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EFFECT OF SOIL APPLICATION OF CARBOFURAN IN SPLIT DOSES ON THE CONTROL OF THE RICE ROOT NEMATODE

THE root nematodes *Hirshmanniella* spp. are widely distributed in lowland rice soils in India causing 25 to 70% losses in grain yield[1,2]. Varying degrees of control of this nematode were obtained with halogenated hydrocarbon organophosphate and carbamate pesticides[3,4]. Soil treatment with carbofuran for once at 1·2 or 2 kg a.i./ha[5,6] or thrice with 1·5 kg/ha each time[7,8] was reported to be effective. With the objective of determining the time of application of carbofuran for economic and effective control, a field with a uniform distribution of *H. mucronata* was selected and 15 plots each measuring 5 *m* × 5 m were laid out. Healthy seedlings of the rice c.v. *Padma* at 35 days age were transplanted in plots in lines at 20 cm × 15 cm spacing.

The following 5 treatments, *viz.*, soil application of carbofuran at 1 kg a.i/ha at the time of planting (T_1), this followed by post-planting application of the same amount for once (T_2), twice (T_3) and thrice (T_4) at intervals of 15 days and an untreated control (T_5) were introduced in 3 replications. Nematode populations in soils and roots of crops were estimated before planting at flowering and at harvesting from all plots[5].

Maximum numbers of *H. mucronata* were found in roots and soils of untreated plots (T_5) both at flowering and at harvest of crops (Table I). The plots receiving basal application of carbofuran (T_1) had significantly low population of nematodes and higher grain yield but were inferior to the other carbofuran treatments which were on par. These findings confirmed the earlier reports on the effectiveness of carbofuran against the nematodes[7,8] and suggest that application of 1 kg/ha to soil as basal dose and again at 15 days after planting would be adequate to keep the *H. mucronata* populations below the economic injury level.

TABLE I

Efficacy of carbofuran (1 *kg/ha*) *to soil application to soil in controlling the root nematodes* (Hirschmanniella mucronata) *in rice var* Padma

(Means of 3 replications)

Treatment (Soil application of carbofuran)		Population of *H mucronata* at planting soil (500 g)	at flowering root (1 g)	at flowering soil (500 g)	at harvest root (1 g)	at harvest soil (500 g)	Grain yield T/ha
T_1	At planting	012	100	90	300	460	3·70
T_2	T_1 + 15 d.a.p.	110	19	36	40	169	4·00
T_3	T_2 + 30 d.a.p.	103	12	16	50	35	4·26
T_4	T_3 + 45 d.a.p.	103	14	33	36	40	4·25
T_5	Untreated control	102	244	338	913	1126	3·20
C. D. 0·05			4·7		12·7		0·43

d.a.p.—Days after planting.

Central Rice Research Institute,
Cuttack 753 006, India,
March 12 1979.

J. SATYANARAYANA PRASAD.
Y. SESHAGIRI RAO.

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OCCURRENCE OF A NEW INSECT, SMALL BROWN PLANT HOPPER *LAODELPHAX STRIATELLUS* (FALLEN), IN INDIA

In July 1978, some small brown plant hoppers were seen on rice nursery (variety 'Jaya') in the farmer's fields near Ludhiana (Punjab). These could be distinguished from white-backed plant hopper by coloured scutellum as against white. The scutellum was black/brownish black in males and pale yellow with greyish tinge in females. The adult specimens of this insect sent to the Commonwealth Institute of Entomology have been identified as *Laodelphax straitellus* (Fallen) (Delphacidae : Homoptera). From the published reports it appears that this insect is a new record from India[1-2].

L. striatellus commonly occurs in Taiwan, Japan, Korea, China and the Palearctic regions. It causes considerable direct damage to the rice crop in these countries. It is also a vector of rice stripe, the most serious virus disease of the East Asian countries and also transmits the rice black-streaked dwarf virus[1].

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Department of Genetics, K. K. SHUKLA.
Punjab Agricultural University,
Ludhiana 141 004, Punjab,
March 12, 1979.

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A SIMPLE METHOD FOR INDUCING SPORULATION IN *HELMINTHOSPORIUM GRAMINEUM* IN CULTURE

Helminthosporium gramineum Rabh. the incitant of stripe disease is known to parasitize barley wherever the crop is grown. The fungus sporulates abundantly on the host under natural conditions but it fails to sporulate when isolated in pure culture. A wide variety of artificial media at different temperatures, pH, carbon and nitrogen sources did not induce sporulation in all the seven isolates of *H. gramineum* collected from different places in India[2]. Conidia could be produced in culture through the combined effect of light and temperature and none of the media was found superior to P.D.A. (Potato Dextrose Agar)[1].

In the present investigations, low temperature treatment induced sporulation in all the three isolates, collected from around Agra differing in morphology and nutrition, grown on Czapek's Dox Agar as well as on Potato Dextrose Agar. The fungus culture was first kept in the refrigerator at 6 (± 1)° C for 7 days and then was incubated in reversible incubator maintained at 28 (± 1)° C for 5 days. The sporulation was obtained throughout the year.

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Botany Department, SHASHI BALA GULATI.
Agra College, Agra 282 002, S. K. MATHUR.
March 26, 1979.

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LEVEL OF GLUCOSE AND FRUCTOSE IN HYPHAE OF TWO FRUIT ROT CAUSING FUNGI

CONCENTRATION of glucose and fructose present in the mycelium of two fruit rot causing fungi, *i.e.*, *Alternaria tenuis* Auct. and *Helminthosporium spiciferum* (Bain) Nicot as influenced by the amount of sugar present in the substratum was determined. Besides the carbon source, the basal medium comprised KNO_3, 3·5 g, KH_2PO_4, 1·75 g and $MgSO_4 \cdot 7H_2O$, 0·75 g. The amount of hexose sugar (glucose/fructose) used was 10 or 20 g/litre. Estimation was carried out in 12 days old dry mycelium (Snell *et al.*[5]).

Results (Table I) indicate that in *A. tenuis*, with the increase in the level of hexose sugar in the medium, there was a rise in the amount of glucose/fructose utilized as well as dry weight of the mycelium. Although the mycelial output increased, yet it was