Agri. Res. J. Kerala, 1978 16 (1) 114—116

IN VITRO EFFECTS OF CERTAIN HERBICIDE FORMULATIONS ON *CORTICIUM SASAKII* (SHIRAI) MATSUMOTO

Herbicides are known to affect growth and other activites of various microorganisms (Millikan and Fields, 1964; Skoropad and Wang Kao, 1965). The inhibitory effect of herbicides on the growth of several fungi has been reported by many workers (Cole and Batson, 1975; Gunasekharan and Ahuja, 1975; Paul and Sohonbeck, 1976 and Rodriguez-Kabana *et al.*, 1966). The present study is aimed to find out the effect of certain herbicide formulations on the growth of *Corticium sasakii* (Shirai) Matsumoto, the incitant fungus of sheath blight disease of rice.

The effect of ten herbicides on the growth of *C. sasakii* was determined by the poisoned food technique as suggested by Nene, 1971. Czapek's-Dox agar was used as the basal medium to which solutions of herbicides were added so as to get 1000, 500, 250 and 125 ppm concentrations of herbicides. Twenty ml of the medium was poured to petri dishes, and mycelial discs of 0.5 cm diameter were placed in the centre of the medium. The basal medium without herbicide served as check. The observations on the radial growth of the fungus was recorded on the fourth day when the growth entirely covered the dish in the check. Sclerotial production and pigmentation were observed on the seventh day.

The results (Table 1) showed that Avirosan 500 EC, Saturn 50 EC, Rilof H 500 EC and Machete 50 EC were highly inhibitory to *C. Sasakii.* Similar inhibitory effect of herbicides on the growth of *Rhizoctonia solani in vitro* has been reported by Rodriguez-Kabana *et al.* (1976). They also found that the effect was inversely related to the concentration of the herbicides. In the present study also the growth of *C. Sasakii* in genera! was found to be inversely proportional to the concentrations of the herbicides used.

On media incorporated with Avirosan 500 EC and Avirosan 3.3 G, there was neither sclerotial production nor pigmentation. Only very few sclerotia were produced on Saturn 50 EC and Machete 50 EC incorporated media. A pink pigmentation was also noted in the culture. Sclerotial production was not much affected by other herbicides. In general, the production of sclerotia was inversely proportional to the concentration of the herbicide. The sclerotia on herbicide treated medium were larger than those produced on control. Similar observations were recorded by Bozarth and Tweedy (1971) working with *Sclerotium rolfsii.*

Table 1

Mean colony diameter of *Corticium sasakii* 4 days after inoculation.

Herbicides	Colony diameter in em. (C. D. = 0.49) (Average of three replications) 1000 ppm	500 ppm	250 ppm	125 ppm	Mean (C. D. 0.247)
Avirosan 500 EC	0.50	1.56	1.76	1.30	1.28
Avirosan 3.3 G	6.76	6.40	2.83	6.66	5.66
Rilof H 500 EC	1.26	1.36	1.60	1.60	1.45
Rilof H 2.5 G	6.90	6.80	7.20	7.60	7.12
Rilof H 4 G 7	7.30	7.43	8.40	8.83	7.99
Rilof H 5 G	6.53	6.63	7.10	8.63	7.22
Saturn 50 EC	0.90	1.23	1.70	1.70	1.38
Machete 50 EC	0.93	1.36	2.06	2.06	1.60
Machete 5 G	7.16	8.03	8.10	8.26	7.89
Tok granular	7.20	7.26	7.80	7.96	7.55
Check	0.00	9.00	9.00	9.00	9.00

സംഗ്രഹം

നെല്ലിന്റെ പോളരോഗത്തിനു കാരണമായ കോർട്ടീഷ്യം സസാക്കി എന്ന കുമിളിന്റെ വളർച്ചയെ തടയാൻ കളനാശിനികൾ ഉപയുക്തമാണോ എന്നു ലബോറട്ടറിയിൽ പരീക്ഷണം നടത്തുകയുണ്ടായി. പത്തു കളനാശിനികൾ ഉപയോഗിച്ചതിൽ reraa/lcsoofrooaft500 ഈ. സി. ആണു് ഏറ്റവും ഫലപ്രദമായി കണ്ടതു്. സാറോറൺ 50 ഈ. സി., റിലോഫ് എച്ച് 500 ഈ. സി., fflosi.TMooT 50 ഈ. സി. എന്നീ കളനാശിനികളും ഈ കുമിളിന്റെ വളർച്ചയെ സാരമായി തടയുവാൻ പര്യാപ്തമാണെന്നു കാണുകയുണ്ടായി.

