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Survey and surveillance of Myrothecium leaf spot disease (*Myrothecium roridum)* in soybean growing area of Chhattisgarh

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Abstract
Myrothecium leaf spot of soybean caused by *Myrothecium roridum*. Myrothecium leaf spot of soybean is occurring in almost all the major soybean growing areas of India causing about 30 per cent yield loss. Initial symptoms of the disease appear as small round or oval, brown spots with dark brown margin on leaves in the infected plant. In Survey studies an intensive disease survey of the target leaf spot disease of soybean during June to August in Kharif 2015 was undertaken in different soybean growing area at Bemetra, Saja, Mungeli, Kawarda, Lohara, Gandai, Chhuhikhadan, Khairagarh, Rajnandgaon of Chhattisgarh region. Maximum percent disease incidence (48.50%) was observed in Gandai block, followed by Mungeli (42.10%) and Rajnadgaon (40%) and minimum percent disease incidence (21.87%) of myrothecium leaf spot of soybean was found in Saja block. Maximum average percent disease index (52.5%) was observed in Gandai block, followed by Mungeli (47.5%) and Rajnadgaon (37.5%) and minimum average percent disease index (17.5%) was observed in Saja block.

Keywords: Myrothecium leaf spot, soybean, *Myrothecium roridum*, survey, surveillance

Introduction
Soybean (*Glycine max.* L. Merril) belonging to family Leguminaceae is designated as miracle bean established its potential as an industrially vital and viable oilseed crop in many areas of India. Leaf spot of soybean caused by *Myrothecium roridum* Tode ex. Fries is an important disease, which occurred in epidemic proportion entailing into colossal losses to soybean crop in Madhya Pradesh (Shrivastava and Khan, 1994, Singh and Shrivastava, 1994) [4, 6]. Myrothecium leaf spot of soybean is occurring in almost all the major soybean growing areas of India causing about 30 per cent yield loss (Shrivastava and Khan 1994) [4]. The disease severity of myrothecium leaf spot soybean was in the range of 35 to 45 % and disease incidence of myrothecium leaf spot soybean was in the range of 30 to 55 % (Singh and Shrivastava, 1994) [6]. *Myrothecium roridum* is ordinary soil fungi, and survive in this environment as saprophytes in decaying plant tissues (Ellis, 1971) [2]. Initial symptoms of the disease appear as small round or oval, brown spots with dark brown margin on leaves in the infected plant. A survey was conducted during *Kharif* 2010 in13 villages of Durg Raipur, Kawardha District to record the incidence of diseases in soybean.Six diseases namely Corynospora leaf spot, Myrothesium leaf spot, Rhyzoctonial aerial blight, Colletotricum pot blight, Indian bud blight and Bacterial pustule were recorded. (Annonymous 2010-11) [1]. Jagtap *et al.* (2012) [3] surveyed in eight districts (Parbhani, Nanded, Hingoli, Beed, Osmanabad, Jalna, Latur and] Aurangabad) of Marathwada region during June to August in Kharif, 2009 to 2010. In all, 69 soybean fields were surveyed (roving survey) for recording the severity and incidence of soybean blight.

Material and Methods
Survey and surveillance
An intensive disease survey of the myrothecium leaf spot disease of soybean during June to August in Kharif 2015 was undertaken in different soybean growing area at Bemetra, Saja, Mungeli, Kawarda, Lohara,Gandai, Chhuhikhadan, Khairagarh, Rajnandgaon of Chhattisgarh region. Soybean fields of Chhuhikhadan and Khairagarh in Rajnandgaon district, Lohara and Gandai in Kawarda district, Saja in Bemetra district were observed for recording the incidence and severity of myrothecium leaf spot disease. For recording of disease severity and disease incidence random five or six 1×1 m^2 area were marked in each field. Percent disease incidence was recorded by percent infected plant and calculated by the formula as given below.

Disease severity was recorded by using 0-9 scale according to Singh *et al.* (1982) [5] and per cent disease index (PDI) was worked out.

Where,
0 - No lesions
1 - 1% leaf area covered with lesion
3 - 1.1 - 10 % leaf area covered with lesion
5 - 10.1 – 25 % of the leaf area covered no defoliation, little damage
7 - 25.1 – 50 % leaf area covered, some leaf drop, death of a few plant damage conspicuous
9 - More than 50% leaf area covered, lesion very common on all plants, defoliation common, death of plant common, damage more than 50%.

PDI was calculated using the formula of Wheeler (1969) as given here

$$\text{Percent Disease Index (PDI)} = \frac{\text{Sum of individual rating}}{\text{Number of leaves examined}} \times \frac{100}{\text{maximum disease rating}}$$

$$\text{Percent disease incidence} = \frac{\text{Number of plant infected}}{\text{Total number of plant examined}} \times 100$$

Result

Survey and surveillance

Total seventy three soybean fields were surveyed in nine blocks belonging to four districts. Maximum eleven fields were surveyed in Lohara block while minimum five fields in Khairagarh block (Table1). The results in Table 1 and Figure 1 exhibited that the maximum percent disease incidence (48.50%) was observed in Gandai block, followed by Mungeli (42.10%), Rajnadgaon (40%), Chhuhikhadan (34.00%), Khairagarh (32.50), Kawarda (32.55), Bemetra (31.50%) and Lohara (25.00%).The minimum percent disease incidence (21.87%) of myrothecium leaf spot of soybean was found in Saja block. The soybean yield was reduced substantially due to this disease. In all, seventy three fields were surveyed and average disease incidence to the tune of 34.22% has been observed.

