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Survey on anthracnose disease of soybean (*Colletotrichum truncatum*) in selected locations of Tamil Nadu

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Abstract

Soybean is originated in India. In Tamil Nadu major soybean growing areas are of Kodaikannal, Koli hills, Nilgris, Ooty, Yercaud, Megamalai regions. Soybean belongs to a leguminous crop family that attains its complete growth in a short duration. Soybean that grows in 3 seasons where as in of Andipattam (June to July), Purattasipattam (Sep to Oct) and of Masipattam (Feb-Mar). In these season the survey is carried out in three replication methods in the year between 2019-2021. This has a varied climatic conditions of which best adaptability and for variety of cropping systems.

Keywords: Soybean, anthracnose disease, masipattam

Introduction

Soybean is originated in India. In Tamil Nadu major soybean growing areas are of Kodaikannal, Koli hills, Nilgris, Ooty, Yercaud, Megamalai regions. Soybean is either oilseeds or of pulses crop because it contains proteins, vitamins, minerals, fats. The main advantage of soybean that increase the soil fertility through nitrogen fixation. As per the survey of the 2019-2020 the area, production and productivity is of 63.4 lakhs ha, 75.44 lakhs tonnes, 1360 kg/ha respectively. (TNAU Production Technology list).

The anthracnose that affects all the stages of the crop growth. The disease that appears on the leaves, fruits, pods and even in the stem region. Black sunken lesions or reddish brown patches that appears on the plant, coloured lesions and also the veins of lower leaves that turns into black colour. The infection that affects in the early stages there is no seed formation. In this the infected seedling will produce pre and post emergence damping off and of seedling blight. (TNAU Disease Management on Vegetables and Spices Crop).

Colletotrichum truncatum is the most common species recorded on soybean. Anthracnose is an important disease of soybean, causing yield losses upto 16-100 per cent. In the present investigation an extensive survey in Tamil Nadu regions was undertaken to find out the prevalence of the disease on soybean crop.

Materials and Methods

A field plot surveying was conducted in the soybean growing regions during the *Kharif* seasons of 2019. The reasons to assess anthracnose intensity. The observations were made accordingly the random plants were selected in that particular area. The field is surveyed applying the 0-5 disease rating scale given by Mayee and Datar (1986) [4]. Replication of the intensity is recorded R₁ in the month of October 2019 whereas R₂ in the month of August 2020 finally R₃ in the month of November 2020.

Table 1: Standard disease rating (0-5) scale

Grade	Extent of infection
0	Healthy leaves
1	1-10 percent of leaf area is affected.
2	11-25 percent of leaf area is affected.
3	26-50 percent of leaf area is affected.
4	51-75 percent of leaf area is affected
5	More than 75 percent of leaf area is affected.

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Percent Disease index states that it refers to percentage of experimental subject that has the disease symptoms over the total number of experimental subjected in calculated.

$$\text{Percent Disease Index} = \frac{\text{Sum of numerical ratings}}{\text{Total no of sample} \times \text{Maximum rating grade}} \times 100$$

Table 2: Survey data of Anthracnose disease of soybean in Tamil Nadu regions

Districts	Village	Conditions	PDI range	Average
Kodaikannal (Dindugil) 14.14	Kookal	Rainfed	2-3	15.65
	Mannavanur	Rainfed	3-4	13.26
	Poondi	Rainfed	2-4	17.89
	Pombarai	Rainfed	4-5	15.39
	Thandigudi	Rainfed	3-5	12.37
	Kodaikannal	Rainfed	1-2	10.28
Namakkal (Koli hills) 15.51	Selur nadu	Irrigated	2-4	18.29
	Chithoor nadu	Rainfed	3-5	19.20
	Edapuli nadu	Rainfed	2-5	16.25
	Valappur nadu	Irrigated	4-5	14.23
	Gundur Nadu	Irrigated	0-2	9.56
Nilgiris 10.9	Kotagiri	Irrigated	0-2	9.25
	Coonoor	Irrigated	0-3	10.2
	Gudalur	Rainfed	1-3	12.25
	Avilanji	Irrigated	1-2	11.5
	Theppakadu	Rainfed	1-2	11.3
Ooty (Nilgiris) 4.8	Kukkal	Rainfed	0-1	8.3
	Thuneri	Irrigated	0	1.2
	Nanjanad	Irrigated	1-2	11.3
	Kadanad	Irrigated	0	1.5
	Hullathi	Rainfed	0	1.6
Yercaud (Salem) 17.1	Athiyur	Irrigated	4-5	18.9
	Elavadi	Irrigated	3-5	17.23
	Kanjeri	Irrigated	3-4	15.24
	Mailapatti	Irrigated	2-4	16.45
	Nagalur	Irrigated	3-5	17.5

Results and Discussion

This surveyed occur to find out the areas which has high to low severe areas of Tamilnadu locations. Here the PDI ranges from the 0-17.1% in the month Kharif seasons of 2019. Highest severity of anthracnose incidence were found in the areas of Yercaud (17.1%), which is followed by next area is of semi highest koli hills (15.51%), the next area is of moderately affected area is of Koadikannal (14.14%), then the next is of semi moderately affected area is Nilgiris (10.9%), then the next is of least affected area is Ooty (4.8%). Hence the overall incidence of the disease is found to be slight high as compared to previous years like 2016, 2017, 2018.

Conclusion

This pathogen *Colletotrichum truncatum* produces wide ranges symptoms in many alternative host plants. Evaluation of the incidence methodologies may differ from variety to variety locations to locations etc., As per the above tables had been recorder since 2 years in the place where soybean is cultivated commercially Yercaud (17.1%) and Ooty (4.8%) is the place of high and low severity of disease incidence area respectively.

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