REFERENCES

Bozarth, G. A. and Tweedy, B. G., 1971. Effect of pesticidies on growth and sclerotial production of *Sclerotium rolfsii*. *Phytopathology*, **61**, 1140—1142.

Cole, A. W. and Batson, W. E., 1975. Effects of diphenamid on *Rhizoctonia solani*, *Pythium aphanidermatum* and damping of Tomato. *Phytopathology* **65**, 431—434.

Gunasekhran, M and Ahuja, A. S., 1975. Effect of herbicides on mycelial growth of *Phymatotrichum omnivorum*. *Trans. Brit. Mycol. Soc.* **64,** 324—327.

Millikan, D. F. and Fields, M. L. 1954. Influence of some representative herbicidal chemicals upon the growth of some soil fungi. *Phytopathology*, 54, 901.

Nene, P. L. 1971. Fungicides in Plant Disease Control. Oxford and IBH *Pub , Co.,* New Delhi—1. 385.

Paul, V. and Schonbeck, F. 1976. Investigations on the influence of the herbicide diallate on some cereal diseases. *Phytopath. Z., 35,* 353.

Rodriguez-Kabana, R., Curl, E. A. and Funderburk, Jr. H. H., 1966. Effect of four herbicides on growth of *Rhizoctonia solani* kuhn. *Phytopathology,* 56. 1332—1333.

Skoropad, W. P. and Wang Kao, W. J., 1965. The effect of some herbicides on sporulation of *Rhynchosporium secalis. Phytopathology,* 55, 43—45.

Department of Plant Pathology,
College of Agriculture,
Vellayani, Kerala.

A. S. VARMA
C. K. PEETHAMBARAN
S. BALAKRISHNAN
M. R. MENON

(*M. S. Received: 22-6-1977)*

ERRATUM

(Cf Res. J. Kerala. 1977, 15 (2), 202—203)

The first paragraph of the research note "Changes in free amino acid content of groundnut hypocotyl tissue infected with *Sclerotium rolfsii* Sacc" may be read as follows:

Importance of amino acids in imparting resistance or susceptibility in a number of host parasite relationships has been discussed by Van Andel (1966). In the present study changes in the free amino acid content of groundnut hypocotyl as a result *S. rolfsii* infection was investigated. Seeds of the variety TMV-2 were surface sterilised, washed and sown in large petridishes containing 100 ml of 1 per cent water agar. They were allowed to grow at room temperature (26 +2° C) for 10 days. These seedlings were then inoculated with a highly pathogenic isolate of *S. rolfsii* and samples were collected on the 4th and 8th days after inoculation. Free arnino acids were detected by unidimensional paper chromatography using n-butancl-acetic acid-water (4:1 :5 v/v/v) as solvent system as described by Block *et al.* (1958). The individual amino acid was quantitatively detected following the methods of Selman *et al.* (1961). The results are presented in table 1. In general there was an increase in many of the amino acids in the hypocotyl tissues due to infection. Glycine, glutamic acid, alanine, proline, phenylanine and histidine were increased even during the early stages of infection. Amino acids like tryptophane, methionine threconine, arginine, serine and cysteine were detected in the infected tissue only. Accumulation of amino acids in the infected tissues has been reported earlier (Van Andel, 1966). This may primarily be responsible for growth of the pathogen in the infected host tissue. It may be possible that the free amino acids were transported to the site of infection for the development of the pathogen or infection might have resulted in the breakdown of proteins as pointed out by Van Andel (1966) and Ragunathan *et al.* (1966).