CONTROL OF COTTON ROOT ROT WITH BASAL STEM APPLICATIONS OF BENOMYL

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INTRODUCTION

The systemic fungicide, benomyl, was shown in laboratory studies to be highly active against the Root Rot fungus, Phymatotrichum omnivorum. Minimum concentrations of fungicide necessary to prevent mycelial growth of different isolates of the fungus in agar ranged from 0.5 to 3.0 ppm. Growth was prevented in nonsterile field soil at concentrations as low as 5 ppm (active) dry-weight soil basis of the chemical. Because of this high degree of activity and known systemic nature of benomyl, a small replicated field study was made during summer 1970 to determine the efficacy of benomyl applied as a basal stem treatment for controlling Root Rot.

MATERIAL AND METHODS

Two treatments, 50 mgs (active) per plant and 100 mgs (active) per plant of benomyl (Benlate 50 WP) were applied to the base of each plant in 10 mls of water to 10-week-old plants. The check consisted of water application only.

Assays for benomyl were made from roots periodically through the growing season by use of chloroform extracts and a Penicillium expansum bioassay test. On September 30 the plots were rated for disease.

RESULTS

Benomyl was detected in cortical root tissue two and one half months after the initial application in both the 50 and 100 mg rate at depths approximately 20 cm below the soil surface. This depth of occurrence and concentration of benomyl on the root prevented death of the plant although the tap root was rotted below this point. Apparently the fungus was unable to invade and cause disease in root tissue containing benomyl. Results of the test are shown on Table 1.

Table 1. Effect of basal stem applications of benomyl on control of cotton root rot.

Treatment[a]	Plants killed by *Phymatotrichum omnivorum*	Percent Disease
Benomyl 50 mgs (active)/plant	6/89[b]	6.7
Benomyl 100 mgs (active)/plant	4/91	4.3
Check	25/92	27.1

[a] Benomyl applied in 10 mls water/plant.

[b] Six of a total of 89 plants killed by *P. omnivorum*.