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RESEARCH ARTICLE

Management of Foliar Diseases in Jasmine

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ABSTRACT

Jasmine is the most attractive flower crop cultivated throughout tropical and subtropical countries. In Tamil Nadu jasmine cultivation is highly interrupted by the foliar diseases caused by *Colletotrichum jasminicola* and *Alternaria jasmini* are economically important diseases which leads in yield loss and quality of flowers. The present study was conducted with fungicides and bio agents under field conditions based on their efficacy tested under *invitro* conditions. Among the eight treatments imposed, foliar spray with Tebuconazole 50% + Trifloxystrobin 25 % at 0.1% on 30,60 and 90 days after planting was found to be effective in reducing the *Colletotrichum* leaf spot disease (14. 20 PDI) and *Alternaria* leaf spot to 17.53 PDI with increased per plant yield (1350 g) and an estimated yield of 8.64 t/ha , also recorded the highest BC ratio of 3.77 as compared to untreated control which recorded 35.45 PDI, 44.15 PDI, 180 g and 3.89 t/ha respectively. The next effective treatment was fungal and bacterial bio agent consortia @100g /pit (*Bacillus*+*Trichoderma*) with FYM at the time of planting+ foliar spray with fungal and bacterial bio agent consortia @ 0.2% on 30 ,60 and 90 days after planting which recorded the lowest *Colletotrichum* disease intensity (24.80 PDI) *Alternaria leaf* spot intensity of 27.78 PDI with an increased per plant yield (1012.50 g) and an estimated yield (6.48 t/ha) with CB ratio of 2.82.

Keywords: Jasmine foliar diseases, fungicides, bio agents, management, yield.

INTRODUCTION

Jasmine (*Jasminum sambac* (L.) Aiton) pertaining to the family (Oleaceae) is cultivated throughout India and Asia. India is the largest exporter of Jasmine oil in the world accounting for over 40 per cent of total world export (Arun et al., 2016) Intensive cultivation of Jasmine is amenable for both biotic and abiotic stress. Jasmine mainly affected by diseases like leaf spot caused by *Cercospora, Colletotrichum* and *Alterneria* pathogens. Among the biotic constraints the leaf spot disease incited by the *Colletotrichum jasminicola* and *Alternaria jasmine* are important diseases. Among the different diseases caused by the genus Alternaria, blight disease is one of the most dominant one that causes average yield loss in the range of 32-57 per cent (Singh *et al.*2021).This article will led to a series of researchers interest to control the pathogenic impact of the fungal species on this economic plant by introducing new and effective fungicides in the market. Keeping the above facts in view, investigations were undertaken with an objective to evaluate the efficacy of various fungicides, biocontrol agents against pathogen causing foliar diseases in Jasmine.

MATERIALS AND METHODS

A field trial was laid out in the farmer's field at Venkataramapuram, Sirumugai during 2022-2024 with eight treatments against foliar diseases of jasmine.(local variety) The effective treatments identified under *invitro* conditions were tested under field conditions. Four treatments were maintained for each treatment along with untreated checks, and farmers' practices as chemical check checks, and Immerse' practices farmers' practice as chemical checks. in randomized block design, 60, and 90; the fungicides and bioagents were applied 30, 60, 90,

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and 120 days after planting. The disease intensity was recorded by following the standard score chart (0-9 scale) as described by Pawelec *et al*., 2006 [0: No visible disease damage; 1:<5% leaf area damaged; 3 : 5-20% leaf area damaged; 5 : 20-40%leaf area damaged; 7 : 40-60% leaf area damaged; 9 : severedefoliation]. Per cent disease index (PDI) was calculated by using the formula

$$PDI = \frac{\text{Sum of numerical ratings}}{\text{Number of leaves examined x Maximum grade available in the score chart}} \times 100$$

The yield per plant, estimated yield per ha, and cost-benefit ratio (CB) was recorded for all treatments, and cost-benefit ratio (CB) was recorded for all treatments, and the data were statistically analyzed.

RESULTS AND DISCUSSION

The results of a field trial conducted from 2022 to 2024 at framers field were the field trial conducted from 2022 to 2024 at Framers Field were pooled and presented in the table.1 Among the eight treatments tested against foliar diseases, foliar spray with Tebuconazole 50% + Trifloxystrobin 25 % at 0.1% on 30,60 and 90 days after planting was found to be effective in reducing the *Colletotrichum* leaf spot disease (14. 20 PDI) and *Alternaria* leaf spot to 17.53 PDI with increased per plant yield (1350 g) and an estimated yield of 8.64 t/ha , also recorded the highest BC ratio of 3.77 as compared to untreated control which recorded 35.45 PDI, 44.15 PDI , 180 g and 3.89 t/ha respectively.

The next effective treatment was fungal and bacterial bio agent consortia @100g /pit (*Bacillus+Trichoderma*) with FYM at the time of planting+ foliar spray with fungal and bacterial bio agent consortia @ 0.2% on 30 ,60 and 90 days after planting which recorded the lowest *Colletotrichum* disease intensity (24.80 PDI)*Alternaria l*eaf spot intensity of 27.78 PDI with an increased per plant yield (1012.50 g) and an estimated yield (6.48 t/ha) with CB ratio of 2.82. Similar findings were reported by many workers.

