KEEP POTTED ROSES COOL

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Growers, shippers, and others involved in shipping potted plants often leave packed containers in open sunlight for various periods of time. The assumption is that such exposure does not adversely affect plant quality. Recent studies we have conducted indicate this is not the case.

Two containers of potted 'Mothers Day' roses, each containing six plants in the bud and early-bloom stage were obtained from a commercial grower in the Half Moon Bay area of California. Copper constantan thermocouples were placed in the soil alongside the plants, in air inside the box at the top and bottom, in buds on the plant, and in shade adjacent to the container. The containers were held in open sunlight from 10:00 a.m. to 2:00 p.m. and temperatures were recorded continuously.

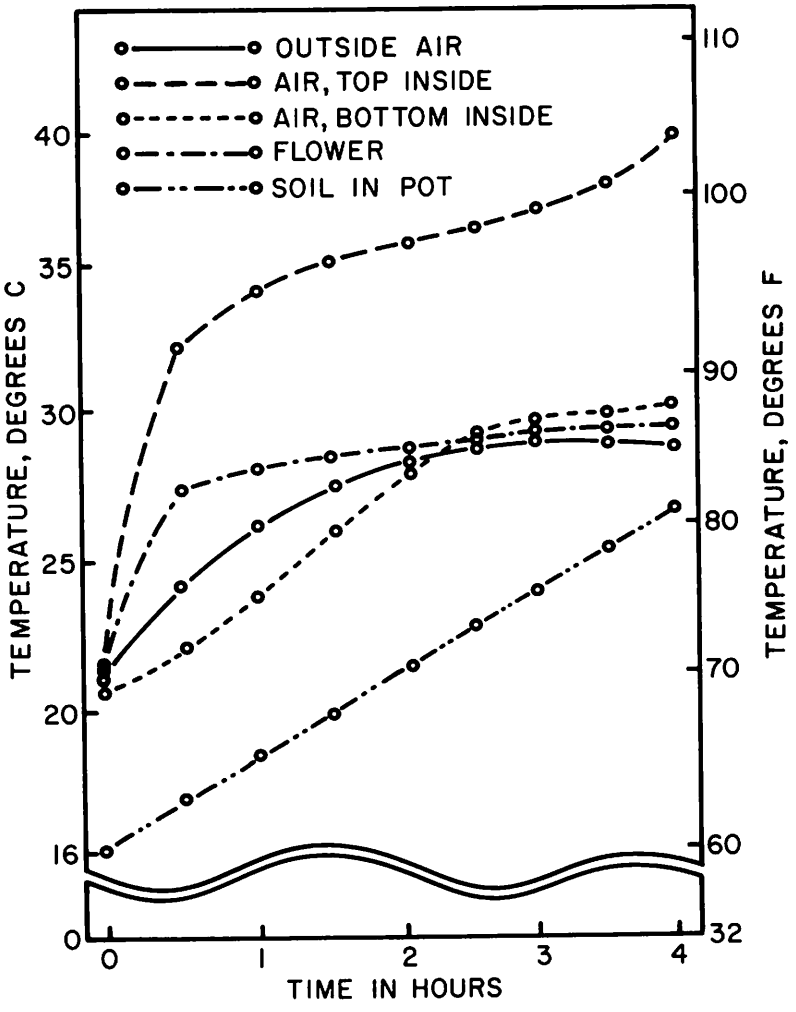

Figure 1. Warming curves for various locations in a packed box of potted 'Mothers Day' roses exposed to direct sunlight.

As shown in figure 1, the temperature ranges during the 4 hours for the various positions were: outside air, 72° to 85° F.; soil, 60° to 81° F.; air inside top of container, 73° to 104° F.; air inside bottom of container, 71° to 88° F.; and buds, 72° to 88° F.

After exposure to sunlight, the containers were opened and the plants placed in a greenhouse for 10 days of observation. No adverse effects were noted for open flowers. Unopen buds failed to open and subsequently dropped from the plant. The damage to flower development was severe enough to have made the plants unacceptable to consumers. Unheated control plants showed no symptoms of injury.

