



## A CASE STUDY

# Incidence and severity of anthracnose of pomegranate in Latur and Osmanabad district of Marathwada region

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**Abstract :** The roving survey of anthracnose of pomegranate was carried out during June 2011- January 2012 in Latur and Osmanabad districts. Survey on the incidence and severity of anthracnose of pomegranate reveals the magnitude of the problem in pomegranate orchards and serves as a precursor for evolving the management strategies. It also gives clue about survival of pathogen during off season as weed or collateral hosts. In Latur district, pomegranate orchards of Latur, Chakur, Ausa, Nilanga, Renapur, Ahamdpur and Udgir tahsil were surveyed to find out the incidence and severity of anthracnose of pomegranate caused by *Colletotrichum gloeosporioides* (Penz.). In the surveyed orchards, the disease incidence ranged between 38.75 to 57.45 per cent. In this district the maximum incidence and severity of disease was recorded in Chakur tahsil followed by Udgir, Nilanga, Ahamdpur, Latur and Ausa. In Osmanabad district, the disease incidence ranged between 46.33 to 57.56 per cent. In this district the incidence and severity of disease was recorded maximum in Tuljapur followed by Washi, Kalamb and Osmanabad.

**Key Words :** *Colletotrichum gloeosporioides*, Incidence, Severity, Pomegranate

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## INTRODUCTION

Pomegranate (*Punica granatum* L.) belongs to the family *Punicaceae* and is believed to have flourished in the garden of Eden, ever since the first human life appeared on earth. It is the most favoured table fruit in tropical and subtropical regions. It is a high value crop both economically and nutritionally. The area under pomegranate cultivation in India is more than 1.07 lakh hectares with 7.43 lakh tones production (Anonymous, 2011). Maharashtra is the leading state in India and about 76.42 per cent area of pomegranate cultivation in India is concentrated in Maharashtra. The area under

pomegranate in Maharashtra was 82.0 thousand hectares with 4.92 lakh tones production in the year 2010-2011. The other states growing pomegranate commercially are Karnataka, Gujarat, Andhra Pradesh, Tamil Nadu and Rajasthan (Anonymous, 2011). Pomegranate is susceptible to many diseases which affect the fruit quality and yield. However, during recent years pomegranate cultivation in Maharashtra has been threatened due to incidence of anthracnose disease caused by *Colletotrichum gloeosporioides* (Penz.). The disease has resulted in enormous losses to pomegranate fruits which makes the fruits unfit for consumption and market.

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Nevertheless, despite the fact that *Colletotrichum* affect a wide range of crops, its pathogenic range increases by a rising number of species identified under these genera that were classified as anthracnose's agent (Peres, 2002). Considering the economic importance of the fruit crop as well as disease, present investigation was undertaken to conduct survey for measuring incidence and severity of *C. gloeosporioides* causing anthracnose of pomegranate.

## MATERIAL AND METHODS

An extensive survey of pomegranate orchards was done from June, 2011–January, 2012 in Latur and Osmanabad districts of Marathwada regions for recording the status of anthracnose of pomegranate. In the orchards of pomegranate plants were selected in zigzag manner for recording the incidence and the severity of anthracnose disease of pomegranate on leaf and fruit. The observations were recorded by using the scale given by Wheeler (1969).

Table A : Scale used for recording observations of anthracnose disease of pomegranate			
Grade	Per cent area of infection		Reaction
	On fruit	On leaf	
0	No infection	No infection	Immune
1	1-10	Upto 5	Resistant
2	11-25	6-10	Moderately resistant
3	26-50	11-20	Moderately susceptible
4	51-75	21-50	Susceptible
5	>75	50	Highly susceptible

