Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2019; 8(1): 1043-1044
Received: 11-11-2018
Accepted: 14-12-2018

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Survey for severity of anthracnose of cluster bean in northern Madhya Pradesh

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Abstract
Cluster bean [*Cyamopsis tetragonoloba* (L.) Taub.] is one of the important legume and vegetable crop in of India in recent years. A roving survey was conducted to assess the severity of anthracnose of cluster bean during *kharif* 2017 in Morena, Bhind, Shivpuri, Datia and Gwalior districts of northern Madhya Pradesh. Among the surveyed districts, highest severity of anthracnose was observed in Gwalior (19.23%) district followed by Datia (2.87%) while the lowest severity was observed in Bhind (0.1%) district.

Keywords: Anthracnose, disease severity, roving survey, quadrate

Introduction
Cluster bean [*Cyamopsis tetragonoloba* (L.) Taub] has a special contribution among the pulses crops grown in country. However, yield of crop is reducing because of various biotic and abiotic factors. Among, biotic factors anthracnose caused by Colletotrichum capsici is one of the most important constraint for yield reduction. The disease was first observed at Agricultural Institute, Anand by Desai and Prasad (1955). Hence, the present study was conducted with an objective to access the prevalence and intensity of anthracnose of clusterbean in major growing locations of Madhya Pradesh.

Materials and Methods
A roving survey was conducted during *kharif* 2017 to access the of severity of anthracnose of clusterbean in major growing districts (Morena, Bhind, Shivpuri, Datia and Gwalior) of northern Madhya Pradesh, on farmers fields. For such survey five villages from each district were randomly selected and from each village five fields were randomly selected and further from different quadrate sample was taken. The Percent disease index was workout using Mayee and Datar (1986) formula as follows.

$$PDI = \frac{\text{Sum of total numerical rating}}{\text{Total no. of leaves examined} \quad X \quad \text{Maximum disease rating}} x\,100$$

The data on severity of disease at village and district level were recorded and compared for analysis. During survey along with severity and cropping condition was also recorded.

Results and Discussion
Survey conducted for identification of hot spots and disease free area revealed that the anthracnose was prevalent in clusterbean growing areas in low to severe form with percent disease index ranging from 0-24.63 percent during kharif 2017. The locality wise maximum severity of anthracnose was observed in Nayagaon (24.63%) followed by Mauchh (20.63%), Richhera (20.52%), Himmatgarh (16.27%) and Panihar (14.13%). Minimum severity of anthracnose was observed in Gohad, Ater, Mehgaon and Dhanela were free from disease incidence followed by Umri (0.2%), Gormi (0.3%), Goda (0.32%), kherra (0.5%) and Dimini (0.6%). The district wise maximum severity of anthracnose was recorded in Gwalior (19.23%) district followed by Datia (2.87%), Shivpuri (1.22%), Morena (0.62%) and Bhind (0.1%). A good deal of studies on survey of anthracnose has been conducted by various workers in India and other countries (Laxman, 2006 and Chavan and Dhutraj, 2017) [3, 1].

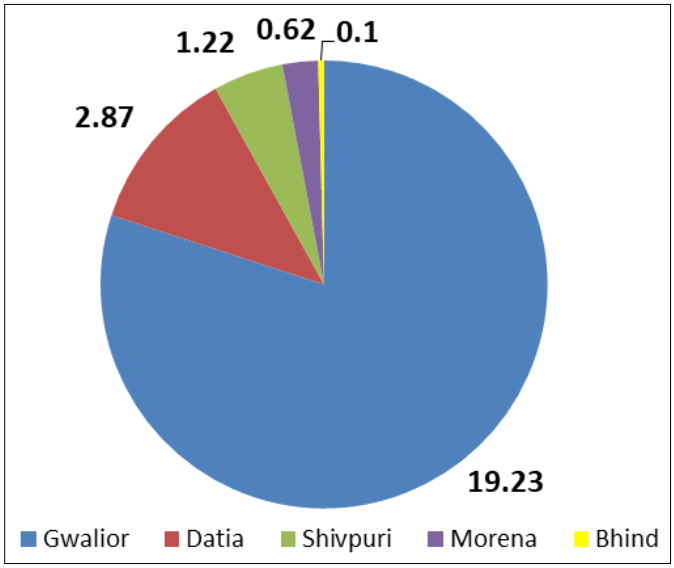

Fig 1: PDI values of anthracnose in different Districts

Table 1: Severity of anthracnose of clusterbean in northern Madhya Pradesh during *kharif* 2017

District (PDI)	Villages	Condition	Percent disease incidence(PDI)	
			range	average
Gwalior (19.23)*	Mauchh	Irrigated	15-25	20.63
	Himmatgarh	Rainfed	12-20	16.27
	Richera	Irrigated	13-28	20.52
	Nayagaon	Irrigated	15-30	24.63
	Panihar	Rainfed	10-22	14.13
Datia (2.87)*	Sitapur	Rainfed	02-04	3.36
	Tarana	Rainfed	3-6	2.43
	Vijapur	Rainfed	2-7	5.25
	Govindpur	Rainfed	0-2	1
	Mahewa	Rainfed	4-6	2.32
Shivpuri (1.22)*	Lukwasa	Rainfed	0-2	1.2
	Goda	Rainfed	0-1	0.32
	Kolarash	Rainfed	1-3	1.31
	Badarwas	Rainfed	0-3	1.5
	Dhumeshwar	Rainfed	1-4	1.8
Morena (0.62)*	Kherra	Irrigated	0-1	0.5
	Ambah	Irrigated	0-2	1
	Dhanela	Irrigated	0	0
	Dimini	Irrigated	0-1	0.6
	Morenagaon	Rainfed	1-2	1
Bhind (0.1)*	Gohad	Irrigated	0	0
	Ater	Rainfed	0	0
	Mehgaon	Irrigated	0	0
	Gormi	Irrigated	0-1	0.3
	Umri	Irrigated	0-1	0.2

* Mean PDI values

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