Ideally, potted rose plants should be promptly cooled and held under refrigeration at 32° to 36° F. after packing. If this is impractical, the containers should be held in a shaded, well-ventilated place. **To avoid exposure to ethylene gas, the plants should not be stored with ripening fruits, and gasoline or diesel-fueled engines should not be operated in the storage areas.**

No heating tests were run with packages of the 'Margo Koster' variety. However, this cultivar and the 'Mothers Day' were observed in the field. It was evident that exposure of 'Margo Koster' plants to high temperatures for several days in a row had relatively little adverse effect on bud opening and development. Plant growth was satisfactory in 'Mothers Day' roses, but after several hot days, buds failed to open properly and/or abscised at the base of the pedicel. Flowering shoots soon became devoid of buds.

Figure 2. Nature of bud abscission of 'Mothers Day' roses subjected to high temperatures in the field.

Figure 2 shows the type of abscission that occurred. If this information can be projected to the production of flowering pot plants, it would seem that, for the cultivar 'Mothers Day,' temperature extremes must be minimized both in the greenhouse and in the shipping procedure that follows.

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WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in their original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Recommendations are based on the best information currently available, and treatments based on them should not leave residues exceeding the tolerance established for any particular chemical. Confine chemicals to the area being treated. THE GROWER IS LEGALLY RESPONSIBLE for residues on his crops as well as for problems caused by drift from his property to other properties or crops.

Consult your County Agricultural Commissioner for correct methods of disposing of leftover spray material and empty containers. **Never burn pesticide containers.**

PHYTOTOXICITY: Certain chemicals may cause plant injury if used at the wrong stage of plant development or when temperatures are too high. Injury may also result from excessive amounts or the wrong formulation or from mixing incompatible materials. Inert ingredients, such as wetters, spreaders, emulsifiers, diluents, and solvents, can cause plant injury. Since formulations are often changed by manufacturers, it is possible that plant injury may occur, even though no injury was noted in previous seasons.

CHEMICAL CONCENTRATIONS: THINKING SMALL

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Highly potent chemicals, such as certain herbicides and growth regulators, can be phytotoxic at very low concentrations. Few would dispute this statement. But how low is a very low concentration? Some light was shed on this question in an experiment related to a rose mulch contamination problem conducted at the San Jose Field Station. (See "A Chemically Contaminated Rose Mulch," page 6.)

The herbicide Tordon® was applied once as a soil drench at a concentration of 0.005 ppm (i.e., 5 parts per billion) to container-grown 'Forever Yours' rose plants. After treatment, the plants showed unmistakable symptoms of herbicide toxicity.

Five parts per billion is perhaps a bit easier to comprehend if we think of it in terms of cut flower sales. California growers sold a total of 1,276,763,000 carnation, standard chrysanthemum, and rose blooms during 1971 and 1972.[1] Five parts per billion is equivalent to only 6½ flowers of that very large 2-year total!

This example emphasizes the importance of handling chemicals of this type with the greatest care.

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[1]*Flowers and Foliage Plants, Production and Sales, 1971 and 1972.* Washington, D.C.: Statistical Reporting Service, U.S.D.A. April 1973.

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CONTROL OF PYTHIUM ROOT ROT OF CALCEOLARIA – Progress Report

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Florist's calceolaria (*Calceolaria crenatiflora* Cav.) is a difficult pot plant to grow. One of the main reasons is that it is very susceptible to a species of Pythium that causes a root rot. Effects from infection vary from slight stunting to death of the plant, and these are directly related to the amount of damage to the root system. Because of the seriousness of the problem, control experiments were started at a greenhouse in Half Moon Bay, California.

In one experiment, fungicides were added to the planting mix before seedlings were transplanted into the mix. In another experiment, the seedlings were drenched with the fungicides after transplanting. They were drenched again 1 month later. One-fourth pint of fungicide was added to each 4-inch pot, followed by ⅕ pint of water to aid fungicide penetration. After 6 weeks, all plants were rated for growth of tops and roots. Table 1 gives the fungicides used, rates, and results. (See page 12.)

In the experiment, ethazol as a preplant treatment or as a drench and Dowco 269 as a drench gave the best top growth and root systems. The addition of benomyl had little effect, indicating that Pythium was the main root-rotting fungus. Diazoben, which is effective against Pythium, does not last long in the soil and therefore is not effective when used only as a preplant treatment. It also was not effective in this experiment when used as a drench. This was perhaps because the soil mix was light and the fungicide appeared to be washed from the pots when the extra water was added. Additional experiments are planned.

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