## RESULTS AND DISCUSSION

An extensive survey was carried out in pomegranate orchards of Latur and Osmanabad districts in the year 2011-12. Survey was done in Latur, AUSA, Nilanga, Renapur, Udgir, Chakur and Ahmadpur tahsil of Latur district and Osmanabad, Kalamb, Washi and Tuljapur tahsils of Osmanabad district to find out the incidence and severity of anthracnose of pomegranate in orchards. The data are presented in Table 1 and 3. The results presented in Table 1 revealed that, maximum disease incidence was recorded in Chakur tahsil (57.45%), which was followed by Udgir (55.57%), Nilanga (50.39%), Ahmadpur (45.34%), Renapur (44.07%) and Latur (39.46%), whereas, minimum disease incidence was recorded in AUSA (38.75%) tahsil of Latur district. Among the seven tahsils of Latur district maximum disease severity was recorded in Chakur tahsil (33.12%) followed by Udgir (21.20%), AUSA (19.72%), Nilanga (17.67%), Ahmadpur (17.58%) and Latur (17.08%), whereas minimum disease severity was recorded in Renapur (15.64%) tahsil of Latur district. The data with regard to the incidence and severity of anthracnose of pomegranate of Osmanabad district are presented in Table 3. The results presented in Table 3 revealed that, maximum disease incidence was recorded in Tuljapur tahsil (57.56%), which was followed by Washi (48.88%) and Kalamb (46.56%), whereas, minimum disease incidence was recorded in Osmanabad (46.33%) tahsil of Osmanabad district. Among these four tahsils maximum disease severity was recorded in Tuljapur tahsil

Table 1a : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Latur, district Latur						
Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Ramegaon	Bhagirathi Vasnt Magar	Ganesh	0-6	52.18	21.81
2.	Chikudi	Babu Uttam Hudde	Ganesh	0-5	48.70	18.11
3.	Harngul	Nagorao Sambhaji Zunze	Ganesh	0-3	25.30	10.33
4.	Chincholi	Angat Sopan Nagmode	Ganesh	0-3	28.75	14.87
5.	Murud	Shivrudra Bidve	Ganesh	0-5	42.37	20.28
6.	Sakhara	Dinesh Enani	Ganesh	0-5	41.82	21.42
7.	Phakharsngavivi	Sanjay Khanapure	Ganesh	0-5	42.95	13.38
8.	Gangapur	Jagganath Kulkarni	Ganesh	0-4	35.82	17.39
9.	Bamani	Shivaji Divate	Ganesh	0-4	37.70	18.45
10.	Ekurga	Shivaji Mali	Ganesh	0-4	39.83	15.43
11.	Mathephal	Shubhangi Patil	Ganesh	0-5	45.89	17.41
12.	Gadhavad	Raosahab Bhise	Ganesh	0-4	34.74	14.39
13.	Bodhaka	Wasim Sayad	Ganesh	0-4	36.90	20.37
				Mean	39.46	17.08

**Table 1b : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Ausa, district Latur**

Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Ausa	Shri. Ashokrao Kabade	Bhagawa	0-4	36.23	14.87
2.	Matola	Gurunath K. Birajdar	Bhagawa	0-4	31.20	16.97
3.	Devtala	Gundappa M. Birajdar	Bhagawa	0-5	48.49	26.59
4.	Yerendi	Vinod Eknath Babalsule	Bhagawa	0-5	45.65	21.64
5.	Shelu	Shri Naiknaware S.K.	Bhagawa	0-4	32.19	18.57
				Mean	38.75	19.72

**Table 1c : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Chakur, district Latur**

Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Ashta	Bhanudas Namdeo Shelake	Ganesh	0-6	57.17	34.87
2.	Ashta	Vaijinath Dadarao Shelake	Ganesh	0-7	61.10	30.33
3.	Ashta	Bhgawat Hariram Nithure	Ganesh	0-6	59.30	39.55
4.	Ashta	Shri Sahadeo Sunthane	Ganesh	0-6	53.38	32.93
5.	Ashta	Shri Om Bhandari	Ganesh	0-6	56.30	27.96
				Mean	57.45	33.12

**Table 1d : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Nilanga, district Latur**

Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Nilanga	Dhananjay Hanumant Bhise	Ganesh	0-5	41.17	14.87
2.	Basapur	Nagorao Sitaram Kadam	Ganesh	0-5	43.48	16.97
3.	Nitur	Ratnaling Digambar Dhumal	Ganesh	0-7	62.18	26.59
4.	Ambegaon	Abasaheb Tukaram Kadam	Ganesh	0-6	53.63	11.81
5.	Hadga	Haribhau Namdeo Bhise	Ganesh	0-6	51.52	18.11
				Mean	50.39	17.67

