



[Research Article]

Occurrence of fungal diseases of bottle gourd in Rajasthan

S.K. Maheshwari, B.R. Choudhary and D. Singh

Central Institute for Arid Horticulture, Beechwal, Bikaner- 334 006 (Rajasthan)

Email: maheshwariskciah@gmail.com

ABSTRACT

A survey was conducted in four districts of Rajasthan, viz., Bikaner, Hanumangarh, Jaipur and Sri Ganganagar for occurrence of fungal diseases of bottle gourd. *Alternaria* leaf blight and *Cercospora* leaf spot diseases were found to be prevalent during rainy season in bottle gourd. The highest disease incidence (35.33%) and disease severity (24.0%) of *Alternaria* leaf blight were observed at Maharkala, Chomu (Jaipur) followed by Shikarpura (Jaipur) with 31.67% disease incidence and 22.50% disease severity. Minimum disease incidence (8.67%) and disease severity (4.0%) were found at 10 MLD, New Gharsana (Sri Ganganagar). Maximum disease incidence (26.67%) with disease severity (13.0%) of *Cercospora* leaf spot was noticed at Blaken, Chomu (Jaipur) followed by Govindpura (Jaipur) with disease incidence of 23.50% and disease severity of 12.33%, whereas, the minimum disease incidence (7.50%) and disease severity (2.0%) of *Cercospora* leaf spot were found in Lunkaransar Tehsil of Bikaner

KEY WORDS: Bottle gourd, disease incidence, disease severity, *Alternaria* leaf blight, *Cercospora* leaf spot

Bottle gourd [*Lagenaria siceraria* (Mol.) Standl.] is gaining importance due to its high yield potential and steady market price throughout the season. It is one of the most commonly grown cucurbitaceous vegetable crop and showed wide variability (Kumar *et al.*, 2011). The cultivation of bottle gourd is affected by a number of diseases caused by fungus, bacteria and viruses, which cause huge losses in fruit yield. Among fungal diseases, *Alternaria* leaf blight (*Alternaria cucumerina*) and *Cercospora* leaf spot (*Cercospora* spp.) are the most important diseases of bottle gourd. *Cercospora* leaf spot caused by *Cercospora citrulina* was observed on cucurbits (Sarbhoy, 2006). Thus, the occurrence of these diseases needs periodic survey to work out disease incidence and disease severity to find out the effective control measures because of both the diseases have posed a major threat in bottle gourd cultivation. So far, very little information is available on this aspect. Therefore, the present study was undertaken with the objective to document the occurrence of *Alternaria* leaf blight and *Cercospora* leaf spot of bottle gourd in four districts of Rajasthan at farmer's fields.

MATERIALS AND METHODS

Among biotic stresses, *Alternaria* leaf blight and

Cercospora leaf spot are the major fungal diseases of bottle gourd in Rajasthan. During rainy season of 2010 a survey was conducted at farmer's field in Bikaner, Hanumangarh, Jaipur and Sri Ganganagar districts of Rajasthan to record incidence and severity of *Alternaria* leaf blight and *Cercospora* leaf spot diseases of bottle gourd. The number of villages/localities surveyed was 4, 6, 3 and 7 in Bikaner, Hanumangarh, Jaipur and Sri Ganganagar districts, respectively. During survey, the naturally infected plants of bottle gourd showing typical symptoms of *Alternaria* leaf blight and *Cercospora* leaf spot were examined visually. The pathogens (*Alternaria cucumerina* and *Cercospora* spp.) of both the diseases were isolated on Potato Dextrose Agar (PDA) medium at Plant Pathology Laboratory of CIAH, Bikaner and confirmed by standard culture technique. The observations on disease incidence and severity were recorded from randomly selected three fields from each village. Disease severity was recorded on the basis of percent leaf area affected (Singh *et al.*, 2006). The diseased and healthy plants taken from 2 m x 2 m sub-plot area of randomly selected fields were counted, averaged and disease incidence was calculated by following formula:

$$\text{Disease incidence} = \frac{\text{Number of plants with visible symptoms}}{\text{Total number of observed plants}} \times 100$$

RESULTS AND DISCUSSION

The incidence and severity of *Alternaria* leaf blight of bottle gourd during survey programme of four districts of Rajasthan is presented in table 1. The data revealed that incidence and severity of *Alternaria* leaf blight in bottle gourd fields ranged from 8.67-35.33% and 4.0-24.0%, respectively. The highest disease incidence (35.33%) and disease severity (24.0%) were observed at Maharkala, Chomu (Jaipur), followed by Shikarpura (Jaipur) with 31.67% and 22.50%, respectively. The lowest disease incidence (8.67%) and disease severity (4.0%) were recorded at locality 10 MLD, New Gharsana (Sri Ganganagar), followed by 6 LNP (Sri Ganganagar) with 9.33% disease incidence and 5.0% disease severity. The data presented in Table 2 showed incidence and severity of *Cercospora* leaf spot of bottle gourd at farmer's field ranged from 7.50-26.67 and 2.0-13.0%, respectively. The maximum disease incidence (26.67%) with disease severity (13.0%) was noticed at Blaken, Chomu (Jaipur), followed by Govindpura (Jaipur) with disease incidence of 23.50% and disease severity of 12.33%. Minimum disease incidence (7.50%) and disease severity (2.0%) were found at locality Lunkaransar (Bikaner).

