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Protection of young Rubber Plants from Powdery Mildew Disease with Systemic Fungicides

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SUMMARY

An experiment to study the efficacy of various systemic fungicides for the control of powdery mildew disease on young rubber plants was undertaken. The result indicates that Bavistin at 0.2% a. i., gave maximum disease control followed by Topsin at 0.14% a. i. The untreated control plants recorded highest disease intensity. As there are chances for developing resistance in the pathogen by the repeated use of any systemic fungicide, the alternative use of Bavistin and wettable sulphur is suggested.

Introduction

In recent years, it has been observed that infestation of rubber plants by powdery mildew disease caused by the fungus *Oidium hevea steinm.* is on the increase. Sulphur dusting is the commonly accepted control measure for mature plants in India. Low volume ground spraying of systemic fungicides in oil was later recommended as an alternative to sulphur dusting in Malaysia (Lim, 1976). Recently, thermal fogging of Calixin was found superior to sulphur dusting (Thomson et al., 1984). However, for the control of this disease on young rubber plants spray application of wettable sulphur in water is the standing recommendation in India. During

the past four years, many instances of young rubber plants, of 2-3 years of age, drying up from top to bottom due to repeated defoliation caused by the infection of powdery mildew disease during March-April and consequent effect of sun scorch were reported. This phenomenon was more pronounced in case of plants grown in high ranges where congenial climatic conditions prevail for the development of the causative fungus throughout the year. In many of these cases, wettable sulphur was being sprayed as the control measure. This investigation was aimed

at identifying more effective mildewcides than wettable sulphur to protect young rubber plants from the attack of this fungus.

Method of study

The experiment was laid out according to randomised block design in two years old RR11 105 plants, in one of the disease prone areas at Munda-kayam. There were six treatments, each having four replications. The plot size was 0.1 hectare containing 40 trees each. The details of the treatments are presented in table-1.

Table-1. Fungicides and the dosages tried

Treat-ments	Name of fungicides		Concentra-tion.
	Trade name	Chemical name	
1	Calixin 80 EC	N-tridecyl 2-6 dimethyl-morpholine (Tridemorph)	0.4% ai.
2	"	"	0.2% ai.
3	Bavistin 50 WP	2-Meth-oxy carbamoyl benzimidazole	0.2% ai.
4	Topsin 70 WP	Methyl 1,2 bis(3-Methoxy carbonyl-2-thiouride) benzene	0.14% ai.
5	Sulfex (non-sys-temic)	Wettable sulphur	0.72% ai.
6	Control (untreated)	

Four rounds of spray applications were given at an interval of 15 days with a Mist-Blower sprayer during the disease season of February-March 1986. The volume of the spray fluid for each plant was reduced to one fourth of the normal high volume dose sprayed with a Rocker sprayer as the trial was conducted with a Mist-blower sprayer. The concentrations of the spray fluids were also increased to four times.

The disease intensity was assessed after the disease season. For this, ten plants in middle of the plot were selected from each plot. Leaf samples were collected from the terminal flushes of two of the lower branches selected at random, from each plant. These leaves were graded at 0-4 disease scale and percentage disease intensity (PDI) was computed using the formula (Horsfall and Heuberger, 1942):-

$$PDI = \frac{\text{Sum of all the disease ratings} \times 100}{\text{Total number of leaves assessed} \times \text{Maximum disease category.}}$$

Results and discussion

The mean percentage disease intensity in the experimental plots are given in table-2.

The result shows that Bavistin at 0.2% ai. is superior to all other treatments. This is followed by Topsin at 0.14% ai. Calixin at 0.4% and 0.2% and sulfex did not differ much in controlling the disease.

The effectiveness of Bavistin in controlling powdery mildew is being reported in crops like Mung, Cumin etc. (Zote et al., 1985; Gupta and Bhawaria, 1985). In a recent trial with volume spraying using Rocker sprayer, Bavistin has showed a similar effect. Hence Bavistin is recommended for the control of powdery mildew disease of young rubber plants.

By the repeated use of a systemic fungicide there are chances of development of resistance in the pathogen. Hence, the alternative use of Bavistin and wettable sulphur is advised.

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Table 2. Efficacy of various treatments in controlling the disease.

Sl. No.	Name of fungicide	Concentration	Mean percent intensity	Disease
1	Calixin	0.4%	52.50	b
2	"	0.2%	53.50	b
3	Bavistin	0.2%	43.00	a
4	Topsin	0.14%	49.25	ab
5	Sulfex	0.72%	54.50	b
6	Control	-	68.00	c

CD at 5% - 9.55

SE - 4.48

