

# Another Smut Disease of Carnation Found in Metropolitan Area

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Anther smut, a potentially dangerous carnation disease, has been found in over a dozen greenhouse establishments on Long Island and in the metropolitan area. In every instance the disease occurred on the variety Noroton White. Blocks of this variety had from 10 to 35 per cent of the plants affected. If the smut fungus is introduced into a greenhouse it can spread to other varieties if it is not recognized and controlled.

## History

Anther smut of pinks (plants belonging to the plant family, Caryophyllaceae, to which the commercial carnation, *Dianthus caryophyllus*, also belongs) has been known for over 70 years. Despite the close relationship between wild pinks and the commercial carnation, the disease was reported on carnation only in the last 20 years. The first report of anther smut of carnation was made from Canada in 1933. The disease was not considered important, however, until an outbreak in an English nursery in 1936 necessitated the destruction of 70 per cent of the blooms. The disease was found first in the United States in eastern Massachusetts in 1948.

Infection experiments (1) indicate that the source of inoculum for natural infection is smutted flowers of the same species in the immediate locality. In other words, the smut organism from wild pinks does not spread readily to the cultivated carnation. Most probably the disease is introduced into new areas by means of infected cuttings.

## Symptoms of the Disease

Smut-affected plants are stunted in growth and have a "grassy" appearance due to excessive side shoot development. Buds tend to be shortened and thickened. Numerous small blooms are produced and many of these have a split calyx tube. The normal pollen is replaced by abundant purplish-black spores of the smut fungus. These spores shed on the petals imparting a dirty, sooty appearance to the flower.

Because the early symptoms are indefinite and slow in appearing, infected plants are difficult to detect prior to the opening of the first smutted bloom. The sooty appearance of the petals and the blackened anthers

are sufficiently distinctive to insure positive identification of the disease.

A "grassy" habit of growth has appeared in other common carnation varieties. This trouble is probably genetical in origin and is different from anther smut-affected plants in that "grassy" plants flower sparsely or not at all. If such "grassy" plants bloom, the flowers are normal.

## About the Fungus

The smut fungus is systemic, that is, spreads internally through most of the host plant. The mycelium of the fungus is most abundant in the nodal regions, or joints of the plant. Apparently the growth of the fungus keeps pace with the growth of the plant since fungus mycelium is found near the actively growing points of the plant.

This is one of the disease organisms that fails to kill the host. Because of this the disease is all the more dangerous, since the excessive lateral shoot development caused by the fungus provides large numbers of healthy-appearing cuttings that perpetuate the disease.

The smut fungus produces spores only in the anthers of affected plants. These spores are disseminated by air currents, splashed water, or by careless handling of infected flowers. Buds, blossoms, injured or cut stems, and unrooted or rooted cuttings can be infected (1). Infection is favored by high humidity and by an injured plant surface. Cut ends of stems provide an important point of infection. Infection at this spot permits the easy entrance of the fungus into the buds initiated at the joint.

## Control

There is no known cure for this disease. Fungicides are ineffective since the fungus is inside the host plant. Effective control, then, depends upon a thorough program of roguing and burning of infected plants or plants showing any indication of disease. A thorough sterilization program for propagating sand and benching soil and general sanitation measures will aid in eradicating the smut fungus.

## References Cited

1. Spencer, J. L., and H. E. White  
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