REFERENCES

ANONYMOUS. 1976. BRRISAIL BR 4. Bangladesh Rice Institute, publication No. 17. 1976.

DEBADATH, S. and S.Y. PADMANABAN, 1971. Factors influencing the incidence of bacterial leaf blight of rice in India and its control. Oryza 8 : 371-372.

GANGULY, D., M. S. BALAKRISHNAN and S. Y. PADMANABAN, 1954. Effect of manuring on the incidence of blast. Rice News letter 2 : 130-138.

HAVE, T.T. and H. E. KAUFFMAN, 1972. Effect of nitrogen and spacing on bacterial leaf blight of rice. Indian Farming 21 : 7-10.

HYGOOD, R. A., O. L. STRIDER and P. V. NELSON, 1982. Influence of nitrogen and potassium on growth and bacterial leaf blight of *Philodandron selloum*. Plant Disease 66 : 728-730.

KRISHNASWAMI, C. S. 1982. Influence of nitrogen phosphorus and potash on the incidence of rice plant in Madras State Madras Agric. J. 39 : 205-218

NAKAI, H. and M. GOTO. 1977. Mutation breeding of rice for bacterial leaf blight resistance In "Induced mutations against plant disease" IAEA-SM-214/45 : 171-186.

OU, S. H. 1973. A handbook of rice diseases in the tropics. The International Rice Research Institute. Los. Banos - Philippines 58 pp.

REDDY, A. P K., J. C. KATYAL., D. L. ROUSE and D. R. MACKENGIE, 1979. Relationship between nitrogen fertilization, Bacterial leaf blight severity and yield of rice. *Phytopathology*. 69 : 670-973.

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ASSOCIATIVE EFFECTS OF POTATO VIRUS Y AND FUNGAL DISEASES IN CHILLI (*Capsicum annuum* L.)

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Potato virus Y infection in Chilli did not influence the germination of *Colletotrichum capsici* (Syd.) Butler and Bisby but the spore germination of *Leveillula taurica* (Lev.) Arn. was less in the extract from PVY - infected chilli leaves when compared to that of sap from healthy leaves. Prior infection of PVY increased the susceptibility of Chilli plants to *C. capsici*.

In nature, plant pathogens seldom occur in isolation yet, relatively little work has been done on interaction between two or more pathogens capable of infecting a single host. In the present study the effect of potato virus Y infection on two fungal disease was studied.

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MATERIALS AND METHODS

The effect of virus infection on spore germination as studied following the method of Joshi and Wangikar (1978). Detached shoot inoculation method was developed to study the effect of virus infection in the development of die-back disease Uniform-sized young shoots were excised from healthy and mosaic-infected chilli plants and inserted through cotton pad into a conical flask containing tap water so that the end was in contact with water. The spore suspension of *C. capsici* (10^6 spores/ml) was sprayed over the shoots and covered with a bell jar. Tap water was sprayed over the shoots periodically to maintain high relative humidity. The shoots sprayed only with sterile water served as control. Observations on the development of fungal disease were recorded.

RESULTS AND DISCUSSION

The present study indicated that PVY infection had no significant effect on spore germination of *C. capsici*. This finding corroborates those of Stevens and Gudauskas (1982). Basada (1978) reported that extracts from plants infected with CMV and watermelon mosaic virus were free from any substance which might affect the conidial germination of *Sphaerotheca fuliginea*. The data presented in Table also revealed that the extract from PVY-

Table Effect of virus inoculation of fungal spore germination (Percentage)

