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RESEARCH NOTE

Seasonal incidence of major pests of jasmine (*Jasminum sambac* L.)

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Investigation on seasonal incidence of major pests of jasmine was carried out at Lakkundi, Kadampura and Papanashi villages belongs to Gadagtaluka during 2018-19. The maximum incidence of bud worm was noticed in the month of June (34.73%) and minimum incidence was observed during October (8.84%). Per cent discoloured buds caused by blossom midge was highest during the month of August (23.81) and lowest in the month of October (11.24). Activity of crimson spider mites observed in entire study period with peak incidence of 27.83 mites per leaf during October and least incidence was recorded during September (14.75 mites/leaf). Natural enemies like coccinellids, predatory mites and spiders were also recorded during study period. Predatory mites *Neoseiuluslongispinosus, Amblyseius*sp. *Phytoseius*sp and coccinellid beetle, *Stethorus*sp. were found to predate on crimson spider mites in field condition.

Key words: Blossom midge, Crimson spider mites, Jasmine bud worm,

Jasmine (*Jasminum*s pp.) is a highly valued commercial flower crop and ornamental plant for home Gardens. Jasmine is considered as the "Queen of fragrance" is one of the oldest fragrant flowers cultivated by man and it is belonging to the olive family (Oleaceae) (Khader and Kumar, 1995). The term jasmine is derived from an Arabic word "Jessamine" and in Persian language it is called as "Yasmin" which means fragrance.

Jasmine flower is native to India cultivated over an area of 25,530 hectares with a production of 1,87,190 tonnes of loose flowers and 10,710 tonnes of cut flowers in 2016-17. Karnataka is the secondhighest producer of jasmine flowers with a production of 43,600 tonnes from an area of 6,600 hectares (Anon., 2017).

More than 20 insect and mite pests are reported to attack jasmine crop and cause considerable damages (Kiran 2017). Among them major ones are bud worm, gallery worm, leaf roller, blossom midge and non-insect pests are red spider mite and eriophyid mite. Information regarding incidence of jasmine pests is lacking in major jasmine growing areas of Gadag districts Hence the present study was carried out to know the incidence and damage level by major pests of jasmine during the year 2018-19.

The fixed plot survey was conducted to assess the incidence of bud worm, blossom midge and crimson spider mite and their natural enemies prevailing in jasmine ecosystem in Gadagtaluka. Where, three villages were covered at three farmer's fields per area. Further, in each field, two spots with five randomly selected plants per spot were observed for infestation of insect and mite pests and their natural enemies. They were recorded at monthly interval from June to October-2018.The methodology used to record the major pests of jasmine and their natural enemies is given below (Sudhir, 2002).

Budworm, *Hendacasisduplifascialis* Hampson

$$\text{Per cent affected buds} = \frac{\text{Number of buds with bore holes}}{\text{Total number of buds}} \times 100$$

Jasmine blossom midge, *Contariniamaculipennis* Felt

$$\text{Per cent damage of midge} = \frac{\text{Number of discoloured buds}}{\text{Total number of buds}} \times 100$$

Spider mite, *Tetranychus* spp.

The population of mites were recorded by using a 10 x magnifying hand lens from three leaves per plant each from the upper, middle, and lower position. Later, the data obtained were expressed as number per leaf.

Natural enemies

Natural enemies *viz*., coccinellid (adults and grubs) and spiders were also observed on the whole plant basis whereas, predatory mites were counted from three leaves each from top, middle and bottom of the plant when encountered during data recording for the insect and mite pests of jasmine.

Bud borer, *Hendecasisduplifascialis*

Among the different villages surveyed, the maximum incidence of bud worm was observed in Lakkundi village (22.37 %) followed by Papanashi (19.01 %) where as minimum in Kadampura (17.99 %)(Table 1). Incidence of bud worm ranged between 8.84 per cent to 34.73 per cent. Themaximum incidence of bud worm was noticed in the month of June (34.73% bored buds). Whereas, minimum incidence was recorded during the October (8.84% bored buds) (Table 2). These results are in confirmative with results of Sudhir (2002) who reported that higher per cent bud borer incidence was recorded in during May (23.15%) and July (18.32%).

Blossom midge, *Conariniamaculipennis* Felt

Per cent discoloured buds caused by blossom midge *C. maculipennis* ranged from 11.24 to 23.81. The activity was appeared in the month of June and remained up to October with the peak incidence of 23.81 per cent during the month of August (23.81). The least incidence was recorded during October (11.24) (Table 2). Among the different villages surveyed for the incidence of blossom midge revealed that highest seasonal infestation of blossom midge was observed in Papanashi village (20.45%) followed by Lakkundi (18.54%) and least in Kadampura (16.98%) (Table 1). Similarly, David (1958) also noticed the blossom midge infestation during July and August months with the onset of rains in Tamil Nadu.

