SHORT NOTES

FROST PROTECTION FOR DORMANT CP

by Terry W. Brokenbro

In CPN IV, No. 4, page 58, Joe Mazrimas discussed conditions and preparations for the dormancy of *Sarracenias* and North American *Drosera*. Although these plants, once dormant, can stand extremely cold conditions, they are at their most vulnerable, as regards tender growths, during late fall and early spring. Therefore, the following points may be worth noting as regards frost protection of these growths. Once the CP are truly dormant, or risk of frost over, any coverings, etc., mentioned can then be removed.

1) Local buildings, trees, hedges, etc., can often determine the possibility of frost. For example, cold wind mixing with higher warm air can lessen the risk while an area protected from the wind would increase the possibility.

2) A light, dry soil loses heat more quickly than a heavy, compact one which will tend to draw heat from lower depths. Even in both soils, if wet, heat will be conducted more efficiently and the risk of frost reduced.

3) A badly air-drained site will lead to a frost pocket and thus greatly increase the frost risk (see diagram). These sites are usually found on a slight slope where a katabatic wind (slow moving volume of cold air) can form, which will flow like water down the slope to the valley bottom. If the drainage is blocked on route, e.g. by a high wall in your garden, a pocket can develop in which a very severe frost can develop. This can not only be dangerous to partially dormant CP, but also increase a glass house fuel bill considerably. The most famous frost-hollow (valley bottom into which the katabatic wind flows) is found in the Austrian Alps, near Vienna. Here temperatures have been recorded as low as minus 60°F, while the nearby mountains (10,200 feet plus) were a "mild" minus 2°F.

4) On a night when frost is expected any cover which can be applied over the plants will slow down the rate of loss of radiating heat and lessen the risk of frost. For example, fruit tree nettings, shading, sheets of glass and placing plants under the canopy of shrubs and bushes (evergreens) are especially effective. A mist spray used over outside plants will protect tender growths as when ice is formed, heat is released and therefore a wet surface can protect a tender growth from a minor frost. Further, it should also be remembered that there is no better insulator than snow and this should be used on any occasion which permits.

5) Even local weather stations may not be able to say whether you are likely to have a frost in your back garden that night because of varying local features such as woods, lakes or even skyscrapers which help to create peculiar microclimates. However, the following should be noted as bad signs for possibility of frost, using a few simple instruments: a) No wind, b) cloudless evening or night, c) rising barometer, d) low humidity, e) falling temperature. Yet these signs should never be relied upon 100% as it is too easy for a windy, warm and cloudy evening to change to a still, cold and cloudless but humid 3 a.m. the next morning with a severe frost.

The following may be of interest in winter glasshouse use, including those which are heated as well as unheated.

1) Clear glass is absolutely essential during winter months otherwise valuable incoming heat and light are lost.

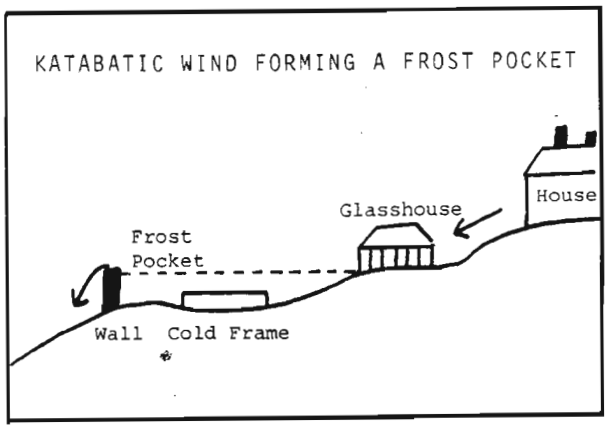
2) Double glazing is valuable especially in the glasshouse roof for cutting heat loss. During extremely cold weather, snow will also settle more readily as another bonus.

3) Even during mid-afternoon, with the sun shining, both air and soil termperatures are beginning to fall. All glasshouse ventilators should therefore be closed as early as possible and shading applied to the glasshouse roof during late afternoon (or earlier if no sun is shining) with considerable effect.

4) A couple of hurricane lamps placed in a small sized glasshouse (say 8 feet x 6 feet) will keep quite a severe frost at bay. It is not the heat itself from the lamps but the movement of air preventing the formation of frost and damaging the plants therein. Failing all else even a couple of sheets of newspaper placed directly over the plants will prevent any damage occurring during a light frost.

5) If tender plants have been subjected to frost, spray plants with cold water the first thing next morning, especially if the sun is shining.

6) Containers with dormant aquatic *Utricularias* left in them should not be prevented from having ice formed across the surface. The ice forms and floats but the temperature in the bottom mud where the winter buds lay will remain constant at about 4°C.



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A POSSIBLE ALTERNATIVE FOOD FOR CARNIVOROUS PLANTS

by Jeffrey Del Col

George Sergeant's note in Vol. V, No. 1 of CPN about feeding powdered milk to *Droseras* led me to do some thinking about other possible non-living foods for carnivorous plants. I recognize, of course, that living insects are the best food for our plants, but we must concede that live insects are a seasonal item and that indoor gardeners face special problems in feeding live insects to their plants. Probably the best live insects for home culture are the wingless or vestigial winged mutants of the common fruit fly. I formerly raised thousands of fruit flies to feed to tropical fish and am aware of the difficulties in culturing them. The cultures must be carefully maintained lest they spoil, run out of nutrient, or become contaminated by wild-type *Drosophila*. This last problem is a serious one. The wild flies quickly overwhelm the less vigorous mutants, and the person growing the flies soon has a large swarm of winged pests loose in the home.

If living insects are undesirable in the home, what other foods are suitable? Classically, raw meat and cooked egg white have been used to maintain carnivorous plants. However, proportions of these may be hard to gauge, and they must be prepared and refrigerated. My experience with tropical fish leads me to make the following proposal: we may be able to feed our plants some of the commercial freeze-dried tropical fish foods.

These foods are relatively cheap, clean, and require no care other than seeing to it that the lid of the container is kept tightly shut. An amazing variety of freeze-dried insects, worms, crustaceans and meat are available. Freeze-dried brine shrimp is the most common food, but I have purchased or seen freeze-dried daphnia, squid flakes, meal worms, mosquito larvae, beef liver and tubifex worms. All these are high protein foods with a protein content ranging from around thirty to seventy per cent protein according to the analyses printed on the containers. They can be readily portioned and even powdered for smaller plants. Because a container of these foods should last a long time, they are quite cheap over the long run.

I must emphasize that this is only a suggestion. I have done no experiments, though I plan to this summer using *D. rotundifolia*. One possible drawback to brine shrimp may be a residue of salt that could harm the plants. No sodium content was listed on the labels I have checked, so research is needed to discover how much salt is in brine shrimp and other freeze-dried foods. I hope other CP enthusiasts will be willing to try some of these foods. Only by experiment can we know if they are a convenient and beneficial food for our plants.