



Occurrence and Present Situation of Cercospora Leaf Spot Disease of Cotton in South Zone of India

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ABSTRACT: *Cercospora* leaf spot caused by *Cercospora gossypina* is considered as minor disease in the past. Now a days the appearance of this disease and incidence is increasing slowly. It is an uphill task to know the presence and severity of the disease in major cotton growing areas of South Zone states namely Karnataka, Telangana, Andhra Pradesh and Tamil Nadu. An extensive survey was conducted to know the current situation and occurrence of *Cercospora* leaf spot of cotton in major cotton growing districts of South Zone States during 2021-22 crop season. *Cercospora* leaf spot symptoms were observed in surveyed farmers' fields at the end of the crop season. Fifty-five cotton fields have been covered for survey in nine major cotton growing districts of Karnataka namely Haveri (8), Gadag (4), Dharwad (8), Belagavi (8), Raichur (9), Vijayapura (7), Kalaburagi (3), Yadagiri (6) and Ballary (2). Disease incidence was recorded from 3.5 to 12.0 Percent Disease Index (PDI) with an average of 6.25 PDI. Maximum disease was recorded in Chikka Sindagi village of Vijayapura district. Fifteen fields have been surveyed in Telangana covering four districts such as Ranga Reddy (2), Warangal (4), Nirmal (5) and Adilabad (4). Moderate to less disease incidence was recorded (3.0 to 7.0 PDI) in hybrids and varieties grown in the region with an average of 5.5 PDI. Maximum (7.0 PDI) was recorded in Damera village of Warangal district. Ten fields in Kurnool district of Andhra Pradesh recorded moderate to less disease incidence (2.5 to 7.0 PDI) with an average of 5.3 PDI among five mandals covered namely Manthralayam (2), Nandavaram (1), Yemmiganur (3), Adoni (2) and Alur (2). Twenty fields were surveyed in Coimbatore district covering three taluks such as Annur (6), Kinathukadavu (5) and Coimbatore (9) and recorded less to moderate (2.0 to 8.5 PDI) disease incidence with an average of 5.5 PDI.

Keywords: *Cercospora* leaf spot, Cotton, Survey, Occurrence, Present situation.

INTRODUCTION

Cotton the 'white gold' is one of the most important commercial crops of India. Among cotton growing countries, India is the largest producer followed by China and United States. Cotton is cultivated in India over an area of 130.49 lakh hectares with a production of 337.23 lakh bales with an average productivity of 439 kg/ha (AICRP on Cotton, Annual Report 2022-23). Fungi, bacteria and viruses causing various diseases to cotton crop during entire crop growth stage from young to matured plants and plant parts. Fungal pathogens are causing a greater number of diseases compared to bacteria and virus. In India, cotton foliar diseases have been estimated to cause yield losses up to 20 to 30 per cent (Mayee and Mukewar 2007). *Cercospora* leaf spot caused by *Cercospora gossypina* is a late season disease causing considerable yield loss to seed cotton production. *Cercospora* is one of the largest fungal genera and many members pathogenic on a wide range

of plants including all major families of dicots and some monocots (Pollack, 1987). Species of *Cercospora* were considered host-specific at the level of the plant genus or family and this has led to the description of a large number of species (Groenewald *et al.*, 2005). Among fungal diseases of cotton, *Alternaria* leaf spot, *Cercospora* leaf spot and grey mildew were the predominant diseases and causing economic losses to cotton (Indira *et al.*, 2019). Initially small red colour lesions develop on leaf lamina. In due course of time, lesions expand and spots appear with white to light grey centre. Spots are circular in nature with size variation. Margins of spots may produce red colour rings. *Cercospora* leaf spot was recorded from 5.0 to 7.5 PDI in Bathinda area of Punjab and 5.0 PDI in Junagadh in Gujarat and 8.5 PDI in Coimbatore district of Tamil Nadu (AICRP on Cotton Annual Report, 2021-22). *Cercospora* leaf spot of cotton was recorded in Warangal district of Telangana and Coimbatore district of Tamil Nadu with PDI varying from 1.7 to 12.7 in Bt

hybrid cotton (AICRP on Cotton Annual Report, 2022-23). Its early appearance causes heavy defoliation in immature plants and arrests the photosynthetic activity. Due to this, boll maturation is arrested and forced boll opening is happening. Fibre maturity is severely affected due to this problem which reduces the fibre quality. To know the present situation and occurrence of Cercospora leaf spot of cotton, a detailed survey was carried out in major cotton growing areas of South Zone states namely Karnataka, Telangana, Andhra Pradesh and Tamil Nadu.

