



Research Article

SURVEY OF CHILLI PEST AND DISEASES IN DHARWAD DISTRICTS

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Abstract- A roving survey was conducted to know the severity of pest and diseases in Dharwad district during Kharif 2017-18. Leaf curl damage due to thrips was lowest in Garag (0.80 LCI/plant) and highest in Majjigeri (1.90 LCI/plant) village of Annigeri. Whereas highest mite leaf curl index was recorded in Majjigeri village of Navalagund taluk whereas lowest was noticed in Sherewada of Hubli taluk. The fruit borer damage, highest percent damage was recorded in Shanshi village of 39.1 percent and lowest was noticed in Hulgur of Dharwad district. Whereas highest fruit rot disease was noticed in Shirguppi village of Hubli taluk (40.1%) and minimum fruit rot disease incidence (21.1%) recorded in Hulgur village of Dharwad taluk. The next important disease noticed was murda complex, the highest disease incidence (71.0%) recorded in Bhadrapur village of Navalagund taluk and lowest disease (18.2%) was noticed in Shirguppi village of Hubli taluk. Whereas Powdery mildew disease incidence was highest (30.1%) in Hulgur village of Dharwad taluk and lowest disease incidence recorded in Sherewad village (10.40%) of Hubli taluk. The highest disease incidence of cercospora leaf spot was recorded in Basapura village of Navalagund taluk (30.1%) and lowest disease (13.5%) was noticed in Annigeri village of Navalagund taluk. The Die back disease incidence was more (19.10%) in Shanshi village of Dharwad taluk and lowest disease incidence was noticed in Garag village of Dharwad taluk.

Keywords- Pest, Disease, Chilli, Survey, Fruit Borer, Fruit Rot

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Introduction

The major chilli growing districts of Karnataka includes Dharwad, Haveri, Belgaum, Gadag, Bellary, Gulbarga, Chikmagalur and Raichur district. In malnad belt of Chikmagalur, important varieties grown are Priyanka, Rudra, Pusa Jwala, Byadgi Local, Bhavani, Laxmi, Akra lohit, Sithara, Brahma, Thanaya, Garima etc. Various factors are responsible for low productivity and production of chilli that include adverse climate, poor quality seeds, diseases, insect and mite pests. The insects and mites are of prime importance which significantly affects both the quality and production of chilli. Chilli thrips, Scirtothrips dorsalis Hood and yellow mite, *Polyphagotarsonemus latus* (Banks) are two serious pests of chilli both in the nursery and main field. Among them occurrence of viral disease, die back, fruit rot, leaf spots, leaf curl, wilt as well as insect pests such as aphids, thrips, yellow mite and fruit borer are the most vital production constraints. Successful plant protection depends upon early detection of the disease severity followed by timely adoption and application of preventive measures. Keeping all these aspects in view, the present investigation was undertaken to know the pest and disease severity in Northern parts of Karnataka. In the present study, an exhaustive survey was conducted in Dharwad districts during kharif 2017-18 to know the incidence and severity of the pest and disease in order to work out the management strategies on large scale basis.

Materials and Methods

Roving survey was conducted to know the severity of pest and diseases in Dharwad district of Karnataka. In each district two to three taluks were selected and in each selected taluk, different villages were selected. In each selected village five farmer's fields were selected and pest, disease severity was assessed during different crop growth stage. Percent leaf curl damage due to thrips and mites recorded separately on 5 plants in each replication. The leaf curling was measured at 0-9 scale grade [on visual basis] and was converted into leaf curl

index [LCI] using the following formula.

$$\text{Leaf curl index} = \frac{\text{Sum of scores} \times \text{Frequency}}{\text{Total no. of plants}}$$

The fruit borer damage in percentage was recorded at harvest.

$$\text{Percent fruit damage} = \frac{\text{Number of fruits damaged}}{\text{Total no. of fruits}} \times 100$$

Finally, the dry pod yield data per plot was recorded and converted to hectare basis.

For diseases, the average percent disease incidence for leafspot, powdery mildew, murda complex and fruit rot was worked out by using 0-9 scale as given by Mayee and Datar (1986).

$$\text{Percent Disease Index (PDI)} = \frac{\text{Total sum of numerical rating}}{\text{No of fruits or leaves observed}} \times \text{Maximum grade values}$$

For murda complex percent mosaic disease calculated by counting number of infected plants and number of plants observed

$$\text{Percent Disease Index (PDI)} = \frac{\text{Number of infected plants}}{\text{Total number of plants observed}} \times 100$$

Result and Discussion

Damage due to thrips, mites and fruit borer was recorded and the results are presented here. Survey carried out in Dharwad district revealed that mean incidence of leaf curl damage due to thrips ranged from 0.80 to 1.80 leaf curl index (LCI) per plant. It was lowest in Garag (0.80 LCI/plant) and highest in Majjigeri (1.90 LCI/plant) on Annigeri. Whereas mite leaf curl index was ranged from 0.80-2.20(LCI) per plant. Highest mite incidence was recorded in Majjigeri village of Navalagund taluk whereas lowest was noticed in Sherewada of Hubli taluk. Also recorded fruit borer damage, highest percent damage was recorded in Shanshi village of 39.1% and lowest was noticed in Hulgur of Dharwad district [Table-1]. This result is also similar with the findings of Butani (1970) [1].

