Para-dichlorobenzene (moth ball) Injury to Bulbs

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Over the past ten years we have seen two serious losses of tulip and hyacinth bulbs. In both of these situations para-dichlorobenzene moth balls had been inadvertently used instead of the recommended napthalene to prevent pest damage to stored bulbs. The diagnosis of the problem suggested the injury had been caused by the para-dichlorobenzene. To verify this observation, a series of trials were run comparing the use of the two materials. The results obtained are shown in the photographs (Figures 1-5).

Moth flakes, or more specifically napthalene moth flakes, are an excellent and inexpensive method used to discourage rodents from eating stored bulbs. Para-dichlorobenzene, a material very similar to napthalene in commercial use, will also keep away the rodents, but it inhibits normal root growth (Figure 1, 2 and 3). If an affected bulb is cut in half the injury may not be readily apparent, especially if the bulbs have not been exposed to para-dichlorobenzene for a long period of time; however under prolonged exposure, a darkened area may appear where the flower stem and basal plate meet (Figure 4 and 5). The first indication of injury normally noticed is the lack of, or reduced shoot growth.

There appears to be no practical remedy for this type of injury. Once the bulbs have been exposed to the para-dichlorobenzene, the damage is done. The only way to avoid this problem is to be sure to use only napthalene and not para-dichlorobenzene.

It is difficult to distinguish between the two materials. The safest method is to read the label on the container before using any moth ball material to be sure it contains only napthalene. The best way to tell the difference short of a chemical analysis, is by smell. Napthalene has a dry, moth ball odor whereas para-dichlorobenzene has an oily, washroom odor (Para-dichlorobenzene is used as a deodorant in washrooms). While trying to trace down this problem, a box of each material was purchased and used to make a smell comparison with the sample of material suspected to be causing the injury. In this way, the nature of the problem was confirmed.

This is a relatively simple thing, but should be carefully checked each year to insure avoidance of this problem.

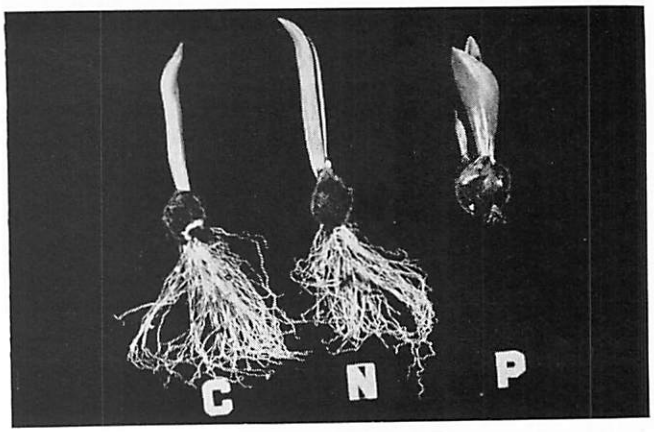

Figure 1 left to right: C—control tulip, N—Napthalene added as repellent and P—Para-dichlorobenzene used as repellent. (Note lack of root growth for P).

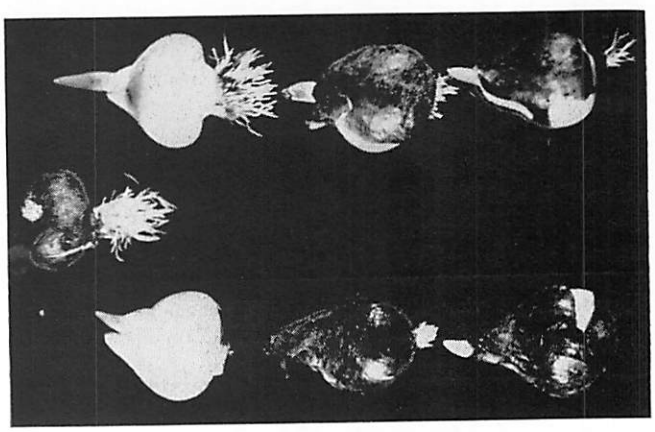

Figure 2 (middle left) Control, (top row) Napthalene treated. (bottom) Para-dichlorobenzene treated.

