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Survey for the Severity of Anthracnose Disease of Mango (*Mangifera indica* L.) on Nurseries in Karnataka State during *Kharif* 2015-16

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ABSTRACT

Mango (Mangifera indica L.) is one of the important fruit crop in tropical and sub-tropical countries. Colletotrichum gloeosporioides (Penz.) Penz and Sacc. causing anthracnose is a serious disease in mango, accounting for 15-20% loss. In recent years, there is a huge loss in nursery seedlings due to this disease. So, a roving survey was conducted to ascertain disease severity under nurseries in major mango growing regions of Karnataka during kharif 2015. Among the ten districts surveyed, highest per cent disease index (PDI) was observed in Srinivaspur taluk (33.60 %) of Kolar district with mean PDI of 32.40 followed by Chikkaballapur district with mean PDI of 31.62. Whereas, least per cent disease index was recorded in Devanahalli taluk (21.15 %) of Bengaluru Rural district (21.52%).

Key words: *Mango, Anthracnose disease, Survey, Per cent disease index (PDI)*

INTRODUCTION

Mango (*Mangifera indica* L.) commonly called as King of fruits, is the most important tropical and sub-tropical fruit crop. Although mango is considered to be a hardy plant, it is susceptible to several diseases. Among, anthracnose caused by *Colletotrichum gloeosporioides* (Penz.) Penz and Sacc. is one of the most serious diseases in all mango growing regions of the world. The disease was first identified in India by McRae in 1924. The pathogen causes black spot, leaf blight, blossom blight, fruit rot and in severe cases die-back [2,6].

In the recent years the disease become severe in nursery seedlings, on young leaves, symptoms appear as irregular black necrotic spots on both sides. In severe conditions, the entire seedlings may die and collapse. Pathogen present on the infected leaves, twig and fallen leaves serves as the major source for infection and spreads by rain splashed conidia[1].

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By keeping the above fact in mind, a roving survey was conducted to know disease severity in major growing regions of Karnataka.

MATERIAL AND METHODS

A roving survey was undertaken in nurseries during *Kharif* 2015 to know the severity of anthracnose disease of mango in the major mango growing districts of Karnataka *viz*., Bengaluru Rural, Chitradurga, Chikkaballapur, Dharwad, Haveri, Kolar, Raichur, Ramanagara, Shivamogga and Tumakuru.

The diagnosis of the disease in the nursery was based on symptoms on the seedlings. In each district two taluks were selected based on intensity of growing, in each taluk two to three villages/nursery forms were identified and surveyed for the severity. During survey, seedlings in the nursery were selected in zig-zag manner and the severity of anthracnose disease of mango on leaf were recorded by following 0 to 5 scale.

Disease scoring or severity scale

Grade	Per cent area infection on leaf
0	No infection
1	Up to 5
2	6-10
3	11-20
4	21-50
5	>50

Per cent disease index (PDI) was calculated by using following formula[9].

$$\text{Per cent disease index (PDI)} = \frac{\text{Sum of the individual disease ratings}}{\text{Number of leaves observed} \times \text{Maximum disease grade}} \times 100$$

The roving method of survey was conducted to assess the severity of anthracnose of mango in nurserie of major mango growing regions of Karnataka were presented in **Table 1 Figure 1 and Figure 3**. Among the ten districts surveyed, highest per cent disease index was observed in Srinivaspur taluk (33.60%) of Kolar district with mean PDI of 32.40 followed by Chikkaballapur (31.62%), Raichur (29.50%), Dharwad (27.10%), Tumakuru (28.59%), Haveri (28.50%), Chitradurga (26.88 %), Shivamogga (25.05%) and Ramanagara district (22.54%). Whereas, least per cent disease index was recorded in Devanahalli taluk (21.15%) of Bengaluru Rural district (21.52%).

Fig. 1: Symptoms of anthracnose of mango on leaves and twigs of seedling

Table 1: Mean PDI of survey of mango anthracnose disease during *kharif* 2015-16 under nurseries

Sl. No.	Districts	Taluk	PDI	Mean PDI
1	Kolar	Srinivaspur	33.60	32.40
		Kolar	31.20	
2	Chikkaballapur	Chintamani	32.24	31.62
		Gouribidanur	31.00	
3	Dharwad	Dharwad	28.50	27.10
		Hubballi	25.70	
4	Tumakuru	Tumakur	27.86	28.59
		Pavagada	29.32	
5	Haveri	Haveri	28.95	28.50
		Ranibennur	28.05	
6	Shivamogga	Shivamogga	25.99	25.05
		Sagar	24.11	
7	Chitradurga	Chitradurga	25.56	26.88
		Hiriyur	28.20	
8	Raichur	Raichur	30.12	29.50
		Sindhnur	28.88	
9	Bengaluru Rural	Devanahalli	21.15	21.52
		Doddaballapura	21.89	
10	Ramanagara	Kanakapura	23.51	22.54
		Channapatna	21.57	

