

## CARNATIONS AND SOIL DISEASE

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Growers of carnations in Connecticut and in the northeast in general face effective competition from producers in California, Colorado and of course Latin American countries such as Colombia and Ecuador. Efficient and skillful management of a carnation crop is therefore essential if one expects to show a profit.

Carnations are propagated from cuttings. It is best to purchase rooted cuttings which are culture-indexed for systemic fungal and bacterial pathogens. These cuttings are probably disease-free but they are susceptible to reinfection. Complete sanitation and disease prevention measures are important in producing a top quality crop.

Growers who propagate their own cuttings can use the "mother block system" which is primarily aimed at the control of *Fusarium* and bacterial wilts of carnation. Mother blocks can be established by purchasing culture-indexed stock from an outside source. The mother block should be isolated from other growing operations and used only for cutting production. Cuttings taken from the mother block should always be broken off, never cut off. All propagating media should be thoroughly steam pasteurized and the planting medium must be as pathogen free as the cuttings.

Recently a grower of carnations called to report a reoccurring dead and dying patch of carnations in his production house. The plants showed a charac-

teristic wilting, subsequent browning, and eventual death (Figure 1). The bench was steam pasteurized and replanted. The next crop became diseased in the same 2' x 3' area (Figure 1). The diseased plants were cultured in the laboratory and Fusarium roseum was found to be the pathogen.

The grower has tried using ferbam, benlate and oxyquinoline sulfate without any success. The pathogen has survived the steam pasteurization and above chemicals.

There are several alternatives for management of diseased areas in carnation benches. Fusarium roseum generally occurs on young plants and spread should subside when winter arrives. These areas may be planted to snapdragons or stocks which are not normally attacked. If F. oxysporum is present, a benomyl drench should restrict the pathogen's movement from carnation to carnation down the bench.



Figure 1. Carnations killed by Fusarium.

In conclusion, a preventative program should be followed including 1) use of culture-indexed cuttings; 2) use of the mother block system if doing your own propagation; 3) use of pathogen-free rooting media, soil mixture and benches; 4) grow in raised benches; 5) plant shallow, bench plants so that the top half-inch or more of the soil ball is above the level of bench soil; and 6) always observe strict sanitation procedures.