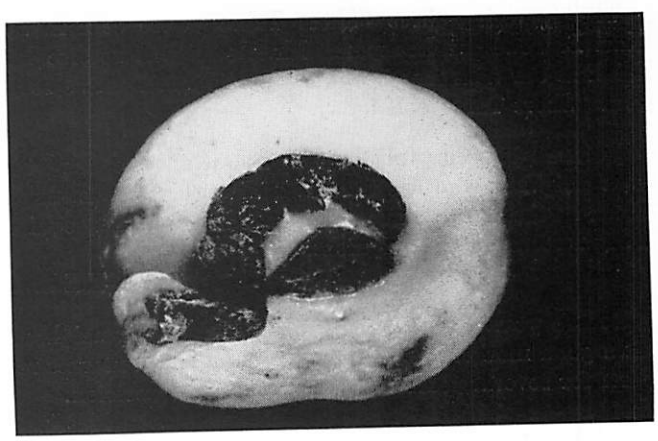

Figure 3. The basal view of a tulip (skin or tunica removed) after exposure to para-dichlorobenzene.

(*continued on page 4*)

Response of Carnations

(*continued from page 2*)

4. Photoperiod showed no apparent effect on mean grade, but a slight effect on splitting.

LITERATURE CITED

1. Bing, A. 1960. Timing your carnation crop. New York State Flower Growers Bul. *172*:1-2, 4.
2. Freeman, R. N. and R. W. Langhans. 1965. Photoperiod Affects Carnations. New York State Flower Growers Bul. *231*:1-3.
3. ———— and ————. 1965. The Influence of Night and Day Temperatures on Carnations. New York State Flower Growers Bul. 232: 1-3.

Para-dichlorobenzene Injury to Bulbs

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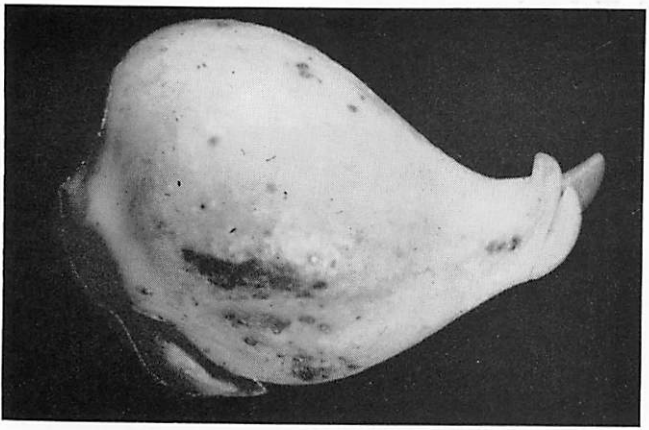

Figure 4 Side view of a tulip (skin or tunica removed) after exposure to Para-dichlorobenzene.

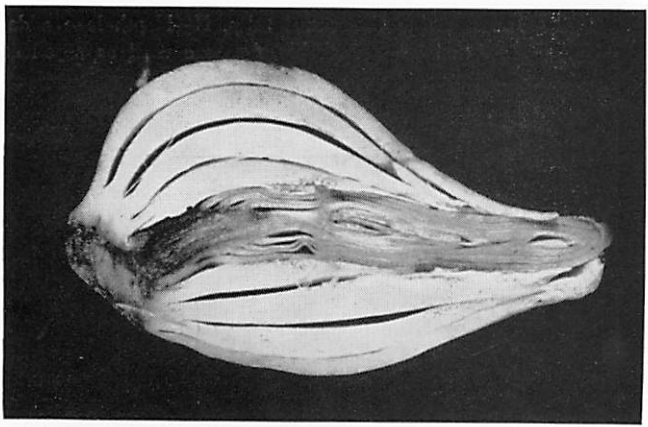

Figure 5. Cut view of a tulip showing blackening of the base of the flowering stem—bulb was exposed to Para-dichlorobenzene.