Madras Agric. J., 93 (1-6) : 132-134 January-June 2006
https://doi.org/10.29321/MAJ.10.100738

Management of tuber rot *(Fusarium oxysporum)* of tuberose *(Polianthes tuberosa L.)*

A. MUTHUKUMAR[1], G.KARTHIKEYAN[2] AND K. PRABAKAR[2]

[1]*Dept. of Plant Pathology, Faculty of Agriculture, Annamalai Univ., Annamalai Nagar - 608 002*
[2]*Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore-641 003*

Tuberose is an important ornamental plant widely cultivated in Tamilnadu for flower purpose. Tuberose have been affected by many fungal and viral diseases. Among the fungal diseases, tuber rot incited by *Fusarium oxysporum* is a serious disease in tuberose. It causes severe yield loss. For the first time *Fusarium oxysporum* has been isolated from the infected tubers of tuberose. In this paper different fungicides were evaluated against tuberose *in vitro* and under glasshouse conditions.

The fungicides *viz.*, carbendazim, captan, thiram, mancozeb and copper oxy chloride were tested *in vitro* against *F. oxysporum*, the cause of tuber rot of tuberose through poisoned food technique (Grover and Moore, 1962). Different concentrations *viz.*, 100 ppm, 200 ppm, 300 ppm, 400 ppm, 500 ppm, 750 ppm and 1000 ppm of the fungicides were incorporated into 100 ml of sterilized PDA medium and poured into sterile Petri plates. The plates were rotated clock and anti clock wise direction for uniform mixing. Each plate was inoculated with a nine mm disc of *F.oxysporum* and incubated at room temperature (28 ± 2^0C). A proper control was also maintained. The radial growth of the pathogen was measured at an interval of 24 hours.

Fungicides tested *in vitro* were also evaluated under glass house conditions for the management of tuber rot of tuberose. The pots were filled with pot mixture and inoculated with the pathogen multiplied on sand maize medium @ 100g kg^{-1} of soil. Ten days after inoculation, the treated tubers (with fungicides @ 0.2 per cent concentration separately) were planted in the pots. The germination percentage was recorded on tenth day of planting. Observations on the incidence of tuber rot and growth parameters were recorded at 20, 40, 60 and 80 days after planting.

The results of the experiments revealed that among the fungicides tested, Carbendazim and Captan completely suppressed the mycelial growth of *F.oxysporum* at 750 and 1000 ppm respectively (Table 1). While the other fungicides needs higher concentrations for the inhibition of *F.oxysporum*. Mohan (1989) observed that Carbendazim of 500 and 1000 ppm effectively checked the growth *F.oxysporum* under *in vitro* conditions respectively. Similar indications were also obtained in other *Fusarium* spp. According to Pushpathi *et al.* (1998), systemic fungicides like Carbendazim (100 ppm),Benomyl (250 ppm), Thiophanate methyl (250 ppm) and non systemic fungicides like Mancozeh (500 ppm), Thiram (1000 ppm) and Captan (1250 ppm) inhibited the mycelial growth of *F.oxysporum f.sp. ricini.*

All the fungicides tested significantly increased the germination and reduced the tuber rot incidence throughout the growth period (Table 2). Treatment of tubers with Carbendazim @ 0.2 per cent concentration registered significantly

Table 1. Effect of fungicides on the growth of *F. oxysporum in vitro.*

Concentration (ppm)	Mycelial growth (mm) at 7 days after inoculation				
	Carbendazim	Captan	Thiram	Mancozeb	Copper oxychloride
100	55.50	62.50	67.25	78.50	84.50
200	46.25	57.50	63.25	71.50	76.25
300	31.75	44.25	54.00	62.50	65.50
400	25.75	36.50	42.50	50.75	55.25
500	11.25	23.50	33.50	42.25	46.50
750	0.00	9.75	22.50	30.75	35.50
1000	0.00	0.00	10.50	16.75	26.00
Control	88.88	87.75	8750	88.00	88.38

Mean of four replications
CD (P=0.05)

Concentration : 1.25
Treatment : 0.99
Concentration x Treatments : 2.80

Table 2. Efficacy of fungicides on germination, incidence of tuber rot and growth of tuberose.