Table 1. Seasonal incidence of major pests of jasmine (*Jasminum sambac*) and their natural enemies at different villages in Gadag taluka

Name of village	Month	Mean infested buds (%)		Mean population/leaf		Mean population/plant	
		Bud	Blossom worm	Crimson midge	Predatory spider mitess	Coccinellids mites	Spiders
Kadampura	June	33.63	18.95	15.72	0.67	0.80	0.90
	July	13.73	14.45	21.13	0.86	1.83	0.83
	August	20.70	22.00	17.10	0.73	1.27	1.12
	September	15.16	17.80	12.38	0.93	0.74	0.72
	October	6.73	11.73	27.74	1.48	2.44	1.09
	Seasonal mean	17.99	16.98	18.81	0.93	1.41	0.93
Papanashi	June	32.56	23.2	19.85	0.86	1.30	1.33
	July	16.6	20.14	24.23	1.25	1.53	0.93
	August	19.43	25.23	17.73	1.10	1.83	1.43
	September	17.2	21.3	14.65	0.93	1.35	0.9
	October	9.3	12.4	24.63	1.60	2.14	1.63
	Seasonal mean	19.01	20.45	20.21	1.14	1.63	1.24
Lakkundi	June	38.03	21.33	22.2	0.94	0.93	2.10
	July	21.00	17.35	24.72	1.34	2.90	1.30
	August	25.13	24.20	21.22	0.92	1.14	2.16
	September	16.93	20.23	17.24	0.84	1.95	1.23
	October	10.80	9.63	31.12	1.92	3.40	1.20
	Seasonal mean	22.37	18.54	23.30	1.19	2.06	1.59

Note: Mean of three field observations

Table 2. Seasonal incidence of major pests of jasmine (*J. sambac*) and their natural enemies during different months in Gadag taluka

Month	Mean infested buds (%)		Mean population/leaf		Mean population/plant	
	Bud worm	Blossom midge	Crimson spider mites	Predatory mites	Coccinellids	Spiders
June	34.73	21.16	19.25	0.82	1.00	1.44
July	17.11	17.31	23.36	1.15	2.08	1.01
August	21.75	23.81	18.68	0.91	1.40	1.55
September	16.41	19.77	14.75	1.06	1.34	0.95
October	8.84	11.24	27.83	1.66	2.67	1.30
Seasonal mean	19.76	18.65	20.77	1.12	1.69	1.25

Note: Mean of three village observations

Crimson spider mite, *Tetranychuslombardinii* Baker and Prithard

The population of mites was observed with varying intensity ranging from 14.75 to 27.83 per leaf. The maximum population of mites (27.83/leaf) was recorded in October and minimum population (14.75/leaf) was noticed in September (Table 2). Comparison of the population level of mites in three locations indicated that highest incidence was recorded in Lakkundi village (23.30/leaf) followed by Papanashi (20.21/leaf) and lowest in Kadampura (18.81/leaf) (Table 1). The present findings are supported by David (1958) and Rajkumar *et al*. (2005) they reported the incidence of red spider mite throughout the year on jasmine.

Natural enemies

Irrespective of different locations the maximum population of predatory mites (1.66/leaf) was recorded during October and minimum population (0.82/leaf) noticed in June (Table 2).The present study revealed that predatory mites, *viz*., *Neoseiuluslongispinosus, Amblyseius*sp.,*Phytoseius*sp belongs to Phytoseidaefound to feed on phytophagous mites of jasmine. These results are in close conformity with the findings of Chidananda (2017) who observed *N. longispinosus* was most dominant predatory mitein jasmine ecosystem.

The coccinellids population ranged from 1.00 to 2.67 per plant. The population reached its peak (2.67/plant) during October (Table 2). These findings are in line with results of Chidanada (2017) who reported that *Stithorus*sp. was the major coccinellid found to predate on crimson spider mites in jasmine ecosystem. The predaceous coccinellid, *Stethorus* sp. which prey on spider mites, was more prevalent in every different locations.

The spider population started inJune and was observed throughout the season with varying intensity ranging from 0.95 to 1.55 per plant. The maximum spiders (1.55/plant) were observed in August (Table 2). The present findings are supported by Sudhir (2002), he has also reported that seven species of spider belongs to seven genera representing five families on jasmine ecosystem which are feeding on different lepidopterans.

The incidence of bud worm and blossom midge infestation was noticed during entire study period however, maximum infestation was coinciding with peak flowering period. The number of natural enemies harbouring jasmine ecosystem plays an important role in tri-trophic interactions, usage of selective insecticides and acaricides safe to non-target arthropods should be entertained.

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