

SURVEY AND OCCURRENCE OF MANGO ANTHRACNOSE DISEASE UNDER SOUTH GUJARAT CONDITION

BHAGWAT, R. G.; MEHTA, B. P. AND *PATIL, V. A.

DEPARTMENT OF PLANT PATHOLOGY
N. M. COLLEGE OF AGRICULTURE
NAVSARI AGRICULTURAL UNIVERSITY
NAVSARI - 396 450, GUJARAT, INDIA

**EMAIL : vijay.patilagri@gmail.com*

ABSTRACT

Anthracnose of Mango caused by Colletotrichum gloeosporioides is an important disease and found severe in south Gujarat. The survey was done from November 2012 to May 2013. The pathogen involved to cause the anthracnose was identified as C. gloeosporioides. In this study, survey indicated that anthracnose was observed in mango growing area of Navsari and Valsad districts of south Gujarat. In the variety, Kesar growing extensively in the area showed anthracnose infection. The anthracnose incidence of mango was recorded ranging from 11.68 to 26.97 per cent (Av. 22.74 %) in Navsari district. The highest disease incidence was observed at Gandevi (26.97 %) in May, while the lowest in Jalalpur (11.68 %) village in November. In Valsad district, the disease incidence was observed in the range of 14.12 to 26.72 per cent (Av. 22.37 %). The highest disease incidence was observed in Ambheti (26.72 %) in May, while the lowest in Bhamti village (14.12%) in month of November.

KEY WORDS: Anthracnose, Colletotrichum gloeosporioides, Mango,

INTRODUCTION

Mango is an important fruit crop in area and production in Gujarat also, where it is cultivated over an area of about 130.1 thousand hectares with annual production of 911.3 thousand tones with productivity of 7.01 tones/ha. Its plantation has become quite popular in the districts of Valsad, Junagadh, Navsari, Kutch, Surat, Amreli and Bhavnagar because of favourable agro-climate condition. Mango is affected by number of diseases at all the stages of its development right from plant in nursery to the fruit in storage or transit. Mango is prone to many fungal diseases like Anthracnose, Rhizopus rot, Stem end rot, Penicillium rot, Black

mould rot, Mucor rot, Phyllosticta rot, Pestalotiopsis rot, Macrophoma rot and powdery mildew, leading to heavy loss in yield. Among these diseases, anthracnose is the major disease of mango as it occurs at all the growing parts including leaves, twigs, flowers, fruits except root and trunk throughout the year. Anthracnose caused by Glomerella cingulata (Stoneman) Spauld and H Schrenk (anamorph: Colletotrichum gloeosporioides (Penz.)) appear to be more severe causing devastation of mango fruits during grading, packing, transportation, storage and marketing (Pathak, 1980). Looking to this, the survey was made to know the

occurrence of this important disease in South Gujarat condition.

MATERIALS AND METHODS

Survey was carried out to know the prevalence of disease in Navsari and Valsad districts of south Gujarat region. In Navsari district, Navsari, (Bhulafaliya, Khadsupa), Jalalpur (University Campus, Kharsad), Gandevi (Gandevi, Khkhawada) and Vasada (Chapaldhara, Roopwel), where as in Valsad district, Valsad (Dungri, Sarodhi), Pardi (Paria and khadki), Dharpur (Dharpur, Bhamti) and Kaparala (Nana Ponda, Ambheti) farmers fields were selected.

In this survey study, ten trees were selected randomly from each orchard of farmer's field. All the recommended agronomical practices were adopted for the crop. Total ten shoots were assessed from each tree. Observations with regards to infection and symptoms development were recorded on the basis of disease rating by using 0-5 scale. Observation was taken at monthly interval during November 2012 to May, 2013. The per cent disease index was calculated as per the standard procedure by adopting the prescribed scale using the formula by Narasimhudu (2007) as given below:

Rating	Per Cent Leaf Infected
0	0
1	1 – 10
2	11 – 20
3	21 – 30
4	31 – 50
5	Above 50

$$\text{Per cent disease Index (PDI)} = \frac{\text{Sum of all numerical rating}}{\text{No. of observations} \times \text{Max.disease grade}} \times 100$$

RESULTS AND DISCUSSION

To find out the status of anthracnose disease caused by *Colletotrichum gloeosporioides* in Navsari and Valsad districts, a field survey was conducted during seven different months viz., November, December, January, February, March, April and May in the year 2012-13. The observations on per cent disease index were recorded and presented in Table 1. It is very cleared from the results that anthracnose was present in all the surveyed areas of Navsari and Valsad districts. Among the seven different months, maximum anthracnose incidence in per cent i.e. (26.15%) was found during the month of May and minimum per cent i.e.

(17.44%) in November. Variety Kesar growing extensively in these areas showed anthracnose infection.

The anthracnose incidence of mango was recorded ranging from 11.68 to 26.97 per cent (Av. 22.74 %) in Navsari district. The highest disease incidence was observed at Gandevi (26.97 %) in May, while the lowest in Jalalpur (11.68 %) village in November. In Valsad district, the disease incidence was observed in the range of 14.12 to 26.72 per cent (Av. 22.37 %). The highest disease incidence was observed in Ambheti (26.72 %) in May, while the lowest in Bhamti (14.12%) village in November.

During the year 2012-13, in Navsari district the average

anthracnose incidence was observed in the range of 22.74 %. It was the highest at Bhula faliya (25.15 %) followed by Khadsupa (23.97%), Gandeve (23.70), Kharsad (23.20%), Khkhawada (23.07%) Chapaldhara (22.57%) and Rupvel (21.67%), while the lowest in Jalalpur (18.55%) village. In Valsad district, the average anthracnose disease incidence (22.00%) was observed. The highest disease incidence was observed in Dharampur (23.48 %) followed by Sarodi (22.83), Ambheti (22.65%), Bhamti (22.30%), Nana Ponda (21.92%), Khadki (21.75%) and Dungari (20.73%), while the lowest in Pariya (20.33 %) village.