**Table 1e : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Renapur, district Latur**

Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Renapur	Hanumant Sopan Gade	Bhagawa	0-5	41.52	10.57
2.	Kamkheda	Pradip Khanderao Patil	Bhagawa	0-6	52.58	12.08
3.	Bhatanwadi	Fulachand Ganpati Ingale	Bhagawa	0-5	41.48	15.55
4.	Pangaon	Raosahab Viththalrao Bhise	Bhagawa	0-5	44.49	19.43
5.	Sukuni	Rajabhau Maroti Bhise	Bhagawa	0-5	40.30	20.57
				Mean	44.07	15.64

**Table 1f : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Udgir, district Latur**

Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Udgir	Gundu Sambhaji Lad	Bhagawa	0-6	55.54	22.56
2.	Daul	Shri. Sitaram Jadhav	Bhagawa	0-6	59.74	18.84
3.	Kodali	Nivrutti Maruti Bhosale	Bhagawa	0-6	58.63	27.80
4.	Janapur	Fulchand Maruti Bhosale	Bhagawa	0-6	51.30	17.96
5.	Somnathpur	Rajendra Gundappa Birajdar	Bhagawa	0-6	52.68	18.84
				Mean	55.57	21.20

**Table 1g : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Ahamdpur, district Latur**

Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Ahamdpur	Shri Mahadeo Dhanore	Bhagawa	0-4	38.16	14.87
2.	Sawargaon	Shri Arvind Dhanore	Bhagawa	0-5	48.40	15.80
3.	Nagthana	Shri Manoj Dhanore	Bhagawa	0-5	45.45	19.86
4.	Talegaon	Shri Ramesh Sahalugade	Bhagawa	0-5	48.38	18.84
5.	Tebhurni	Ashok Dnyanoba Patil	Bhagawa	0-5	46.34	18.57
				Mean	45.34	17.58

(24.36%) followed by Kalamb (23.93%) and Washi (18.98%), whereas, minimum disease severity was recorded in Osmanabad (15.76%) tahsil of Osmanabad district. In general, the disease incidence and severity vary from season to season in different agro-climatic zones and varieties, which may be due to variation in pathogen, host varieties or climatic condition. The results of the present investigation are in agreement with those reported in past. Mandhare *et al.* (1996) in their survey recorded the highest severity of anthracnose of pomegranate to an extent of 40 to 60 per cent in the

Nashik district (Maharashtra), whereas, Prashanth (2007) recorded the highest severity of anthracnose of pomegranate to an extent of 38.88 per cent in the villages of Bagalkot. During survey it was found that the farmers who had grown their crop during *hasta* bahar, the disease development was minimum in these orchards as there was no rainfall and the temperature was high. Similar reasons for low disease incidence and severity (anthracnose of pomegranate) in *hasta* bahar were attributed by Prashanth (2007) and Prashantha *et al.* (2013a and b). It is also observed that the farmers who

**Table 2 : Mean of disease incidence and severity of anthracnose of pomegranate in Latur district**

Sr. No.	Tahsil	Mean disease incidence (%)	Mean disease severity (%)
1.	Latur	39.46	17.08
2.	Ausa	38.75	19.72
3.	Chakur	57.45	33.12
4.	Nilanga	50.39	17.67
5.	Renapur	44.07	15.64
6.	Udgir	55.57	21.20
7.	Ahamdpur	45.34	17.58

**Table 3a : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Osmanabad, district Osmanabad**

Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Wagholi	Satish Vitthal Khadke.	Bhagawa	3-4	36.40	16.80
2.	Wagholi	Dada Patil	Bhagawa	5-6	50.00	17.70
3.	Sakanewadi	Gitanjali Gurudatta Hasgude	Bhagawa	4-5	43.43	19.86
4.	Hingalajwadi	Shyam Naiknavare	Bhagawa	4-5	46.38	20.84
5.	Hingalajwadi	Balasaheb Naiknavare	Bhagawa	5-6	55.54	23.60
				Mean	46.33	19.76

