

Survey for incidence and severity of *Alternaria* blight of safflower in different districts of Marathwada region

■ V.M. GHOLVE*, S.V. PAWAR AND S.S. WAGH

Department of Plant Pathology, Vasantnao Naik Marathwada Krishi Vidyapeeth, PARBHANI (M.S.) INDIA

ARTICLE INFO

Received : 02.12.2014
Revised : 28.02.2016
Accepted : 09.03.2016

KEY WORDS :

Alternaria blight, Incidence, *Carthamus tinctorius*, Severity survey

*Corresponding author:

Email: vikramgholve@rediffmail.com

ABSTRACT

Survey was conducted in four districts of Marathwada region of Maharashtra during Rabi 2013 to know the incidence and intensity of leaf blight disease caused by *Alternaria carthami*. The disease was predominant in all the districts surveyed. Highest per cent disease incidence and intensity was reported in Hingoli (42.08 and 38.46 %, respectively). This was followed by Nanded (40.07 and 36.03 %, respectively).

How to view point the article : Gholve, V.M., Pawar, S.V. and Wagh, S.S. (2016). Survey for incidence and severity of *Alternaria* blight of safflower in different districts of Marathwada region. *Internat. J. Plant Protec.*, **9**(1): 219-222.

INTRODUCTION

Safflower (*Carthamus tinctorius* L.) is one of the major Rabi oilseed crops of India. It occupies a prominent place being in both area and production, containing 25-32 per cent oil. It fulfills the oil requirement of about 20-25 per cent population in the states of Maharashtra, Karnataka, Madhya Pradesh, Uttar Pradesh, Bihar and Tamil Nadu. In India area, production and productivity of safflower recorded during 2010-11 were 5.9 lakh ha, 1.3 lakh tones and 710 kg/ha, respectively (Anonymous, 2011).

Among the various biotic factors responsible for low production and productivity of safflower, diseases caused by biotic agents viz., fungi, bacteria, viruses and nematodes are the major one. Among the major fungal diseases infecting safflower, *Alternaria* blight incited by *Alternaria carthami* is one of the most destructive and wide spread diseases. The yield losses in the range of

25-60 per cent due to *Alternaria* blight in safflower were reported from India (Indi *et al.*, 1988; Prasad *et al.*, 1988 and Relekar *et al.*, 2010).

MATERIAL AND METHODS

Safflower fields of the farmers in the districts of Parbhani, Nanded, Hingoli and Jalna were surveyed during the Rabi 2013 for recording *Alternaria* blight/leaf spot disease incidence and intensity/severity. The observations on blight/leaf spot incidence were recorded and computed on the basis of number of safflower plants affected by *Alternaria* blight (Table A). The disease incidence was recorded on total number of safflower plants in the field. Observations on blight intensity/severity were recorded on ten randomly selected safflower plants per field surveyed, applying standard disease rating scale (Mayee and Datar, 1986). The data obtained on blight incidence and intensity was computed for estimation of

Table A : Scale/description of the symptom for <i>Alternaria</i> leaf spot of safflower		
Grade	Disease intensity (%)	Disease reaction
0	No symptoms	Immune
1	Less than 1	Resistant
3	1 to 10	Moderately resistant
5	11 to 25	Tolerant
7	26 to 50	Susceptible
9	More than 50	Highly susceptible

the percentage incidence and intensity/severity, applying following formula (McKinney, 1923).

$$\text{Incidence (\%)} = \frac{\text{No. of plants showing disease symptoms}}{\text{Total number of plants}} \times 100$$

$$\text{Intensity (\%)} = \frac{\text{Summation of numerical rating}}{\text{Number of plants observed} \times \text{Maximum rating grade}} \times 100$$

RESULTS AND DISCUSSION

The findings of the present study as well as relevant discussion have been presented under the following heads:

Survey of safflower *Alternaria* blight :

The survey of farmers fields of safflower crop at different locations each from Parbhani, Hingoli, Nanded and Jalna districts of Marathwada region of Maharashtra were undertaken during *Rabi* 2013 season. Results obtained on incidence and intensity of *Alternaria* leaf spot/blight (*Alternaria carthami*) is presented in Table 1.