Overall, the anthracnose was more in Navsari district (22.74%) compared to Valsad district (22.00 %). The disease was more (26.29 %) in May followed by December (25.25 %), April (23.89 %), March (22.96 %), February (21.57%) and January (19.59%), whereas minimum disease incidence (17.30 %) was observed in November month.

The results of present investigation are more or less similar to Sanders *et al.* (2000), who conducted market survey for incidence of *C. gloeosporioides* on avocado and mango fruits in South Africa and noticed 32 per cent incidence of anthracnose (*Colletotrichum gloeosporioides*) disease in mango. Similarly, Prakash *et al.* (1989) conducted the survey of market diseases of mango fruits around Hyderabad and reported that 20-30 per cent fruits were rotten due to *Colletotrichum gloeosporioides*. Basha *et al.* (2010) conducted roving survey for the collection of healthy and diseased leaf samples from major mango growing regions of Andhra Pradesh and found that *Colletotrichum gloeosporioides* subjected to pathogen

i.e. variability on Baneshan mango graft and classified as highly virulent, moderately virulent and less virulent. Dalvi *et al.* (2009) estimated the total 26.2 per cent pre-harvested losses calculated at the time of harvest in Alphonso fruit due to three important factors such as pathological, entomological and physical.

This is first time where the information on the status of the anthracnose of mango in South Gujarat is created. This suggests for urgent formulation and application of management programme in the area to avoid the losses caused by the disease.

CONCLUSION

Data clearly showed that the disease was present in all the villages of two districts surveyed. The popular variety Kesar was found susceptible and hence proved as a major constraint in profitable cultivation of mango in south Gujarat. This suggests for urgent need to develop management strategies including resistant varieties. The anthracnose incidence in different locations of Navsari and Valsad districts were ranging from 11.68 to 26.97 per cent. This difference may be attributed to the effect of different environmental conditions occurring in different locations and microclimate of the field which influenced specific fungal infection.

REFERENCES

- Basha, S. T.; Suvama, J.; Hemlatha, T. and Reddy, N. P. (2010). Compatibility of native potential bioagents with different fungicides against *colletotrichum gloeosporioides* penz. Causing mango anthracnose. *The Bioscan* 5(1):19-20.
- Dalvi, M. B.; Patil, P. D. and Raut S. P. (2009). Pre- and post-harvest losses in fruits of mango

- (*Mangifera indica*). *J. Mycol Pl. Patho.*, **39**(3): 385-390.
- Narasimhudu, Y. (2007). Bio-efficacy of score 25 EC (Difenconazole) against powdery mildew and anthracnose in mango (*Mangifera indica* L.). *Pestology*, **31**(2): 35 – 37.
- Pathak, V. N. (1980). Diseases of Fruit Crops. Oxford and IBH Publication Co. Ltd. New Delhi. PP. 5-37.
- Prakash, P.; Manoharachary, C. and Bochow, H. (1989). Elucidation of some *in vitro* exo-petrolytic enzymes by mango anthracnose fungus *Colletotrichum gloeosporioides* Penz. *Archv. Fur. Phytopathologie Pflanzenschutz*, **25**(2): 197-199.
- Sanders, G.M.; Korten, L. and wehner, F. C. (2000). Market survey of post harvet disease and incidence of *Colletotrichum gloeosporioides* on avocado and mango fruits in South Africa. *Trop. Sci.*, **40** (4): 192-198.

Table 1: Incidence of pre harvest mango anthracnose in field of south Gujarat.

Location	Per Cent Disease index							Average PDI
	Months							
	November	December	January	February	March	April	May	
Navsari District								
Bhula faliya	21.80	26.37	23.80	25.44	25.80	25.96	26.89	25.15
Khadsupa	16.08	26.08	22.15	25.09	25.96	25.98	26.48	23.97
Jalalpur	11.68	21.51	15.57	17.55	19.86	20.15	23.56	18.55
kharsad	18.00	26.50	20.98	22.00	23.61	24.42	26.86	23.20
Gandevi	19.92	25.59	21.92	22.26	23.92	25.30	26.97	23.70
Khkhawada	17.32	25.32	21.32	23.28	23.55	25.05	25.66	23.07
Chapaldhara	19.96	23.96	21.96	21.96	21.96	22.21	25.96	22.57
Rupvel	14.72	25.68	17.12	22.09	22.18	23.04	26.85	21.67
Av. PDI	17.44	25.13	20.60	22.46	23.36	24.01	26.15	22.74
Valsad District								
Dungari	15.72	23.99	16.38	19.12	21.97	22.15	25.78	20.73
Sarodhi	18.08	26.42	20.44	20.48	22.68	25.16	26.52	22.83
Pariya	14.36	24.92	16.11	18.00	20.12	22.48	26.34	20.33
Khadki	16.32	26.42	16.41	20.44	22.96	23.12	26.58	21.75
Dharampur	18.56	24.88	22.71	23.11	24.12	24.56	26.45	23.48
Bhamti	14.12	25.98	18.09	22.56	24.12	24.84	26.42	22.30
Nana Ponda	16.29	24.84	18.68	20.06	22.84	24.16	26.57	21.92
Ambheti	19.59	25.49	19.82	21.60	21.72	23.62	26.72	22.65
Av. PDI	16.63	25.37	18.58	20.67	22.57	23.76	26.42	22.00
Over all PDI	17.03	25.25	19.59	21.57	22.96	23.89	26.29	22.37

[MS received: May 09, 2016]

[MS accepted: May 29, 2016]