Sl. No.	Treatments	*Colletotrichum capsici* Incubation Period (hr) 8	16	Mean	*Leveillula taurica* Incubation Period (hr) 8	16	Mean
1.	Extract from mosaic-infected chilli leaves	22.13* (28 04)	50.17 (45.08)	36.15 (36 56)	3.11 (9.97)	5.84 (13 87)	4.48 (11.92)
2.	Extract from healthy areas of mosaic infected leaves	19.75 (26.33)	49.14 (44.54)	34.45 (35.44)	3.40 (10.49)	7 53 (15.85)	5.47 (13.17)
3.	Extract from healthy leaves	21.30 (27 44)	53.40 (46.91)	37.35 (37.18)	3.23 (10.29)	8.31 (16.70)	5.77 (13.50)
	Control (Sterile distilled water)	2 67 (9.32)	11 27 (19 52)	6.97 (14.45)	2.44 (8.85)	5.87 (13 96)	4.12 (11.41)
	Mean	16 46 (22 78)	41.00 (39.03)	— —	3.05 (9.90)	6.89 (15.10)	— —

* Mean of three replications.

(Values in parentheses are after angular transformation)

P = 0.05	*Colletotrichum capsici* C. D.	*Leveillula taurica* C. D.
Treatments	0.86	1.27
Period	0 60	0 90
Interaction	1 22	N. S.

infected chilli leaves did not favour spore germination of *Leveillula taurica*. Different effects of virus infection on the germination of fungal pathogens have been reported. Dubey and Joshi (1978) found that sap from PVX-infected tobacco leaves reduced the spore germination of *Alternaria alternata*. Spore germination of *Uromyces phaseoli typica* was completely inhibited by TMV infection on bean (Wilson, 1958). The extract from Sugarcane mosaic virus-infected sugarcane leaves inhibited the germination of *Colletotrichum falcatum* and *Ustilago scitaminea* (Dubey and Joshi, 1976).

Though the spore germination of *C. capsici* was not affected by the extracted from PVY-infected chilli leaves, the severity of the die-back disease increased appreciably in plants infected by PVY. The development of the fungal disease was faster on PVY-infected shoots than on healthy shoots. Similar results were also obtained by Chavan *et al.* (1980). Inhibitory effects of virus infection on fungal diseases have also been reported (Bansal *et al.* 1982). Viruses may exert considerable influence on host metabolic activities and a number of factors may be involved in increasing host susceptibility to other pathogens.

REFERENCES

BANSAL, R. D., H. L. KHATRI and O. P. SHARMA, 1981. Interaction between tobacco mosaic virus and *colletotrichum capsici* in *Capsicum annuum* L. - Varietal reaction. *J. Res. Punjab agric. Univ.*, *19* : 39-43

BESADA, W. H. 1978. nteractions in plants infected with viruses and fungi. I. Interactions between each of cucumber mosaic and watermelon mosaic virus against *Sphaerotheca fuliginea* (Schlechtex Fr.) Pollacci in some *Cucurbitaceaus* hosts. *Acta Phytopath. Acad. Sci. Hnug.* *13* : 95-105.

CHAVAN, K. M., T B. GARUD and V. R. MALI 1980. Interaction between sorghum red stripe virus and fungal pathogens causing sorghum leaf spot and chorcoal rot. *Indian J Mycol. Pl. Pathol*, *10* : 8 (Abstr.)

DUBEY, L. N. and R. D. JOSHI, 1976. Anti-fungal property of mosaic virus affected sugarcane leaf extract. *Sugarcane Pathol. Newsl.*, No. 15/16, 23-25.

DUBEY, L. N. and R. D. JOSHI, 1978. Studies on spore germination of *Alternaria alternata* in the sap extracted from tobacco plants infected with potato virus x. *Indian J. Mycol. Pl. Pathol.* 7 : 182.

JOSHI, C. G. and P. D. WANGIKAR. 1978. Efficacy of fungicides against *Colletotrichum capsici* *Indian Phytopath.*, *31* : 222-223.

STEVENS, C. and R T. GUDAUSKAS, 1982. Relation of Maize dwarf mosaic virus infection to increased susceptibility of corn to *Helminthosporium maydis* race '0' *Phytopathology*, *72* : 1500-1502.

WILSON, E. M. 1958. Rust - TMV cross protection and necrotic ring reaction in bean. *Phytopathology*, *48* : 228-231.