Table-1 Detailed survey on chilli pests in Dharwad districts during 2017-18

SN	Taluk	Village	Variety/	LCI/Plant		
			Hybrid	Thrips	Mites	Fruit borer (%)
1	Dharwad	Dharwad	<i>B. dabbi</i>	0.85	1.20	15.5
		Garag	<i>B. dabbi</i>	0.80	1.40	21.5
		Hulgur	<i>B. dabbi</i>	0.92	1.60	12.1
		Shanshi	<i>B. dabbi</i>	1.00	1.80	39.1
2	Hubli	Sherewada	<i>B. dabbi</i>	1.60	0.80	21.1
		Shiraguppi	<i>B. dabbi</i>	1.89	2.00	18.9
3	Navalagund	Annigeri	<i>A.deluxe</i>	0.90	1.90	27.1
		Basapura	<i>A.deluxe</i>	1.00	1.50	22.3
		Bhadrapura	<i>A.deluxe</i>	1.20	1.00	33.8
		Majjigeri	<i>A.deluxe</i>	1.90	2.20	16.1

Table-2 Detailed survey on chilli diseases in Dharwad districts during 2017-18

SN	Taluk	Village	Variety/	Per cent disease Index (PDI)				
			Hybrid	Cercospora leaf spot	Murda complex	Powdery Mildew	Fruit rot	Dieback
1	Dharwad	Dharwad	<i>B. dabbi</i>	17.9	44.1	15.1	31.3	11.1
		Garag	<i>B. dabbi</i>	22.2	36.2	27.5	25.1	10.2
		Hulgur	<i>B. dabbi</i>	19.4	31.4	30.1	21.1	16.1
		Shanshi	<i>B. dabbi</i>	29.3	29.0	13.1	34.2	19.1
2	Hubli	Sherewada	<i>B. dabbi</i>	31.1	26.2	10.4	31.2	11.2
		Shiraguppi	<i>B. dabbi</i>	32.2	18.2	23.4	40.1	14.9
3	Navalagund	Annigeri	<i>A.deluxe</i>	13.5	45.2	20.1	38.1	16.7
		Basapura	<i>A.deluxe</i>	33.1	61.2	11.3	22.9	12.3
		Bhadrapura	<i>A.deluxe</i>	28.1	71.0	14.6	31.1	11.1
		Majjigeri	<i>A.deluxe</i>	21.5	43.2	19.1	36.7	12.3

The results agree with those of Vos and Frinking (1998)[2] who reported that *Helicoverpa armigera*, jassid, thrips, armyworm and spodopter were infesting the Capsicum sp. The reason behind high pest population in the month of July could be due to high humidity of the study area. The results agree with those of Abdulahi (1992)[3] who recorded attack of termites that caused damage by cutting the bark of the stem/roots at ground level. The results also agree with Sunitha, (2007) [4] who carried out investigations on survey of insect pests of capsicum, preparation of checklist of insect pests which occur at different crop growth.

Survey work reveals that fruit rot caused by *Colletotrichum capsici* (Sacc.) Butler and Bisby was the major diseases of chilli, the disease incidence was ranged from 21.1% to 40.1 % and highest disease was noticed in Shirguppi village of Hubli taluk (40.1%) and minimum fruit rot disease incidence (21.1%) recorded in Hulgur village of Dharwad taluk. The next important disease noticed was murda complex, the highest disease incidence (71.0%) recorded in Bhadrapur village of Navalagund taluk and lowest disease (18.2%) was noticed in Shirguppi village of Hubli taluk. Whereas Powdery mildew disease incidence was highest (30.1%) in Hulgur village of Dharwad taluk and lowest disease incidence recorded in Sherewad village (10.40%) of Hubli taluk. The highest disease incidence of cercospora leaf spot was recorded in Basapura village of Navalagund taluk (30.1%) and lowest disease (13.5%) was noticed in Annigeri village of Navalagund taluk. The Die back disease incidence was more (19.10%) in Shanshi village of Dharwad taluk and lowest disease incidence was noticed in Garag village of Dharwad taluk. Diseases recorded during the survey are shown in table 2. Singh et al. (1998) [5], studied that Fusarium wilt, become more serious in chilli growing tracts of India, particularly in Karnataka in black cotton soil leading up to 25 percent yield loss [6]. The incidence of wilt varied from 0.0 to 75.0 percent in different states of India [7].

Application of research: Helpful to find out the status of pest and disease, incidence and severity of diseases which leads to take out management strategies

Research Category: Pest and Crop disease

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Research project name or number: Staff Research Project

Author Contributions: All authors equally contributed

Author statement: All authors read, reviewed, agreed and approved the final manuscript. Note-All authors agreed that- Written informed consent was obtained from all participants prior to publish / enrolment

Study area / Sample Collection: Dharwad district of Karnataka

Cultivar / Variety / Breed name: *Colletotrichum capsici*, *B. dabbi*, *A.deluxe*

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

Ethical Committee Approval Number: Nil

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