REFERENCES

HUTCHINSON, J. B. 1950. A note on some geographical. races of Asiatic Cottons. *Emp. Cott. Gr. Rev.* 27 : 123-127.

MARAPPAN, P. V. and SANTHANAM 1962. Breeding behaviour of some *arborem - anomalum* backcrosses. *Indian Cott. Gr. Rev.* 16 : 24-30.

NARAYANAN, S. S. 1972. Cytogenetical investigations on amphiploids and derivatives of *Gossypium anomalum* and cultivated species of cotton. M. Sc. (Ag.) dissertation (unpub.)

RAO, S. B. P. 1973. *Indian cottons* Directorate of Cotton Development Bombay.

SREE RANGASWAMY, S. R. and V. S. RAMAN 1963. Studies on morphology and cytology of *G. herbaceum* X *G. anomalum* hybrids. *Indian Cott. Gr. Rev.* 17 : 353-59.

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Influence of Foliar Spray of Certain Pesticides on the Phyllosphere Microflora of Paddy

Leaf surface constitutes distinct microhabitat wherein complex interrelationships exist between the different groups of microorganisms. The quantitative and qualitative change in the phyllosphere microflora of crop plants are caused by many factors like plant species, age of the plant, disease incidence, pest prevalence and environment (Last and Deighton, 1965; Sinha, 1965). The changes in the phyllosphere microflora of paddy due to application of various pesticides are presented in this note.

IR 20 variety of paddy was raised in wet lands of Tamil Nadu Agricultural University Experimental Farm. The crop was sprayed on the 20th day of transplanting with Carbaryl (N-methyl-l-napthyl carbamate) (0. 1 percent). Endrin (1, 2, 3, 4, 10 - hexochloro - 6, 7-epoxy-1, 4, 5, 6, 7, 8, 8 percent octahydro-1, 4-exo-5, 8-exodimethanonaphthalene) (0.02 percent), Fenthion (0,0-dimethylmercapto 3-methylphenyl thiophosphate (0.01 percent), and Parathion (Diethyl p-nitrophenyl thiophosphate) (0.01 percent). Leaf samples from the

sprayed plots were collected 24 hr and 15 days after spray and enumeration of the microflora in the phyllosphere was carried out as per the procedure described by Oblisami *et al.* (1973).

Significant quantitative changes were recorded in the populations of phyllosphere microflora due to pesticide sprays. All the pesticides except Fenthion significantly reduced the bacterial population 24 hr after spray. However, 15 days after spraying, the populations in general, increased though Parathion and Carbaryl continued to suppress the bacterial population (Table 1). The initial lag period and an increase of

TABLE 1. Effect of pesticide spray on the phyllosphere microflora of paddy (Population expressed as No./cm^2)

Treatement		24 hr after spray			15 days after spray		
		Bacteria	Actino-mycetes	Fungi	Bacteria	Actino-mycetes	Fungi
Carbaryl	0.1%	173.3	347.0	6.7	187.7	10.2	29.5
Endrin	0.02%	1114.7	294.5	5.8	553.3	12.0	5.7
Fenthion	0.01%	1533.3	13.2	9.9	209.7	28.7	10.0
Parathion	0.01%	942.3	21.8	2.5	114.7	8.0	22.5
Control		1337.3	181.8	46.1	268.0	10.7	5.9

Statistical conclusion :

		Bacteria	Actinomycetes	Fungi
Stage effect	CD	4.95	0.307	0.045
Pesticide effect	CD	12.93	0.848	0.38

bacterial population after 15 days might be due to the stimulation of nutritionally fastidious group of organisms (Gunner *et al.*, 1966; Robson and Gunner, 1970). A drastic reduction in the actinomycets (streptomycetes) population was encountered due to Fenthion and Parathion whereas Carbaryl and Endrin interestingly exerted a stimulating effect. However, 15 days after spray no significant difference was observed except Fenthion showing a higher population than control (Table 1).