Disease incidence :

The disease incidence was ranged from 30.00 to 50.00 per cent in the safflower fields surveyed with the overall average incidence of 40.23 per cent of the district surveyed. The maximum average incidence of the disease (Table 1) was found in Hingoli district (42.08 %). This was followed by Nanded (40.07 %), Jalna (39.99 %) and Parbhani (38.79 %).

Disease severity/intensity :

The disease intensity was ranged from 22.22 to 49.10 per cent in the safflower fields surveyed with the overall average intensity of 36.56 per cent of the district surveyed. The maximum average intensity (Table 1) was recorded in Hingoli district (38.46 %). This was followed by Jalna (36.87 %), Nanded (36.03 %) and Parbhani

districts (34.88 %).

Variation in disease intensity might be due to the different geographical and diverse climatic conditions. Similar survey results were reported by Patil (1998); Patil (1985); Relekar *et al.* (2010) and Taware *et al.* (2014).

The mean of per cent disease incidence and intensity was observed more in Hingoli and Jalna district compared to the Parbhani. This may be due to the reasons that farmers normally do not practice effective fungicide spray against *Alternaria* leaf blight.

Deokar *et al.* (1991) revealed the predominance of *Alternaria* leaf spot disease on safflower in the traditional safflower growing areas in the scarcity zone of Maharashtra state. Weather conditions play a predominant role in determining the course and severity of epidemics.

Anonymous (2007) the survey work was assigned to Annegiri, Solapur, Parbhani, Phlatan and Tandur centers. A total of 75 fields of safflower in 38 villages in the district of Solapur, Pune, Osmanabad and Ahmednagar. Eighty seven fields in 36 villages in Parbhani, Hingoli, Nanded, Latur, Osmanabad, Beed and Jalna district of Marathwada region. In Maharashtra, *Alternaria* leaf spot (20-80%) was prevalent particularly in Solapur, Ahmednagar and Osmanabad district. In Karnataka and Andhra Pradesh maximum intensity of *Alternaria* leaf spot was upto 48 per cent and 5 per cent, respectively. Anonymous (2011) a total of 52 fields in 20 villages in the district of Solapur, Osmanabad, Pune and Ahmednagar and 90 farmer's fields in 20 villages in Satara, Pune and Sangli district of Maharashtra state, 73 fields in Ranga Reddy district of Andhra Pradesh, 65 fields in Dharwad and Gadag districts in Karnataka were surveyed. In Maharashtra the disease severity from 10 to 65 per cent was observed. In Karnataka, maximum severity of *Alternaria* and *Cercospora* leaf spots upto 10 per cent were recorded. In Andhra Pradesh, *Alternaria* leaf spot upto 40 per cent and *Cercospora*

Table 1 : Incidence and intensity of safflower blight caused by *Alternaria* on farmer's fields surveyed in Parbhani, Hingoli, Nanded and Jalna districts of Marathwada during Rabi, 2013

