

Evaluation of bio-efficacy of azoxystrobin 23 per cent SC against anthracnose disease of mango

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ABSTRACT

An experiment was conducted during 2011-2012 and 2012-2013 at farmers field of Gokak taluk, Belgaum district, Karnataka state to find out the efficacy of azoxystrobin 23 per cent SC anthracnose disease of mango. Results revealed that, two sprays of azoxystrobin 23 % SC @ 0.2% effectively controlled the anthracnose disease (12.23% as against 56.88% in control) followed by azoxystrobin 23% SC @ 0.15% (13.53%) and azoxystrobin 23% SC @ 0.1% (18.50%). The intensity of the disease was highest in control (56.88%). The treatment azoxystrobin 23% SC @ 0.2% recorded the highest yield of 67.84 kg/tree followed by azoxystrobin 23% SC @ 0.1% (66.34kg/tree) and azoxystrobin 23% SC @ 0.15% (63.34kg/tree).

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INTRODUCTION

Mango is one of the most important tropical fruits with India contributing about 40 per cent world production. India produced 18.43 MT mangoes from an area of 2.52m.ha during 2013-2014 (Anonymous, 2015). The crop is affected by several diseases caused by fungi, bacteria and abiotic factors. Among diseases of mango viz., anthracnose disease caused by *Colletotrichum gloeosporioides* Penz, Powdery mildew caused by *Oidium mangiferae* and bacterial leaf spot is caused by *Xanthomonas campestris* pv. *mangiferae indicae*. Among these, anthracnose is one of the economically important diseases. Hence, the present investigation was undertaken to find out the efficacy of fungicides against

anthracnose disease of mango.

MATERIAL AND METHODS

Experiment was conducted during 2011-12 and 2012-13 at farmer's field of Gokak taluk, Belgaum district. Susceptible variety Kesar was selected for the evaluation of bioefficacy of azoxystrobin against anthracnose disease. Crop was planted with a spacing of 10 x10 m and age of the trees were 25 years. There were seven treatments viz., azoxystrobin 23%SC @ 0.05%, azoxystrobin 23%SC @ 0.1% azoxystrobin 23%SC @ 0.15%, azoxystrobin 23%SC @0.2%, Amistar 25% SC @0.1%, control and carbendazim 0.1%. Each treatment was replicated thrice with a Randomized Block

Design. Two sprays were given at 30 days interval in 2011-12 and 22 days interval in 2012-13.

Observations were recorded with respect to intensity of anthracnose (PDI). A 0-5 scale was followed for scoring the disease index. Observations were also recorded with respect to, yield (kg/tree) and phytotoxicity.

RESULTS AND DISCUSSION

Results of 2011-12 revealed that, two sprays of azoxystrobin 23% SC @ 0.2% (12.94% as against 59.86% in control) effectively controlled the anthracnose disease followed by azoxystrobin 23% SC @ 0.15% (13.49%), azoxystrobin 23% SC @ 0.1% (20.20%), azoxystrobin 23% SC @ 0.05% (27.22%) and Amistar @ 0.1% (26.86%). The disease intensity was the highest (59.86%) in control (Table 1).

Benomyl and thiophanate methyl at 1.8g/lit were significantly more effective than captafol, mancozeb and vinclozolin at 1.8g/lit and tribasic copper sulfate at 3.6g/lit as foliar sprays for the control of anthracnose of mango. No toxicity was noted on the leaves, flowers or

fruit for any of the chemicals tested (Mc Millan, 1984). Kumar (2014) reported that pooled analysis of two years data revealed that three foliar sprays with carbendazim + mancozeb (0.2%) at 10 days interval starting from initiation of disease symptom was most effective in controlling the foliar anthracnose of mango followed by tricyclozole 0.1 per cent and carbendazim 0.1 per cent, which were also found effective.

In 2012-2013, two sprays of azoxystrobin 23% SC @ 0.2% effectively controlled the anthracnose disease (11.51% as against 53.89% in control) followed by azoxystrobin 23% SC @ 0.15% (13.56%), azoxystrobin 23% SC @ 0.1% (16.80%), azoxystrobin 23% SC @ 0.05% (21.45%), Amistar @ 0.1% (29.10%) and carbendazim @ 0.1% (30.68%). The highest PDI was recorded in control (53.89%). Sundravada *et al.* (2006) reported that azoxystrobin @ 1, 2 and 4ml/lit significantly suppressed the development of both panicle and leaf anthracnose. Cent per cent inhibition of mycelia growth of *C. gloeosporioides* the causal agent of mango anthracnose by azoxystrobin (Sundravada *et al.*,

