

## Preliminary Results Indicate Vapam Promising for Wilt Control

RALPH BAKER

Wilts of carnation incited by *Fusarium oxysporum* f. sp. *dianthi* and *Phialophora cinerescens* have caused significant losses in ground benches. Conventional steaming of these benches has proved to be inadequate for control. Presumably inoculum is not eradicated deep enough in the soil for complete elimination (2). Typical penetration by the wilt fungi is through root tips. As the roots invade surviving inoculum in the deeper layers of soil, infection results.

Use of systemic fungicides to rectify this situation (1) has been only sporadically successful. Observational evidence indicates that these fungicides do not persist in high enough concentrations to give consistent control during the conventional two-year culture of carnations. Means for totally eradicating the pathogens also have not been successful.

Two soil fumigants, methyl bromide (3) and Vapam, were tested for effectiveness in eradicating inoculum from ground benches. Plots that had a history of high incidence of *Fusarium* wilt were selected for the experiment. Each treatment was applied to 3½ feet wide benches for 20 running feet. There were three replications.

Vapam was applied at the recommended rate of 1½ pints to 50 square feet of bench 4 days before the few remaining healthy plants were uprooted and the bench prepared for replanting. A water seal was applied immediately after application of the fumigant.

Methyl bromide was applied at the recommended rate of 4 pounds/100 square feet and confined with a tarp for 48 hours. All plots, including controls, were

steamed 1-2 days later and rooted cuttings transplanted (May 25, 1974) as in conventional carnation culture.

Losses were recorded over a period of a year (Figure 1). While loss in plots treated with methyl bromide initially was below that of steamed soil controls, no differences in control were evident after a year. Loss in plots treated with Vapam was negligible until June

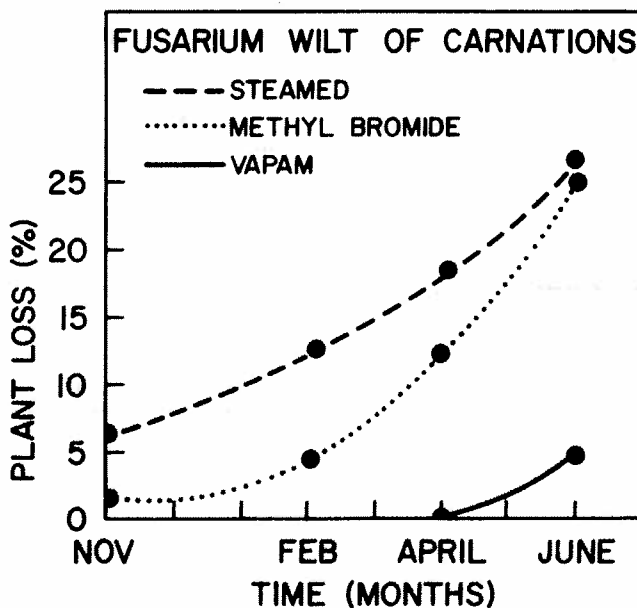


Fig. 1. Effectiveness of soil treatments for control of *Fusarium* wilt of carnations in ground benches.

1975. Plants developed symptoms at this time, but this was confined to one plot and was in an area adjacent to a nontreated portion of the bench where disease incidence was high.

These results indicate that control of wilt diseases of carnation may be possible using Vapam. Due to the relatively high specific gravity of the material, deeper penetration may occur providing better control than the highly volatile methyl bromide. Steam has a tendency to rise twice as fast as it penetrates downward. Therefore, Vapam may have properties contributing to more efficient eradication of those pathogens surviving at deeper levels in soil.

It must be emphasized that this is only one experiment, and these findings are of a preliminary nature. Extensive tests are now underway to repeat and expand these investigations.

## Literature Cited

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