District	Tahsil	Village	Incidence (%)	Intensity (%)
Parbhani	Parbhani	Hatta	31.33	28.88
	Parbhani	Nagzari	46.66	42.22
	Parbhani	Jawala	43.33	37.77
	Parbhani	Pingli	31.66	26.66
	Jintur	Jintur	45.00	46.66
	Jintur	Chandaj	43.33	42.22
	Jintur	Bori	41.66	37.77
	Purna	Shirkalas	30.00	22.22
	Purna	Tadkalas	40.00	33.33
	Palam	Dhanora	35.33	31.11
	Average of Parbhani District		38.79	34.28
Hingoli	Hignoli	Rohili	43.33	37.77
	Hingoli	Sawad	34.00	31.10
	Aundha	Aundha	45.00	42.22
	Aundha	Suregaon	50.00	46.66
	Aundha	Hiwara	41.66	42.50
	Aundha	Kurwadi	50.00	49.10
	Sengaon	Talani	35.00	28.88
	Sengaon	Giroli	42.50	33.33
	Sengaon	Sukali	40.00	37.77
	Sengaon	Kawatha	38.33	33.30
	Average of Hingoli District		42.08	38.46
Nanded	Loha	Loha	40.00	35.55
	Loha	Sunegaon	35.00	33.33
	Loha	Landgewadi	36.66	35.60
	Loha	Malakoli	40.50	37.77
	Loha	Malegaon	40.00	31.11
	Loha	Limboti	41.66	37.70
	Loha	Siwani	45.00	44.44
	Loha	Koregaon	43.50	35.50
	Loha	Sewadi	38.33	33.30
		Average of Nanded district		40.07
Jalna	Jalna	Jambwadi	43.33	42.20
	Jalna	Ramnagar	31.66	28.90
	Badnapur	Kadegaon	33.33	31.10
	Badnapur	Bajargevarai	36.66	33.30
	Badnapur	Ghansangawi	40.00	37.77
	Mantha	Kendali	45.00	42.22
	Mantha	Wathur	38.33	33.30
	Mantha	Giregaon	45.00	46.66
	Ambad	Lalwadi	46.66	37.77
	Ambad	Shahagad	40.00	35.50
	Average of Jalna district		39.99	36.87
	Average of all districts		40.23	36.41

leaf spot upto 15 per cent were observed.

REFERENCES

Anonymous (2007). Annu. Rep. AICRP (Safflower) (2007), Directorate of Oilseed Research (DOR), Hyderabad, p. 165.

Anonymous (2011). Annual Progress Report of DOR. AICRP on Safflower, Rajendranagar, Hyderabad (India). pp : 106.

Deokar, C.D., Veer, D.M., Patil, R.C. and Rao, V. Ranga (1991). Survey of safflower diseases in Maharashtra state. *Sesame & Safflower Newsletter*, **6** : 79-80.

Indi, D.V., Lukade, G.M., Patil, P.S. and Shambharkar, D.A. (1988). Estimation of yield loss due to *Alternaria* leaf spot in safflower under dryland condition. *Pesticides*, **22**(1): 41-43.

Mayee, C.D. and Datar, V.V. (1986). Phytopathometry Tech. Bull. J. Marathwada Agricultural University, Parbhani. pp. : 146

McKinney (1923). A new system of grading plant diseases. *J. Agril. Res.*, **26** : 195-218.

Patil, F.B. (1985). Correlation of some yield components in safflower. *J. Maharashtra Agric. Univ.*, **10** : 82-83.

Patil, H.S. (1998). Genetic variability association and path analysis in safflower. *Indian J. Agric. Res.*, 46-50.

Prasad, N.V., Chaudhary, K.C. and Rao, G.R. (1988). Production of phytotoxin by *Alternaria carthami* incitant of leaf blight of safflower. *Internat. J. Trop. Pl. Dis.*, **6**(2): 251-255.

Relekar, N.N., Khalikar, P.V. and Nikam, P.S. (2010). Survey and surveillance of *Alternaria* blight of safflower caused by *Alternaria carthami* in Marathwada region. *J. Pl. Dis. Sci.*, **61**(1): 195-197.

Taware, M.R., Gholve, V.M., Wagh, S.S., Kuldhar, D.P., Pawar, D.V. and Chavan, A.A. (2014). Effect of different culture media, temperature, pH, carbon and nitrogen sources on mycelial growth and sporulation of *Alternaria carthami* causing *Alternaria* blight of safflower. *Internat. J. Plant Protec.*, **7**(2) : 349-353.

9th
Year
★★★★★ of Excellence ★★★★★