There was a drastic reduction of the fungal population in the phyllosphere 24 hr after spraying pesticides. Nevertheless, the population in general increased 15 days after spraying (Table 1). Asha Ram *et al.* (1971) have reported that incorporation of certain pesticide chemicals in synthetic medium reduced the fungal population. The predominant fungal genus observed was *Cladosporium* sp. Endrin and Parathion in general, stimulated the occurrence of *Trichoderma*, *Aspergillus*, *Fusarium*

and *Penicillium* either 24 hr or 15 days after foliar spray (Table 2). Such specific stimulation of certain fungal genera due to application of insecticides is in conformity with the earlier reports of Matsumura and Boush (1971). Sinha (1965) suggested the possibility of using pesticides as a means to control

TABLE 2. Effect of pesticide spray on the occurrence of fungal genera in the phyllosphere of paddy (Expressed as % to the total fungal flora)

Fungus	Observation	Carbaryl (0.1%)	Endrin (0.02%)	Fenthion (0.01%)	Parathion (0.01%)	Control
Cladosporium	I	91.3	57.6	96.8	90.9	89.6
	II	83.5	61.9	87.9	61.8	80.7
Trichoderma	I	—	14.3	—	9.1	—
	II	1.7	—	—	—	—
Aspergillus	I	—	—	—	0.9	—
	II	2.6	20.6	—	2.0	—
Penicillium	I	—	—	—	—	—
	II	—	2.9	—	—	—
Fusarium	I	4.4	—	—	—	—
	II	2.6	2.9	—	—	—
Rhizopus	I	—	—	—	—	—
	II	—	2.9	—	—	—
Gloeosporium	I	—	28 6	1.6	—	—
	Ii	2.6	—	2.4	2.9	1.6
Alternaria	I	—	—	—	—	1.6
	II	3.5	—	—	2.9	4.2
Helminthosporium	I	—	—	—	—	8.8
	II	—	5.9	—	1.0	12.6
Nonsporulating fungi	I	4.3	—	1.6	—	—
	II	0.9	—	—	—	0.9

I : 24 hr after spraying; II : 15 days after spraying

plant pathogens by stimulating the antagonists. In the the present study, the suppression or elimination of *Helminthosporium*, a pathogen on rice, by the spray of insecticides might be due to the of well known antagonists like *Trichoderma* and *Penicillium*.

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REFERENCES

ASHA RAM, S. P. RAYCHAUDRI and A. VARMA. 1971. Fungistatic activity of some systemic and non-systemic pesticidal chemicals. *Indian Phytopath.* 24 : 325-31.

GUNNER, H. B., B. M. ZUCKERMAN, R. W. MILLER, K. H. DEUBERT and R. E. LONGLEY. 1966. The distribution and persistence of diazinon applied to plant and soil and its influence on rhizosphere and soil microflora. *Plant and Soil.* 25 : 249-64.

LAST, F. T. and F. C. DEIGHTON. 1965. The non-parasitic microflora on the surface of living leaves *Trans. Brit. mycol. Soc.* 48 : 83-99.

MATSUMURA, F. and G. M. BOUSH. 1971. Matabolism of insecticides. pp. 322-336. In: *Soil Biochemistry* Vol. 2, (Eds.) A. D. McLaren and J. Skujins, Marcel DekKer, Inc , New York, U. S. A.

OBLISAMI, G., D. J. BAGYARAJ and J. H. KULKARNI. 1973, The leaf surface microflora of French-bean and Bengalgram. *South Indian Hort.* 21 . 126-30.

ROBSON, H. and H. B. GUNNER. 1970. Differential response of soil microflora to diazinon. *Plant and soil.* 33 : 613-21.

SINHA, S. 1965. Microbiological complex of the phyllosphere and disease control. *Indian Phytopath.* 18 : 1-20.

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Effect of certain Nonsystemic Fungicides on the Control of Powdery Mildew Disease of Bhendi (*Abelmoschus esculentus* L.)

Powdery mildew caused by the fungus *Erysiphe cichoracearum* D. C. is an important disease affecting bhendi crop. The affected leaves dry up and finally fall off. For purposes of controlling this disease, sulphur dust and wettable sulphur are at present recommended. The efficacies of newer fungicides need to be tested and with this objective in view studies were undertaken to assess the efficacy of the fungicides on the control of powdery mildew of bhendi and the results are presented.

Experiments were conducted at the Vegetable Section, Agricultural College and Research Institute, Coimbatore to