**Table 3b : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Washi, district Osmanabad**

Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Kelewadi	Sonabai Sopanrao Kele	Bhagawa	5-6	50.18	21.80
2.	Lakhangaon	Jayasahri Subhash Lakhe	Bhagawa	4-5	47.70	19.10
3.	Indapur	Dattatray Jyotiram Pawar	Bhagawa	2-3	29.70	15.80
4.	Indapur	Sanjay Sudhakar Parde	Bhagawa	4-5	40.30	21.40
5.	Indapur	Suresh Limbraj Gapat	Bhagawa	3-4	38.82	16.39
6.	Shendi	Vaijinath Kalkute	Bhagawa	3-4	37.70	19.40
				Mean	40.67	18.98

**Table 3c : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Tuljapur, district Osmanabad**

Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Tuljapur	Shivaji Jadhav	Bhagawa	5-6	59.55	23.10
2.	Sawargaon	Dattatray Kanwade	Bhagawa	5-6	55.50	28.26
3.	Apsinga	Ambadas Devidas Palange	Bhagawa	5-6	58.56	23.29
4.	Apsinga	Rajkumar Prakash Kadam	Bhagawa	5-6	53.15	26.24
5.	Apsinga	Mukund Prakash Kadam	Bhagawa	5-6	56.20	25.20
6.	Andur	Tanaji Chavan	Bhagawa	6-7	62.50	20.12
				Mean	57.56	24.36

**Table 3d : Per cent disease incidence and severity of anthracnose of pomegranate in tahsil Kalamb, district Osmanabad**

Sr. No.	Village	Name of farmer	Variety	Range (Grade)	Disease incidence (%)	Disease severity (%)
1.	Kalamb	Naganath Ghule	Bhagawa	3-4	38.80	16.40
2.	Kalamb	Gund S.K.	Bhagawa	3-4	33.85	15.35
3.	Wadgaon	Mujahari Solanke	Bhagawa	4-5	47.75	19.30
4.	Kalamb	Chonde Subhasah Babu	Bhagawa	3-4	35.78	16.40
5.	Pimpalgaon	Subhash Kisan Patil	Ganesh	3-4	30.20	16.60
6.	Devdhanora	Janardhan Gajendra Nahane	Bhagawa	3-4	35.25	14.85
7.	Devdhanora	Santosh Tukaram Bhore	Bhagawa	4-5	48.50	26.60
8.	Devdhanora	Ranjit Ramhari Jadhav	Bhagawa	4-5	45.60	20.65
9.	JawlaKh.	Adnyanbai Bapurao Gambhire	Bhagawa	3-4	30.19	18.57
10.	JawlaKh.	Shahaji Krishna Gambhire	Bhagawa	5-6	58.10	36.80
11.	Khamaswadi	Ranjit Mahadev Deshmane	Bhagawa	6-7	64.10	39.00
12.	Malkaranja	Nitin Godse	Bhagawa	6-7	61.30	38.70
13.	Malkaranja	Haridas Lomate	Bhagawa	5-6	54.38	32.90
14.	Shiradhon	Tatyaba Dadarao Kadbade	Bhagawa	5-6	58.30	28.50
15.	Shiradhon	Shahaji Rangnath Kanse	Bhagawa	4-5	40.50	15.50
16.	Karanjkalla	Sarjerao Pawar	Bhagawa	5-6	53.55	17.08
17.	Karanjkalla	Dattatraya Baburao Savant	Bhagawa	4-5	44.45	20.40
18.	Karanjkalla	Nitesh Haridas Savant	Bhagawa	5-6	57.50	37.40
Mean					46.56	23.93

**Table 4 : Mean of disease incidence and severity of anthracnose of pomegranate in Osmanabad district**

Sr. No.	Tahsil	Mean per cent disease incidence	Mean per cent disease severity
1.	Osmanabad	46.33	15.76
2.	Washi	48.88	18.98
3.	Kalamb	46.56	23.93
4.	Tuljapur	57.56	24.36

had grown their crop during *mrig* bahar followed by *ambia* bahar, the disease incidence and severity was also maximum in respective orchards (Jayalakshmi *et al.*, 2012).

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