

Agri. Res. J. Kerala, 1977 75 (1)

## POPULATION DYNAMICS OF *PYTHIUM* *APHANIDERMATUM* (EDSON) FITZ. IN SOIL TREATED WITH DIFFERENT FUNGICIDES

*Pythium aphanidermatum* is one of the most important soil borne plant pathogens. Being semiaquatic in nature this occurs mainly in soils with poor drainage and hence the problem of controlling the pathogen becomes very difficult. Attempts to find out the efficiency of different fungicides against this important plant pathogen in soil is far too meagre. It is a common observation that many of the fungicides which are effective *in vitro* are not effective under field conditions. In the present investigation an attempt was made to test different fungicides against *P. aphanidermatum* in soil without affecting the soil properties.

*P. aphanidermatum* was grown in peptone dextrose agar medium for one week and the mycelial mat was made into the pulp by blending with water. The mycelial pulp was added to sieved soil (20 mesh), mixed thoroughly and maintained at field capacity by adding water. This soil was incubated at 30°C for 48 hours. After the period the soil was again mixed thoroughly. From this 500 g soil was taken in 500 g capacity plastic pots and to each pot 25 ml water suspension of different fungicides was added (Table 1). The soil was then incubated for 48 hours. Inoculated soil without fungicidal treatment was used as a check. After incubation soil samples (20 mg) were collected and were plated on selective media (Peethambaran, 1975) using Warcup's (1950) soil plate method.

To study the residual effect of these fungicides in soil another batch of uninoculated soil was treated with the fungicides and incubated for 20 days. This soil was then inoculated with the fungus and soil samples were taken 48 hours after inoculation and population of *P. aphanidermatum* was determined as described above. The count of fungal population under different treatments are given in Table 1.

Colonies of the fungus was failed to recover 48 hours after treatment of the soil with captan and dithane M-45. The number of colonies in PCNB and demosan treated soils were more than in check. Twenty two days after treatment there was a marked increase in the population of *Pythium* in PCNB treated soil, while a significant reduction in population count was noticed in benlate, captan, duter, dithane M-45, copper sulphate, and vitavax treated soils. Other treatments did not differ significantly from check.

Table 1

Effect of fungicides on the population of *Pythium aphanidermatum* in soil

Fungicides	Active ingredient	Concentration (ppm)	No. of Colonies per 20 mg soil	
			2 days after treatment	22 days after treatment
P. C. N. B.	Penta chlor nitro benzene	500	8	16
Benlate	Meth>I-1 (butyl carbomoy!) — 2 benzimidazole carbamate	20	1	2
Captan	<b>N</b> -trichloromethyl thio-4- cyclohexene — 1, 2-dicarboximide	100	0	4
Duter	Triphenyl tin hydroxide	100	1	4
<b>Blitox-50</b>	Copper oxychloride	100	4	10
Dithane M 45	Co ordination product of Zinc iron and maneb	<b>100</b>		
<b>Demosan</b>	1, 4 Dichloro 2, 5— dimethoxy benzene	100		<b>13</b>
Zineb	Zinc ethylene bis dithiocarbamate	100		10
Dasanit	0, 0—Diethyl 0— (p-methyl sulfinyl phenyl) phosphorothioate	100	7	<b>10</b>
Aureofungin	Antibiotic	20	8	12
Copper sulphate	Copper sulphate	100	5	7
<b>Vitavax</b>	5, —6dihydro-2-methyl-1, 4-oxathin -3 carboxanilide	20	4	7
Untreated inoculated soil			7	12
Untreated <b>uninoculated</b> soil			0	0

The inefficiency of PCNB against Pythiaceous fungi has been reported by earlier workers. (Kerr, 1963; Vaartaja and Bumbieris, 1964). The results of the present investigations indicate that benlate, captan, duter, dithane M-45, copper sulphate and vitavax were effective even after period of 22 days, in reducing the growth of *Pythium* in soil. Benlate was highly fungitoxic in this experiment though Follin (1971) has shown that benlate has no effect against *Pythium*. A probable reason could be that cumulative action of the concentration of benlate present in the selective medium and that added in the soil might have become so pronounced so as to cause an inhibitory action on the fungus.

**Acknowledgement**

The author is grateful to Dr. M. Ramanatha Menon, Professor of plant Pathology, College of Agriculture Vellayani for valuable suggestions made in the preparation of the manuscript.

**സംഗ്രഹം**

പലതരം കമീരനാശിനികൾ മണ്ണിൽ പ്രയോഗിച്ചശേഷം അവ മണ്ണിൽ വളരുന്ന പിത്തിയം അഹാനിയെർമാറ്റം എന്ന ഫംഗസ്സിന്റെ വളർച്ച എത്ര നാൾവരെ തടഞ്ഞു നിർത്താം എന്നതിനെക്കുറിച്ച് ഒരു പഠനം നടത്തുകയുണ്ടായി. മണ്ണിൽ കാപ്റ്റാൻ, ഡൈത്തേൻ എം-45 rajjcrmn കമീര നാശിനികൾ പ്രയോഗിച്ചപ്പോൾ 48 മണിക്കൂറുകൾ കഴിഞ്ഞപ്പോൾ തന്നെ മേൽപ്പറഞ്ഞ ഫംഗസ്സിന്റെ കോളനികൾ നശിച്ചതായി കണ്ടു. എന്നാൽ പിസിഎൻബി, ഡെമോസാൻ എന്നിവ ഈ ഫംഗസ്സിന്റെ വളർച്ചയെ സഹായിക്കുന്നതായാണ് കാണുവാൻ സാധിച്ചത്. ബെൻലേറ്റ, കാപ്റ്റാൻ, ഡ്യൂട്ടർ, ഡൈത്തേൻ എം-45, തുരികൂ, വിറാവാക്സ് എന്നീ കമീരനാശിനികൾ പ്രയോഗിച്ചപ്പോൾ 22 ദിവസത്തിനു ശേഷവും ഫംഗസ്സിന്റെ വളർച്ച താരതമ്യേന കുറവായിരുന്നു.

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(M. S. Received: 4-10-1976)