since I keep the relative humidity up to 80%+. However, *Nepenthes* root systems clearly must be genetically more tolerant of higher temperatures since this same concept would never work with our previous examples of northern *Sarracenia* and *Drosera*.

As far as low temperature extremes, again refer back to the plant's native habitat. In North America, I do not believe any of us would subject our exotic tropicals to freezing, but they will adapt to temperatures just above freezing during dormant periods. A friend once lost all of his *Drosera capensis* during a power failure and they came back from roots the following spring. This brings out the point that as long as rhizomes and roots do not freeze hard, many CP are quite hardy to at least short periods of very cold temperatures. In North America, all native CPs can be overwintered outdoors as far north as Michigan as long as there is some protection against deep freezing, such as burying pots or tubs in the ground, mulching or snow cover. However, I would strongly advise an outdoor overwinter experiment with some excess plants if you have any doubts about your area. Also, beware of frost "heaving" which gradually works previously buried rhizomes up into freezing air.

Regarding dormancy, all temperate growing plants require a period of winter dormancy. If you are growing outdoors, you will have no problem. In greenhouses, you will have to reduce temperatures and watering (to just barely damp soil) as photoperiods decrease and winter comes on. Under lights, you will have to do all of the above plus shorten your photoperiod in daily increments. If you try to force plants prematurely from dormancy or try to bypass it altogether, you are inviting rot. Dormancy and light (see previous Beginner's Corner) are the two most difficult areas I have seen with beginning growers.

Even tropicals have a modified period of dormancy, this most often corresponding to dry periods in the native habitat rather than winter cooling and shorter photoperiod. These rhythms will most often continue into cultivation and you will note a slowdown in plant growth, often during warm weather. At this point, give the plant a bit more shade and decrease watering until it again shows increasing growth at which time *gradually* place back into optimum light and watering conditions for that species.

Dormancy has evolved in plants as a natural protective mechanism against inclement conditions. A tender, growing plant is less likely to withstand freezing than a metabolically resting plant or a hibernaculum or over-wintering bud (e.g. *Drosera filiformis, D. intermedia*, etc.). Further, biological clock mechanisms are often built in so that the plant must have a minimum time in dormancy or be exposed to a minimum temperature before it will properly resume growth, and then must be in appropriate conditions. You may wish to experiment with refrigeration, but again do so only with material you can spare.

Next is Water and Growing Medium by Joe Mazrimas.