

Original Research Article

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Survey and Surveillance of Target Leaf Spot Disease (*Corynespora cassiicola*) in Soybean Growing Area of Chhattisgarh, India

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ABSTRACT

Target leaf spot disease of soybean caused by *Corynespora cassiicola*. The disease affects leaves, stems, pods and seeds. Leaf lesions are rounded to irregular and reddish brown; they vary from specks to big mature spots. Lesions are frequently surrounded by a dull green or yellowish green halo. 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 the minimum disease severity and incidence was observed in Bemetra block. Most of the fields in the surveyed blocks were moderately and trace infected with the disease while few were severely infected. Variety JS 335 was highly susceptible to disease in all the blocks.

Keywords

Target leaf spot,
Corynespora cassiicola.

Article Info

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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. The target leaf spot disease of soybean causes by (*Corynespora cassiicola*) was first reported in 1945 (Olive *et al.*, 1945). Now it has been found in most of soybean growing states. In Chhattisgarh it has been reported during 2002 from Raipur (Patel, 2005). The disease affects leaves, stems, pods and seeds. Leaf lesions are rounded to irregular and reddish brown; they vary from specks to big mature spots. Lesions are frequently surrounded by a dull green or

yellowish green halo. Severely affected leaves drop prematurely (Sinclair, 1982). The fungus over winters on soybean debris and seed. It can survive in a fallow field for two years.

The yield losses to an extent of 18-32 percent have been recorded in susceptible soybean lines grown in Mississippi during years when rainfall was above normal in August and September. Jagtap *et al.*, (2012) studied the eight 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.

Materials and Methods

Survey and surveillance

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. 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 m² 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) 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

Percent Disease
Index (PDI) =

$$\frac{\text{Sum of individual rating}}{\text{Number of leaves examined}} \times \frac{100}{\text{Maximum disease rating}}$$

Percent disease
Incidence =

$$\frac{\text{Number of plant infected}}{\text{Total number of plant examined}} \times 100$$

Results and Discussion

Survey and surveillance of target leaf spot disease in soybean growing area of Chhattisgarh

Data presented in table 1 indicated that the disease was prevailing in all surveyed soybean growing area of Chhattisgarh in severe to trace conditions.

Out of fifty-seven fields Target leaf spot was in severe form in five fields, moderate in twenty fields and trace in twenty-three fields while nine fields were found free from the Target leaf spot Among the surveyed fields Target leaf spot was observed maximum in eight fields of Kawardha blocks, followed by seven, seven, six fields of Khairagarh, Chhuikhadan and Gandai blocks respectively (Fig. 1). The result also showed that the incidence of Target leaf spot was more in variety JS 335 in comparison to JS 95-60. The maximum percent disease incidence (53%) was observed in Kawardha block and Khairagarh also, followed by Chhuhikhadan (50%), Gandai (47%), Saja (42%), Lohara (40%), Rajnandgaon (33%) and Mungeli (30%).

Table.1 Severity of Target leaf spot of soybean in different blocks of Chhattisgarh region

S/N	Name of Blocks	Number of field surveyed	Variety	Disease severity			
				Severe	Moderate	Trace	Free
1	Rajnandgaon	4	JS 95-60	-	1	-	-
			JS-335	-	2	1	-
2	Khairagarh	7	JS 95-60	-	1	1	-
			JS-335	1	2	2	-
3	Chhuhikadan	8	JS 95-60	-	1	2	1
			JS-335	1	2	1	-
4	Gandai	7	JS 95-60	-	1	-	1
			JS-335	1	2	2	-
5	Lohara	5	JS 95-60	-	1	1	-
			JS-335	-	2	1	-
6	Kawardha	9	JS 95-60	-	1	1	1
			JS-335	2	1	3	-
7	Mungeli	5	JS 95-60	-	-	1	1
			JS-335	-	2	1	-
8	Saja	7	JS 95-60	-	1	1	2
			JS-335	-	2	1	-
9	Bemetra	5	JS 95-60	-	-	-	2
			JS-335	-	1	1	1
GT		57		5	23	20	9

Severe: > 50%; Moderate: > 10% to < 50%; Trace: < 10%.

Table.2 Percent disease incidence target leaf spot of soybean in different blocks of Chhattisgarh region

S. No.	Blocks	Number of field surveyed	Disease incidence (%)
			(Average)
1	Rajnandgaon	5	33
2	Khairagarh	7	53
3	Chhuhikadan	8	50
4	Gandai	7	47
5	Lohara	9	40
6	Kawarda	5	53
7	Mungeli	5	30
8	Saja	7	42
9	Bemetra	5	28
Total	57	Average	41.77

Fig.1 Field infected with target leaf spot of soybean disease in different blocks of Chhattisgarh region