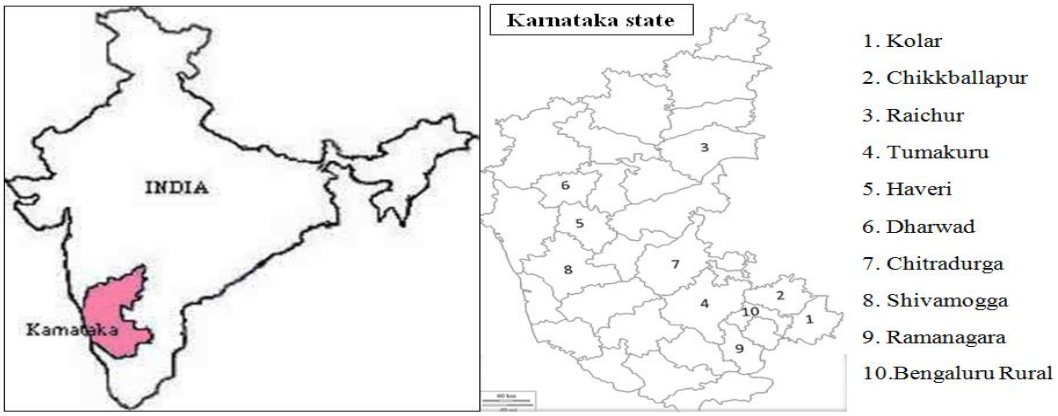

Fig. 2: Mean PDI of anthracnose of mango in different districts of Karnataka

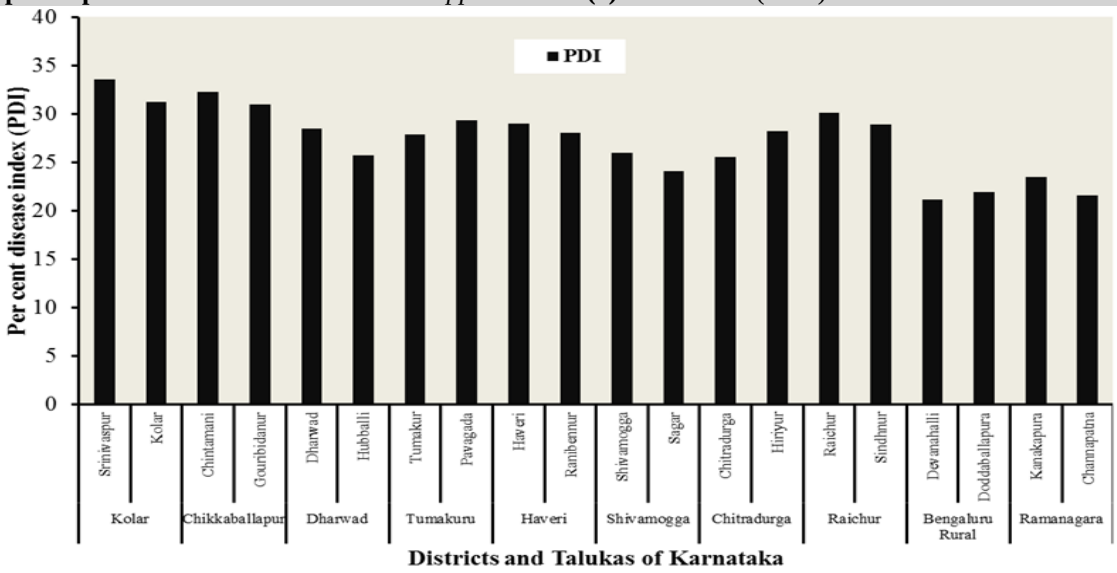

Fig. 3: Mean PDI of survey of mango anthracnose disease during *kharif* 2015-16 under nurseries

CONCLUSION

The severity of anthracnose of mango expressed as per cent disease index (PDI) varied from 32.40 to 21.52 as evident in the survey conducted during *kharif* 2015 in various regions of Karnataka. The survey also revealed that, the severity and incidence of mango anthracnose varied and prevalence differed from place to place.

Among the ten districts, the maximum disease incidence (32.40) was recorded in Kolar, where as lest was in Bengaluru Rural (21.52 %). This variation in disease severity attributed to virulence of the pathogen and environmental conditions. It is clear from the present investigation and also similar description by earlier workers[4,5,6,7,8].

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