

11. Inamdar, J. A. and Patel, R. C., *Ann. Bot.*, 1970, 34, 965.
12. Landré, P. P., *Ann. Sci. Nat.*, 1972, 13, 247.
13. Pant, D. D. and Kidwai, P., *Ann. Bot.*, 1967, 31, 513.
14. — and —, *Senck. biol.*, 1966, 47, 309.
15. Tomlinson, P. B., *Taxon*, 1974, 23, 109.
16. Pant, D. D. and Mehra, B., *Phytomorphology*, 1965, 15, 300.

HOST RANGE OF THE ENTOMOGENOUS FUNGUS *FUSARIUM OXYSPORUM* SCHLECT AND ITS SAFETY TO THREE CROP PLANTS

KURUVILLA AND JACOB¹ recorded the occurrence of *F. oxysporum* as a virulent pathogen of brown plant hopper, *Nilaparvata lugens*. Studies on the pathogenicity of this fungus to rice and to some crop plants are reported in this paper.

The fungal culture obtained from diseased hoppers was maintained on oat meal agar medium. The caterpillars tested were inoculated by allowing them to crawl for one hour over heavily sporulated 4-day old cultures and reared on rice seedlings enclosed in burricane Lantern chimneys provided with moist cotton wool to ensure high humidity. The bugs and beetles under test were released on rice plants caged in chimneys and sprayed with a concentrated suspension of the spores collected from the 4-day old cultures. Mortality of the insects were observed daily till all were dead or pupated as the case may be. Pathogenicity was confirmed by reisolating the same fungus from the dead specimens.

Results presented in Table I show that *F. oxysporum* was infective to *T. spectra*, *L. acuta*, *M. histrio*, *N. depunctalis*, *C. medinalis* and *A. cyanea* causing over 80% mortality. The fungus was not infective to *N. nigropictus* and *S. mauritia*. Nayak and Srivastava² have already reported the infectivity of this pathogen to larvae of *Melanitis leda ismene*. Thus this entomogenous fungus has the capacity to infect a wide spectrum of rice pests.

Pathogenicity of the fungus to rice crop and two other crops namely cotton and tomato which are susceptible to wilt disease caused by *Fusarium* spp. was assessed by (1) soil treatment in which surface soil in 10 cm diameter flower pots was mixed with 25 ml of the spore suspension and 2 seedlings planted in each pot; soil mixed with 25 ml sterile water served as control; (2) seed treatment in which 25 g of the seeds were soaked in the spore suspension for 24 hrs and sown in flower pots at the rate of 3 seeds per pot; (3) root treatment, in which root tips of one month old seedlings were cut and kept immersed in the spore suspension for 2 hr and planted in flower pots at the rate of 3 seedlings per pot and (4) leaf treatment, in

which injury was made on leaves by pinpricks and culture bits were placed on the injured spots and covered with moist cotton wool. All the above experiments were replicated 4 times for each crop. Observations were made daily on the condition of the plants till harvest.

TABLE I
Infectivity of F. oxysporum to different insects

Test insect	Stage of the insects treated	% mortality of treated insects	Average time taken for death in days	Infection
<i>Nephotettix nigropictus</i>	adult	0	..	-ve
<i>Tettigella spectra</i>	adult	80	4	+ve
<i>Leptocorisa acuta</i>	adult	90	5	+ve
<i>Menida histrio</i>	adult	90	5	+ve
<i>Spodoptera mauritia</i>	larva	0	..	-ve
<i>Nymphula depunctalis</i>	larva	100	7	+ve
<i>Cnaphalocrocis medinalis</i>	larva	95	7	+ve
<i>Altica cyanea</i>	larva	100	4	+ve

* Each experiment was replicated 4 times using 20 insects per replication. There was no mortality in control

None of the plants inoculated with the fungus took infection revealing its safety to rice, cotton and tomato crops.

The authors thank the Kerala Agricultural University, Vellanikkara, for kindly granting permission to publish this paper which formed part of the M.Sc. (Ag.) thesis submitted by the senior author. Thanks are also due to Commonwealth Mycological Institute, Kew, England, for identifying the fungus and to Dr. M. R. G. K. Nair, Emeritus Scientist, College of Agriculture, Vellayani, for critically reviewing the manuscript.

Division of Entomology,
College of Agriculture,
Vellayani 695 522,
Kerala, India, November 23, 1978.

SUMA KURUVILLA.
ABRAHAM JACOB.

1. Kuruvilla, S. and Jacob, A., "Abstract of papers," *Symp. on Rice Research and Development, KAU*, 1978, p. 41.
2. Nayak, P. and Srivastava, R. P., *Curr. Sci.*, 1978, 47, 355.