Table 1: Survey of myrothecium leaf spot disease incidence and percent disease index in different growing area of Chhattisgarh

S.N.	Block	Number of field surveyed	Disease incidence (%)	Percent disease index		
				Variety		Average
				JS-335	JS-9560	
1	Rajnandgaon	10	40.00	40	35	37.50
2	Khairagarh	5	32.50	35	30	32.50
3	Chhuhikhadan	9	34.00	50	20	35.00
4	Gandai	10	48.50	60	45	52.50
5	Lohara	11	25.00	30	15	22.50
6	Kawarda	7	32.55	15	45	30.00
7	Mungeli	8	42.10	35	60	47.50
8	Saja	6	21.87	25	10	17.50
9	Bemetra	8	31.50	30	20	25.00
	Total	73				
	Average		34.22	35.55	31.11	

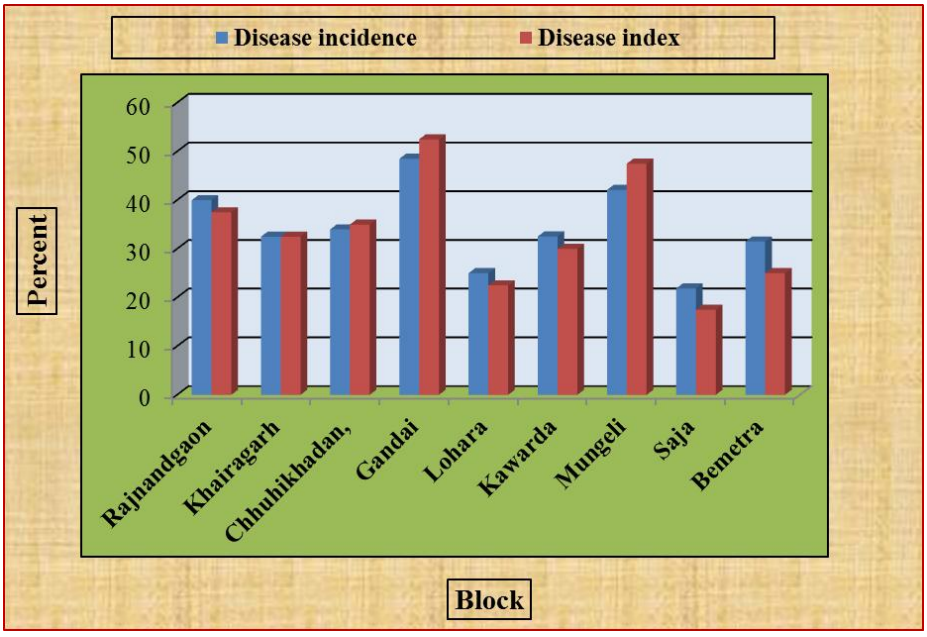

Fig. 1: Survey of myrothecium leaf spot disease incidence and disease index in different soybean growing area of Chhattisgarh

Result also indicated that the myrothecium leaf spot disease appeared in all the soybean growing fields. The maximum average percent disease index (52.50%) was observed in Gandai block, followed by Mungeli (47.50%), Rajnadgaon (37.50%), Chhuhikhadan (35%), Khairagarh (32.50%), Kawarda (30.00%), Bemetra(25.00%) and Lohara (22.50%).

The minimum average percent disease index (17.50%) was observed in Saja block. The result also showed that the variety JS-335 showed more PDI in comparison to variety JS 95-60.

Jagtap *et al.* (2012) [3] conducted a survey in eight districts of Marathwada region during June to August in Kharif, 2009 to 2010. In all, 69 soybean fields were surveyed (roving survey) for recording the severity and incidence of soybean blight. The variety JS-335 showed the maximum pod blight severity in all surveyed districts. The average disease incidence was 14.5% in Marathwada region. The highest disease incidence (23%) was noticed in Parbhani district. The lowest disease incidence (7%) was noticed in Jalna district.

References

1. Annonymous. Annual Report of Kharif crop, Department of Plant pathology IGKV, Raipur, 2010-11.
2. Ellis MB. Dematiaceous Hyphomycetes. Kew. CMI, 1971.
3. Jagtap GP, Dhopte SB, Dey U. Survey, surveillance and cultural characteristics of bacterial blight of soybean. African Journal of Agricultural Research. 2012; 7(32):4559-4563.
4. Shrivastava SK, Khan SU. Impact of host age at infection time on the severity of *Myrothecium* leaf spot disease of soybean. Indian Phytopatho. 1994; 47(2):190-191.
5. Singh BR, Sing M, Yadav MD, Dingar SM. Yield loss in mungbean due to Cercospora leaf spot, yellow mosaic, Science and culture, C. S. Azad University. Agric. & Tech. Kanpur, India. 1982; 48(12):435-436.
6. Singh SM, Shrivastava SK. Screening of soybean varieties against leaf spot disease caused by *Myrothecium roridum*. Indian Journal of Mycology and Plant Pathology. 1994; 24(3):222.
7. Wheeler BEJ. An introduction to plant diseases. John Willey and sons Ltd. London, 1969, 301p.