Sr. No.	Treatments	Conc. (%)	PDI			Per cent reduction of disease over control
			2011-12	2012-13	Mean	
T ₁	Azoxystrobin 23% SC	0.05	27.22 (31.43)	21.45 (27.59)	24.34 (29.51)	57.20
T ₂	Azoxystrobin 23% SC	0.10	20.20 (26.70)	16.80 (24.18)	18.50 (25.44)	67.48
T ₃	Azoxystrobin 23% SC	0.15	13.49 (21.38)	13.56 (21.51)	13.53 (21.45)	76.21
T ₄	Azoxystrobin 23% SC	0.20	12.94 (20.53)	11.51 (19.74)	12.23 (20.14)	78.50
T ₅	Check, Amistar 25% SC	0.10	26.86 (31.83)	29.10 (32.54)	27.98 (32.19)	50.81
T ₆	Control	-	59.86 (50.69)	53.89 (47.26)	56.88 (48.98)	-
T ₇	Carbendazim	0.1	32.22 (34.57)	30.68 (33.55)	31.45 (34.06)	44.71
	S.E.±		1.74	1.71		
	C.D. (P=0.05)		5.38	5.27		

Figures in the parenthesis are the angular transformation values

Sr.No.	Treatments	Conc. (%)	Yield(kg/tree)		
			2011-12	2012-13	Mean
T ₁	Azoxystrobin 23% SC	0.05	39.00	69.67	54.34
T ₂	Azoxystrobin 23% SC	0.10	43.67	89.00	66.34
T ₃	Azoxystrobin 23% SC	0.15	49.00	77.67	63.34
T ₄	Azoxystrobin 23% SC	0.20	51.67	84.00	67.84
T ₅	Check, Amistar 25% SC	0.10	38.67	67.00	52.84
T ₆	Control	-	23.00	47.00	35.00
T ₇	Carbendazim	0.10	38.33	64.00	51.17
	S.E.±		2.39	2.34	
	C.D. (P=0.05)		7.26	7.09	

2007).

Average of two years data revealed that, the treatment azoxystrobin 23% SC @ 0.2% effectively controlled the anthracnose disease (12.23% as against 56.88% in control) followed by azoxystrobin 23% SC @ 0.15% (13.53%) and azoxystrobin 23% SC @ 0.1% (18.50%). The intensity of the disease was highest (56.88%) in control. Tandon and Singh (1968) reported that mango anthracnose can be effectively managed by spraying with zineb or Bordeaux mixture. The leaf extract of *Azadirachta indica* was found more effective in inhibiting the radial growth. Among the fungicides tested tricyclozole was found to be superior for controlling the incidence of pathogen (Pandey *et al.*, 2012). Prochloraz has been used as a protectant or as an eradicant spray (Estrad *et al.*, 1996). Arauz (2000) reported that copper fungicides are recommended for control of mango anthracnose but their efficacy is lower than dithiocarbamate (mancozeb under high pressure).

The present findings revealed that the per cent reduction of disease over control was highest (78.50) in azoxystrobin @ 0.2% followed by azoxystrobin 23% SC @ 0.15% (76.21) and azoxystrobin 23% SC @ 0.1% (67.48). Hsing *et al.* (2004) reported that azoxystrobin is one among the strobilurin class of systemic fungicides which collapses mycelial sporulation which disrupts some vital stages of fungal development.

Determination of azoxystrobin 23 per cent SC on mango crop :

Phytotoxicity symptoms like chlorosis, necrosis, wilting and scorching were not noticed in any of the treatments.

Yield (kg/tree) :

In 2011-2012, the treatment azoxystrobin @ 0.2% recorded the highest yield of 51.67kg/tree followed by azoxystrobin 23% SC @ 0.15% 49.0kg/tree azoxystrobin 23% SC @ 0.1% (43.67kg/tree). The lowest yield (23kg/tree) was recorded in untreated control (Table 2).

In 2012-13, the highest yield (89kg/tree) was recorded in the treatment of azoxystrobin 23% SC @ 0.10% followed by azoxystrobin 23% SC @ 0.2% (84kg/tree) and azoxystrobin 23% SC @ 0.15% (77.67kg/tree),

azoxystrobin 23% SC @ 0.05% (69.67kg/tree) and Amister (67kg/tree). Average of two years data revealed that the treatment azoxystrobin 23 % SC @ 0.2% recorded the highest yield of 67.84kg/tree followed by azoxystrobin 23% SC @ 0.10% (66.34kg/tree) and azoxystrobin 23 % SC @ 0.15% (63.34kg/tree) and it was lowest in control (35kg/tree). Sundravadana *et al.* (2006) reported that mango trees treated with azoxystrobin produced more number of fruits as compared to control and showed no Phytotoxic

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