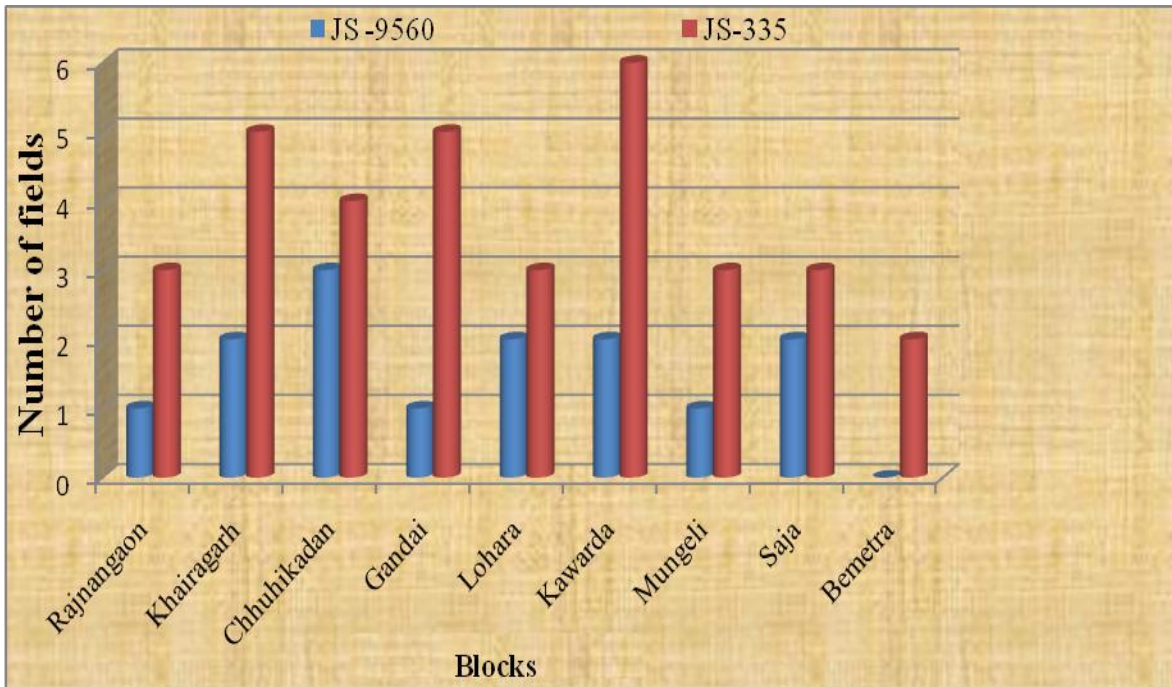
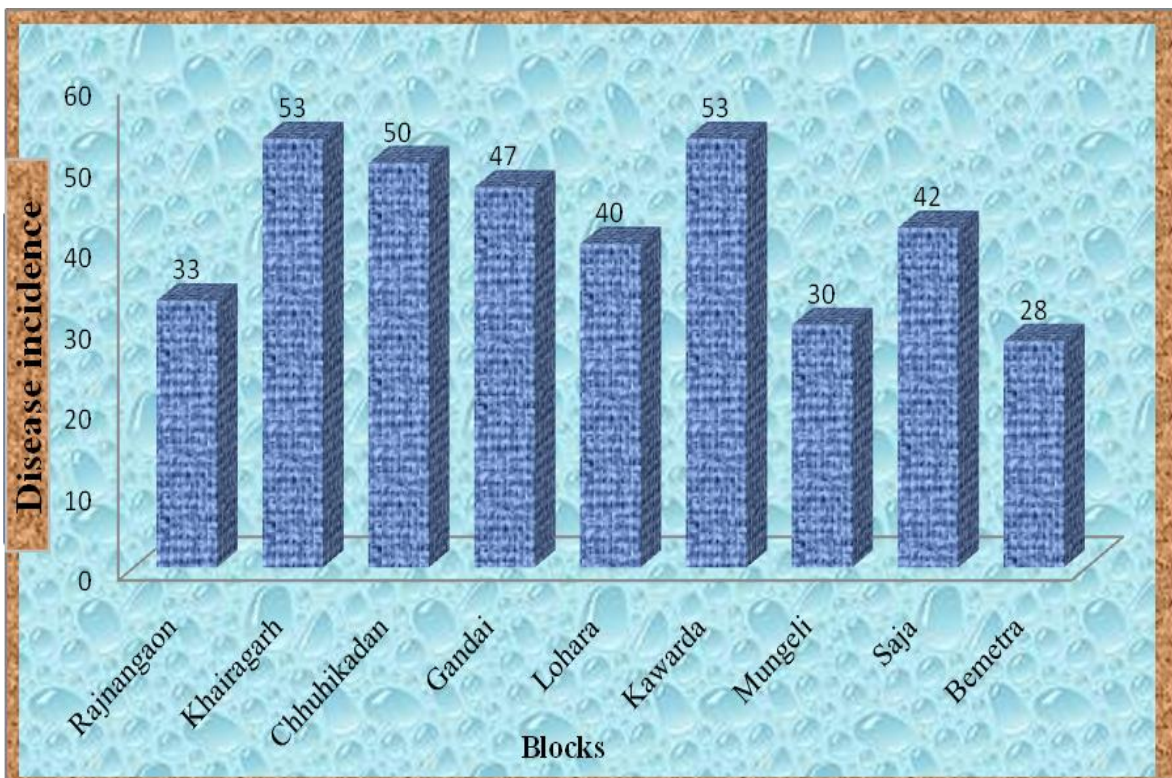


Fig.2 Percent disease incidence of target leaf spot of soybean in different blocks of Chhattisgarh region



The minimum percent disease incidence (28%) of target leaf spot of soybean was found in Bemetra block (Table 2 and Figure 2). Jagtap *et al.*, (2012), surveyed in all, 69 soybean fields of eight districts (Parbhani, Nanded, Hingoli, Beed, Osmanabad, Jalna, Latur and Aurangabad) of Marathwada region were surveyed (roving survey) for recording the severity and incidence of soybean blight during June to August in *Kharif*, 2009 to 2010.

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