MATERIALS AND METHODS

An extensive survey was carried out to know the Occurrence and present situation on the incidence of Cercospora leaf spot disease of cotton in major cotton growing areas of South Zone states such as Karnataka, Telangana, Andhra Pradesh and Tamil Nadu during crop season of 2021-22. Cercospora leaf spot symptoms were observed and recorded during the survey in the crop maturity stage, specifically 130 days after sowing. Cercospora leaf spots coring has been done using 0-4 disease rating scale according to Sheoraj (1988). The Per cent disease index (PDI) was calculated using following formula.

$$\text{Per cent Disease Index (PDI)} = \frac{\text{Sum of all numerical ratings}}{\text{Total number of leaves observed}} \times \frac{100}{\text{Maximum grade}}$$

RESULTS AND DISCUSSION

Field survey was carried out in major cotton growing areas of South Zone covering Karnataka, Telangana, Andhra Pradesh and Tamil Nadu to know the current situation and status of Cercospora leaf spot of cotton. This disease infects matured or older leaves of the plant. Cercospora leaf spot was the second most important disease in cotton after Alternaria leaf spot in Karnataka (Indira *et al.*, 2019). Reddish lesions developed on leaves show grey to brown centre with purple or dark margin. Lesions are circular or irregular in shape and vary in size depending on the time of infection. Pathogen infected leaves turn pale in colour and fall off. Cercospora leaf spot was recorded as much as 10.0 PDI and observed in all the three cotton growing zones of India (AICRP on Cotton Annual Report 2021-22). In the field diagnosis, it is often confused and difficult to differentiate Cercospora leaf spot from other foliar diseases like target leaf spot and Stemphylium leaf spot. Precise identification of the disease symptoms at the field level can be done through microscopic observation of long, slender, whip like septate conidia. Other fungi like Stemphylium and Corynespora are differentiated based on conidial characters. Cercospora leaf spot is much studied in chilli, tomato, maize, brinjal, okra, soya bean, pepper and rubber etc. than cotton. Due to scarcity of literatures on cotton, the research articles from other crops are cited here. Banvasi *et al.* (2020) conducted Intensive survey in major okra growing regions of Raipur and Durg districts of Madhya Pradaesh (Parsada, Godhi, Bhatagaon, Ganiyari and Baktara areas) to record incidence and severity of foliar diseases during Kharif and Rabi seasons of 2016-17. Per cent Disease Incidence (PDI) of Cercospora leaf spot of okra was highest (55.60%) in Kharif season followed by Rabi season (33.80%).

So far, the Cercospora leaf spot pathogen in cotton is considered as less important disease. In recent times, it is gaining momentum and researchers are started screening for disease resistance and variability study of

pathogen. Bhaskar (2022) screened number of AICRP cotton entries against Cercospora leaf spot and concluded that six entries, recorded as resistant/tolerant, that can be utilised in resistance breeding programmes. This disease mainly causes premature defoliation which reduces yield and leads to lower fibre quality. Fifty-five cotton fields have been covered for survey in nine major cotton growing districts of Karnataka namely Haveri (8), Gadag (4), Dharwad (8), Belagavi (8), Raichur (9), Vijayapura (7), Kalaburagi (3), Yadagiri (6) and Ballary (2). Disease incidence was recorded from 3.5 to 12.0 Percent Disease Index (PDI) with an average of 6.25 PDI (Table 1). Maximum disease incidence was recorded in Chikka Sindagi village (12.0 PDI) followed by Sindagi rural (10.5 PDI) of Vijayapura district. Shivalli village of Dharwad district recorded 10.0 PDI. Indira *et al.* (2019) conducted survey on major foliar diseases of Bt cotton in North Eastern Karnataka and reported that Cercospora leaf spot severity varied from 8.50 to 30.0 percent and maximum was recorded in Indira Nagar region of Raichur district. Cercospora leaf spot incidence on chilli varied from 32.4 to 38.6 percent and severity recorded from 13.2 to 17.4 per cent in different parts of Bangladesh (Islam *et al.*, 2015).

It has been observed that, fields under rainfed cultivation recorded more disease incidence compared to irrigated fields. Fields visited in Vijayapura district were mostly rainfed and exposed to multiple stress conditions. In rainfed conditions, water and nutrient availability are less and plants are subjected to stress which favours the pathogen infection. Survey was carried out during Kharif-2019 in the three major groundnut growing tehsils (Nokha, Lunkaransar and Shri Dungargarh) of Bikaner district to know the incidence of early leaf spot of ground nut caused by *Cercospora arachidicola*. Maximum disease intensity was observed in Shri Dungargarh tehsil (25.87%) followed by Lunkaransar tehsil (19.32%) at 45-60 days old crop.