Variation in different disease parameters such as incidence and severity of *Alternaria* leaf blight and *Cercospora* leaf spot from location to location has been reported in case of many pathogen-host interactions (Singh *et al.*, 2003; Asif and Mall, 2009). Letham and Priest (1989) also observed the occurrence of powdery mildew on different cucurbits grown in South Australia and New South Wales. Saha *et al.* (2008) recorded variation in disease incidence and disease severity of damping-off (*Pythium debaryanum*) in cabbage. Factors contributing to differences in disease incidence and severity in bottle gourd as observed in various villages of four districts may probably be ascribed to variations in prevailing local environmental conditions of Rajasthan. This encompasses deviation in relative humidity, temperature and rainfall pattern among the abiotic factors and soil types as well as use of susceptible varieties against diseases.

Alternaria leaf blight and *Cercospora* leaf spot diseases may attain an alarming status and may wreak havoc in bottle gourd growing areas if not taken care well in time. Therefore, it is need of the hour to develop an effective management strategy to combat these two dreaded diseases of bottle gourd.

Table 1: Occurrence of *Alternaria* leaf blight of bottle gourd at farmer's fields in Rajasthan

S. N.	District	Name of village/ locality	Disease incidence (%)	Disease severity (%)
1.	Bikaner	20 JMD (Badrasar)	16.50	10.0
2.		Lunkaransar	10.75	6.5
3.		4 JMD (Khara No. 4)	9.50	5.0
4.		Jaisalsar, Dungargarh	21.75	13.25
5.	Sri Ganganagar	04 MLD (Old Gharsana)	13.50	5.50
6.		10 MLD (New Gharsana)	8.67	4.0
7.		36 PPN (Manaksar, Suratgarh)	16.33	8.33
8.		1 E Chhoti (Near ARS)	30.67	18.0
9.		6 LNP (Near Main canal)	9.33	5.0
10.		16 M L (Near Main canal)	12.50	6.50
11.	Hanumangarh	30 M (Pakka Saharna)	18.33	8.0
12.		Lilawali	14.50	5.67
13.		23 STG (Pili Banga)	15.75	6.5

14.	Jaipur	Ramsinghpura (Sanganer)	19.67	7.33
15.		Govindpura (Sanganer)	28.50	12.0
16.		Shikarpura (Sanganer)	31.67	22.50
17.		Maharkala (Chomu)	35.33	24.0
18.		Govindgarh (Chomu)	27.50	19.50
19.		Blaken (Chomu)	21.75	7.25
20.		Sonarawali (Chomu)	25.75	11.33

Table 2: Status of *Cercospora* leaf spot of bottle gourd at farmer's field in Rajasthan

S. N.	District	Name of village/ locality	Disease incidence (%)	Disease severity (%)
1.	Bikaner	20 JMD (Badrasar)	9.33	2.50
2.		Lunkaransar	7.50	2.0
3.		4 JMD (Khara No. 4)	12.67	6.0
4.		Jaisalsar, Dungargarh	16.25	11.5
5.	Sriganganagar	04 MLD (Old Gharsana)	13.50	7.0
6.		10 MLD (New Gharsana)	9.67	4.0
7.		36 PPN (Manaksar, Suratgarh)	6.67	3.50
8.		1 E Chhoti (Near ARS)	13.33	8.0
9.		6 LNP (Near Main canal)	18.75	12.0
10.		16 M L (Near Main canal)	15.33	6.67
11.	Hanumangarh	30 M (Pakka Saharna)	7.33	3.0
12.		Lilawali	11.67	6.50
13.		23 STG (Pili Banga)	8.75	2.75
14.	Jaipur	Ramsinghpura (Sanganer)	15.67	7.0
15.		Govindpura (Sanganer)	23.50	12.33
16.		Shikarpura (Sanganer)	17.75	9.50
17.		Maharkala (Chomu)	12.50	4.50
18.		Govindgarh (Chomu)	6.25	3.5
19.		Blaken (Chomu)	26.67	13.0
20.		Sonarawali (Chomu)	19.25	9.0

REFERENCES

- Asif, N. and Mall, T.P. 2009. Prevalence of maize diseases in Bahraich (U. P.). *Ann. Pl. Protec. Sci.*, **17(2)**: 512-513.
- Kumar, A.; Singh, B.; Kumar, M. and Naresh, R.K. 2011. Genetic variability, heritability and genetic advance study for yield and its components in bottle gourd. *Prog. Hort.*, **43(2)**: 268-270.
- Letham, D.B. and Priest, M.J. 1989. Occurrence of cleistothecia of *Sphaerotheca fulginea* on cucurbits in South Australia and New South Wales. *Australasian Pl. Path.*, **18(2)**: 35-37.
- Saha, S.; Pandey, S.; Garg, R. and Naskar, I. 2008. Management of damping-off of cabbage by seed treatment strategy. *Prog. Hort.*, **40(1)**: 38-40.
- Sarbhoy, A.K. 2006. Text Book of Mycology, IBH Publishing Ltd., New Delhi, pp. 242-291.
- Singh, A.K.; Tripathi, D.P. and Singh, S.B. 2006. Effect of different dates of transplanting on disease intensity and yield of tobacco caused by *Alternaria alternata*. *Ann. Pl. Protec. Sci.*, **14(2)**: 251- 252.
- Singh, J.; Singh, R.B. and Singh, S.K. 2003. Status of web blight of mungbean in Eastern Uttar Pradesh. *Ann. Pl. Protec. Sci.*, **11(1)**: 173- 175.