Singh et al. (2010) evaluated eight fungicides viz. mancozeb, copper oxychloride, captan, zineb, thiram, chlorothalonil, difenconazole and hexaconazole against leaf spot and flower blight of marigold caused by *Alternariazinniae* in field condition .All fungicides reduced leaf spot and flower blight incidence over control. It was concluded that minimum leaf spot severity (13.3 and 11.6%) was recorded with mancozeb, followed by zineb (17 and 17.3%), thiram (19.9 and 19.3%) and chlorothalonil (20.4 and 21.2%). Similarly, Vijay Kumar et al. (2017) reported the efficacy of different fungicides in tomatoes, and Vijay Kumar *et al.* (2017) reported the efficacy of different fungicides in tomatoes against leaf blight caused by *Alternaria solani.* The highest efficacy of difenoconazole was recorded when sprayed at 0.05 per cent concentration with disease severity of 16.33 per cent and disease control of 74.89 per cent followed by carbendazim (18.00%, 72.30%) when compared with control while the least efficacy was observed with the fungicides kavach (33.67%)

Anand (2021) conducted an experiment to test the efficacy of different fungicides against the leaf spot and flower blight of marigold under field conditions at Tamil Nadu Agricultural University, Coimbatore. It was concluded that seed treatment (0.2%) + foliar spray of hexaconazole 4 + zineb 68 WP (0.2%) was found effective in reducing the incidence of leaf spot and flower blight of marigold. Dishaand Patel (2022) evaluated eight fungicides against leaf spot and flower blight of marigold caused by *Alternaria tenuissima*. It was concluded that zineb 68 + hexaconazole 4 WP (PDI 24.41% and FBI 25.91%) was found superior in managing the disease, followed by tebuconazole 50 + trifloxystrobin 25 WG (PDI 29.26% and FBI 33.60%) and chlorothalonil 75 WP (PDI 31.74% and FBI 37.04%).

Pruthviraj, Sureshaet al., (2024) reported that trifloxystrobin + tebuconazole fungicide was found to have a percent disease index of 4.50against anthracnose disease in pomegranate.which was significantly lower than all other treatments? The plots treated with this fungicide produced the highest yield of 10.92 t/ha, followed by pyraclostrobin + epoxiconazole at 9.89 t/ha. The control plot had the lowest yield, producing only 3.02 t/ha.

Ashwini and Srividya, 2014, observed in chillies, seeds treated with *Bacillus* sp. culture showed 100 % germination index similar to the untreated seedsagainst anthracnose disease of chilli caused by *Colletotrichum gloeosporioides*. The treatment of the seed with co-inoculation of the pathogen with *Bacillus* sp. culture showed 65 % reduction in disease incidence by the treatment as compared to the seed treated with pathogen alone (77.5 %).

Table 1.Effect of treatments on foliar diseases of jasmine under field conditions-(pooled mean of two years)

S.NO	Treatments	Disease intensity (3 month after application)		Yield / Plant(g)	Estimated Yield / t/ ha	C:B ratio
		Colletotrichum Leaf spot(PDI)	Alternaria leaf spot (PDI)			
T1	Effective *Bacillus subtilis* @100g / pit with FYM at the time of planting+ Foliar spray @ 0.2% on 30 ,60 and 90 days after planting	25.36	33.66	825	5.28	2.31
T2	Effective *Trichodermaasperellum* @100g /pit with FYM at the time of planting+ Foliar spray @ 0.2% on 30 ,60 and 90 days after planting	28.56	37.40	810	5.18	2.26
T3	Effective fungal and bacterial bio agent consortia @100g /pit with FYM at the time of planting+ Foliar spray with fungal and bacterial bio agent consortia @ 0.2% on 30 ,60 and 90 days after planting	24.80	27.78	1012.50	6.48	2.82
T4	Foliar spraywith tebuconazole at 0.1% on 30, 60 and 90 days after planting.	21.76	22.85	1100	7.04	3.09
T5	Foliar spray with Tebuconazole 50% + Trifloxystrobin 25 % at 0.1% on 30,60 and 90 days after planting	14.20	17.53	1350	8.64	3.77
T6	Foliar spray with carbendazim @ 0.1 % on 30 ,60 and 90 days after planting	27.35	25.60	987.50	6.32	2.77
T7	Farmers Practice	31.66	34.50	725	4.64	2.02
T8	Untreated control	35.45	44.15	607.50	3.89	
	CD (P=0.05%)	2.66	3.36	50.13	0.268	
	SEd	1.33	1.45	24.45	0.129	
	CV %	11.62	16.38	34.20		

Mean of 4 replications

CONCLUSION

For the management of foliar diseases in jasmine, foliar spray with Tebuconazole 50% + Trifloxystrobin 25 % at 0.1% on 30,60 and 90 days after planting was found to be effective in reducing the intensity of *Colletotrichum* leaf spot disease and *Alternaria* leaf spot with increased per plant yield with maximum cost benefit ratio. The alternate biological treatment was fungal and bacterial bio agent consortia @100g /pit (*Bacillus+Trichoderma*) with FYM at the time of planting+ foliar spray with fungal and bacterial bio agent consortia @ 0.2% on 30 ,60 and 90 days after planting

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