Treatments	Germination (Percentage)	Disease incidence (%)		Shoot length (cm)		Root length (cm)	
		40 DAS	80 DAS	40 DAS	80 DAS	40 DAS	80 DAS
Carbendazim	79.16 (62.95)	31.66 (36.90)	38.88 (38.34)	15.1	26.7	4.2	6.4
Captan	74.99 (60.15)	36.66 (39.76)	43.54 (41.26)	14.1	23.3	3.4	6.0
Thiram	72.91 (58.92)	42.14 (43.26)	49.64(44.77)	13.8	22.4	3.2	4.5
Mancozeb	68.74 (56.13)	54.90 (49.42)	61.60 (51.91)	12.2	20.1	3.0	4.3
Copper oxychloride	54.16 (47.43)	61.57 (57.02)	73.71 (59.54)	12.1	19.3	2.7	4.1
Control	33.33 (35.18)	83.75 (77.33)	93.75 (82.50)	9.1	15.2	2.0	3.2
CD (P=0.05)	7.67	3.23	4.90	0.28	0.46	0.30	0.25

Mean of four replications
Figures in parentheses are arcsine transformed values.

higher germination percentage of 79.16 as against 33.33 per cent in control. Treatment of tubers with carbendazim recorded the lowest disease incidence of 38.88 per cent at 80 days after planting. This was followed by Captan (43.54 per cent) and Thiram (49.64 per cent) as against 93.75 per cent in control after 80 days of planting.

Maximum shoot and root length was also recorded in carbendazim treated tubers. Gozia *et al.* (2002) reported that carbendazim effectively reduced the disease incidence of *F.oxysporum* in potato tubers. According to Channel and Rahul Katoch (2001) drenching with Bavistin and Benomyl at 200 ppm one month after transplanting and at bud formation stage reduced the carnation wilt incidence up to 80 and 73 per cent respectively under field conditions. All the fungicides were found to have different degrees of control against the pathogen. However more detailed studies have to be made to find out the exact principle involved in these treatments.

References

Chandel, S.S. and Rahul Katoch. (2001). Chemical control of *Fusarium oxysporum* f. sp. *dianthi*, an incitent of carnation wilt. *Indian J. Microbiol.*, **41:** 135-137.

Grover, R.K. and Moore, J.D. (1962). Toximetric studies of fungicides against brown spot organism, *Sclerotia fructicola* and *Sclerotia laxa*. *Phytopathology*, **52:** 876-88.

Mohan, L. (1989). Studies on the etiology and control of bulb rot of garlic *(Allium sativum*.L) Ph.D thesis, Tamil Nadu Agricultural University, Coimbatore, India, p. 116.

Pushpavathi, B., Sarwar, A.A.K., Raoof, M.A. and Babu, R.R. (1998). Management of wilt disease in Castor. *Indian J. Plant Prot.*, **26:** 177-180.

Gozia, O., Servan, M., Badea, E.M., Sandulescu, D. and Ivan, V. (2000). Carbendazim - an alternative abiotic elicitor of potato tuber defense response. Proceedings of the Romanian Academy Series B, Chemistry. *Life Sci. Geo Sci.*, **2:** 31-35.

Madras Agric. J., 93 (1-6) : 134-136 January-June 2006

Constraints on privatisation of agricultural extension services as perceived by farmers

M. JEGADEESAN[1] AND T. RAJENDRAN[2]
[1]*Research Associate, CARDS, Tamil Nadu Agricultural University, Coimbatore - 641 003.*
[2]*Research Associate, Central Institute for Cotton Research (CICR), Coimbatore - 641 003.*

Privatization of Agricultural Extension Services (PAES) is considered as new option to deliver technology to the farmers. In this approach, the farmers are expected to pay full or partial cost of technology for which they receive and utilize. (Saravanan, 1999). Expecting, some few thousand-extension workers would fulfill million of farmer's need is not