

Management of sigatoka leaf spot disease with oil based formulation

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ABSTRACT

The experiment was carried out at The Banana Research Station, Jalgaon during 2010 to 2013 with an object to find out the best treatment for control of Sigatoka leaf spot disease of banana (*Mycosphaerella musicola*). The results of present investigation revealed that the treatment of 0.05 per cent propiconazole + 1 per cent mineral oil recorded its superiority in respect of disease control yield and quality of fruit than rest of the treatments studied. The least disease incidence and intensity (13.16%) The highest yield(22.18 kg/plant)along with B:C ratio of 2.22 was recorded by treatment of spraying 0.05 per cent propiconazole along with oil based formulation *i.e.* 1 per cent mineral oil than control. Hence the spraying /s of 0.05 per cent propiconazole + 1 per cent mineral oil is recommended for effective control of sigatoka leaf spot disease of banana.

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INTRODUCTION

Banana is an important fruit crop in tropical and subtropical region and cultivated in more than 130 countries in the world. It's very important and popular fruit crop of India and cultivated on 7.70,000 ha and recorded productivity of 34.4 t/ha tones, which are 2 and half time more than world's average. Banana was largely cultivated in all most all costal states and in Maharashtra, Madhya Pradesh, and Bihar etc. In Maharashtra State, even productivity (> 60 mt) is highest, but still having scope to raise the production and productivity.

At present there are many factors that limit the production of banana, among these diseases are the most one (Simmonds, 1966). Among various diseases, the fungal disease Sigatoka spots is caused by *Mycosphaerella musicola* infecting serious in tropical banana growing belt (Store, 1980). This sigatoka leaf spot disease affects not only the banana leaves however also results in pre mature fruit ripening, and bunches become

unmarketable. The affected bunches get further affected by fruit fly. Some time bunches from affected plant get ripen during transportation (Mourichon *et al.*, 1997). The initiation of incidence has recorded form month June to December and maximum incidence and intensity has recorded during August to November. In general the famers are using contact as well as systemic fungicides for controlling the leaf spot diseases.

The crop loss due to leaf spot diseased ranges from 15 to 45 per cent. The chemical control of disease which is being practiced in our countries involves excessive use of chemical, fungicide which will normally be dangerous to the environment of safely but also compelling the pathogen to develop strains resistant to fungicides this has become a major problem throughout India. Therefore, petroleum based mineral oil (Banole) which is biodegradable in nature has been employed in combination with half of the recommended dose of different fungicides *viz.*, Propiconazole, Carbendenzim,

Tridemorph and the sole application of these fungicides. The spraying of oil and fungicides were taken up at 21 days interval starting from vegetative phase of the crop. In all 3 sprays were applied and the observation on disease severity and YLS-0 (Youngest leaf spotted-0) were recorded.

MATERIAL AND METHODS

A field trial was laid out to find out the effect of various fungicides along with mineral oil on yellow sigatoka leaf spot of banana cv. GRAIND NAINÉ during 2010-13 at Banana Research Station Jalgaon. The experiment with nine treatment was conducted in Randomized Block Design with three replications. There were nine treatments including control. The plant to plant and row to row spacing was 1.5×1.5m. All the recommended agronomic practices for raising crop were followed. The treatment details were given below in Table A:

T ₁	: Untreated control
T ₂	: Petroleum based mineral oil 1%
T ₃	: Petroleum based mineral oil 2%
T ₄	: Propiconazole 0.1% (1ml/l)
T ₅	: Mancozeb 0.25% (2.5g/l)
T ₆	: Tridemorph 0.1% (1ml/l)
T ₇	: Propiconazole 0.05% (0.5ml/l) + Petroleum based mineral oil 1%
T ₈	: Mancozeb 0.05% (1.25g/l) + Petroleum based Mineral oil 1%
T ₉	: Tridemorph 0.05 (0.5 ml/lit) + Petroleum based Mineral oil 1%

These fungicides under treatments were sprayed three times at monthly interval after six month of planting. The effectiveness of fungicides were recorded on the basis of severity of yellow sigatoka leaf spot disease by using Gauhls modification of Stover's severity scoring system (Gauhls, 1989). The observations with respect to severity index, yield and economics were recorded.

RESULTS AND DISCUSSION

The pooled data of three years is presented in the Table 1. The pooled data revealed the least per cent disease intensity 13.16 was recorded by the treatment of 0.05 per cent propiconazole + 1 per cent mineral oil, while the treatment of spraying 0.1 per cent propiconazole alone was found second best treatment recording 14.90 per cent disease intensity, which were statistically at par. The rest of treatments recorded the per cent disease intensity in the range of 18.85 to 26.82 and it was highest 32.85 per cent under untreated control.

The treatments of 0.05 per cent propiconazole + 1 per

Sr. No.	Treatments	PDI	DfL	Yield (kg./plant)	Yield (t/ha)	Gross income Rs.	Cost of Production Rs.	Net returns Rs.	B:C ratio
1.	T ₁ : Untreated check	32.85 (34.94)*	3.54	15.84	70.41	391337	246033	145303	1.59
2.	T ₂ : Petroleum based mineral oil 1%	26.82 (31.18)	6.17	20.75	90.73	502063	250133	251930	2.01
3.	T ₃ : Petroleum based mineral oil 2%	25.88 (30.59)	6.37	20.72	92.17	507938	252833	255105	2.01
4.	T ₄ : Propiconazole 0.1% (1ml/l)	14.90 (22.71)	9.50	22.70	97.79	524315	250283	274032	2.09
5.	T ₅ : Mancozeb 0.25% (2.5g/l)	24.81 (29.87)	6.60	21.11	93.83	515633	250123	265510	2.06
6.	T ₆ : Tridemorph 0.1% (1ml/l)	19.31 (26.06)	6.51	21.02	93.50	514777	249973	264803	2.06
7.	T ₇ : Propiconazole 0.05% (0.5ml/l) + Petroleum based mineral oil @ .00%	13.16 (21.30)	10.29	23.18	101.21	556440	250883	305557	2.22
8.	T ₈ : Mancozeb 0.05% (1.25g/l) + Petroleum based mineral oil @ .00%	20.38 (26.85)	6.88	20.96	93.16	515397	250953	264443	2.05
9.	T ₉ : Tridemorph 0.05% (0.5ml/l) + Petroleum based mineral oil @1.00%	18.85 (25.77)	7.72	21.23	94.34	518825	250898	267927	2.07
	S.E. ±	0.90	0.37	0.34	1.28	7324	8773	7288	0.03
	CD at 0.05	2.70	1.09	1.34	3.84	21957	26300	21851	0.09

*Fingers in parenthesis is arcsin value SLD; Sigatoka leaf spot disease DfL; Disease free leaves

cent mineral oil recorded highest number of disease free leaves (10.29 and 9.50, respectively) which helped for more photosynthesis resulting in higher yield per bunch (23.18 and 22.70 %, respectively). The rest of treatment recorded per bunch yield in the range of 20.72 to 21.23 kg, however it was the least (15.84 kg) in control. All the treatment recorded higher B:C ratio (2.01 to 2.22) than the untreated control (1.59). The highest net monetary return per ha and B:C (2.22) was noticed with treatment of 0.05 per cent propiconazole + 1 per cent mineral oil followed by 0.1 per cent propiconazole alone recorded Rs. 274032/- and 2.22, respectively and were at par. Similar findings were also reported by Eswaramurthy *et al.* (1988); Romero and Sulton (1997); Stover and Dickson (1970) and Stover (1971).

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