Table 1: Percent Disease Index (PDI) of Cercospora leaf spot recorded in different districts of Karnataka during survey.

Sr. No.	Place of collection			Hybrid (H)	Cercospora leaf spot incidence (PDI)	GPS	
	District	Taluk	Village			Latitude	Longitude
1.	Haveri	Shiggaon	Shiggaon	MRC 7383 BGII	4.0	14° 59' 06"	75° 13' 32"
2.	Haveri	Siggaon	Hanumanabal	MRC 7353 BGII	3.5	14° 58' 53"	78° 15' 49"
3.	Haveri	Savanur	Gundur	Neelam BGII	6.0	14° 58' 50"	75° 18' 40"
4.	Haveri	Savanur	Huvalikoppi	Ajeet 155 BGII	7.0	14° 57' 54"	75° 20' 01"
5.	Haveri	Savanur	Mannangi	MRC 7383 BGII	5.5	14° 52' 22"	75° 21' 22"
6.	Haveri	Haveri	Kurabagond	MRC 7353 BGII	4.5	14° 45' 0"	75° 24' 13"
7.	Haveri	Byadgi	Shankaripura	Ajeet 155 BGII	6.5	14° 42' 18"	75° 23' 40"
8.	Haveri	Byadgi	Mottebennur	MRC 7353 BGII	8.0	14° 41' 02"	75° 30' 46"
9.	Gadag	Lakshmeshwar	Muragund	H. Sport BGII	6.0	15° 19' 0"	75° 33' 40"
10.	Gadag	Lakshmeshwar	Ramgiri	MRC 7383 BGII	5.0	15° 08' 23"	75° 25' 49"
11.	Gadag	Gadag	Harti	MRC 7353 BGII	5.5	15° 22' 0"	75° 35' 38"
12.	Gadag	Shirahatti	Gajanur	Ajeet 155 BGII	8.5	15° 11' 45"	75° 30' 05"
13.	Dharwad	Dharwad	ARS Dharwad farm	Ajeet 155 BGII	7.5	15° 27' 39"	75° 01' 58"
14.	Dharwad	Dharwad	Shivalli	MRC 7353 BGII	10.0	15° 26' 49"	75° 07' 46"
15.	Dharwad	Hubballi	Byakatti	Jaadoo BGII	4.5	15° 27' 13"	75° 13' 21"
16.	Dharwad	Hubballi	Hebsur	MRC7518 BGII	9.0	15° 27' 45"	75° 18' 11"
17.	Dharwad	Dharwad	UAS Dharwad	Ajeet 155 BGII	8.0	15° 3' 14"	75° 58' 42"
18.	Dharwad	Dharwad	Tadakod	Goldy 333 BGII	5.0	15° 38' 25"	74° 55' 22"
19.	Dharwad	Navalagund	Navalagund	MRC7353 BGII	5.5	15° 32' 20"	75° 21' 38"
20.	Dharwad	Annigeri	Annigeri	Ajeet 155 BGII	7.0	15° 26' 05"	75° 22' 19"
21.	Belagavi	Bailahongal	Budarkatti	MRC7383 BGII	9.0	15° 41' 24"	75° 54' 41"
22.	Belagavi	Bailahongal	Haraki	MRC7383 BGII	7.5	15° 55' 20"	75° 54' 50"
23.	Belagavi	Saundatti	Udikeri	Ajeet 155 BGII	5.5	15° 43' 12"	74° 56' 42"
24.	Belagavi	Saundatti	Sutagatti	Ajeet 199 BGII	6.0	15° 43' 52"	74° 58' 54"
25.	Belagavi	Saundatti	Harikatti	First Class BGII	7.0	15° 44' 03"	75° 01' 30"
26.	Belagavi	Bailahongal	Nayanagar	Yuva BGII	3.5	15° 48' 15"	75° 54' 02"
27.	Belagavi	Bailahongal	Murakumbi	ATM BGII	5.0	15° 50' 12"	75° 52' 23"
28.	Belagavi	Belagavi	Hanumanatti	Puli BGII	6.5	15° 53' 27"	74° 43' 18"
29.	Raichur	Devadurga	Sunkeshawargal	Jaadoo BG II	7.5	16° 19' 46"	77° 05' 13"
30.	Raichur	Devadurga	Masarakal	Jaadoo BG II	5.0	15° 21' 40"	77° 01' 42"
31.	Raichur	Devadurga	Karigudda Indira Nagar	MRC7353 BGII	4.5	16° 25' 14"	76° 53' 49"
32.	Raichur	Raichur	Yeragera	Ajeet 155BGII	3.0	16° 05' 08"	77° 24' 41"
33.	Raichur	Raichur	Kerebudur	Kaveri BGII	4.0	15° 88' 49"	77° 22' 16"
34.	Raichur	Raichur	Askihare	RCH 668 BGII	5.5	16° 12' 53"	77° 19' 14"
35.	Raichur	Raichur	Unichalguda	Ajeet 155BGII	6.0	16° 12' 01"	77° 15' 04"
36.	Raichur	Raichur	Raghunanthalli	Kaveri seeds BGII	8.0	16° 12' 04"	77° 10' 54"
37.	Raichur	Manvi	Manvi	Jaadoo BG II	6.5	15° 12' 55"	76° 54' 36"
38.	Vijayapura	Talikote	Maileshwar	Yuva BGII	6.0	16° 27' 22"	76° 21' 13"
39.	Vijayapura	Talikote	Bommanahalli	Ajeet 155 BGII	8.0	16° 31' 27"	76° 17' 56"
40.	Vijayapura	DevarHipparagi	Boothihadona	Lakshmi Gold BGII	4.0	16° 39' 43"	76° 06' 32"
41.	Vijayapura	DevarHipparagi	Chikkaruki	SWCH 4749 BGII	2.5	16° 56' 59"	76° 01' 37"
42.	Vijayapura	BasavanaBakewadi	Hunashyal	Ajeet 155 BGII	5.5	16° 33' 58"	76° 01' 36"
43.	Vijayapura	Sindagi	ChikkaSindagi	Sanket BGII	12.0	16° 53' 31"	76° 12' 51"
44.	Vijayapura	Sindagi	Sindagi rural	Super Carpet BGII	10.5	16° 16' 32"	76° 16' 33"
45.	Kalaburagi	Jevargi	Hipperga S. Nelogi	Jaadoo BGII	7.0	17° 0' 19"	76° 34' 26"
46.	Kalaburagi	Jevargi	Jevargi rural	Raja BGII	6.0	17° 0' 55"	76° 44' 30"
47.	Kalaburagi	Jevargi	Jalapur	Jaadoo BGII	7.5	16° 55' 47"	76° 45' 53"
48.	Yadagiri	Shahpur	B' gudi	Yuva BGII	6.5	16° 44' 36"	76° 48' 02"
49.	Yadagiri	Shapur	Dorannahalli	Jaadoo BGII	7.0	16° 43' 34"	76° 55' 51"
50.	Yadagiri	Yadagiri	Bimal	Ankur BGII	2.5	16° 43' 59"	77° 06' 51"
51.	Yadagiri	Wadagere	Naikal	Yuva BGII	7.5	16° 43' 48"	77° 04' 37"
52.	Yadagiri	Wadagere	Gulsaram	Jaadoo BGII	5.0	16° 44' 01"	77° 06' 40"
53.	Yadagiri	Wadagere	Gulsaram -2	Yuva BGII	4.0	16° 44' 56"	77° 08' 02"
54.	Ballary	Ballary	Shivapuram	Jaadoo BGII	7.5	15° 11' 09"	76° 59' 15"
55.	Ballary	Ballary	Somasamudra	Raja BGII	8.0	15° 12' 55"	76° 54' 36"

Fifteen fields have been surveyed in Telangana covering four districts such as Ranga Reddy (2), Warangal (4), Nirmal (5) and Adilabad (4). Moderate to less disease incidence was recorded (3.0 to 7.0 PDI) in hybrids and varieties grown in the region with an average of 5.5 PDI (Table 2). Maximum (7.0 PDI) was recorded in Damera village of Warangal district. Eighty to ninety percent of the melon plants grown under glasshouse conditions were infected by *Cercospora* leaf spot in Gochang area in Korea (Park *et al.*, 2020). When we conducted previous survey on *Alternaria* leaf spot, highest PDI and highly virulent isolates were recorded from Telangana. But this time, not much *Cercospora* leaf spot disease incidence was observed. The climatic conditions and other factors may not favour the occurrence and spread of this disease. Ten fields in Kurnool district of Andhra Pradesh recorded moderate to less disease incidence (2.5 to 7.0 PDI) with an average of 5.3 PDI (Table 3) among five mandals namely Manthralayam (2), Nandavaram (1), Yemmiganur (3), Adoni (2) and Alur (2). Ninety-two Bt and five Non Bt cotton hybrids were evaluated against foliar diseases at RARS, Guntur, Andhra Pradesh and Tulasi-118 BG-II was found free from *Cercospora* leaf spot and seven hybrids viz., ABCH-1020 Bt, GK-207 Bt, RCH-368 Bt, Dhruv Bt, ACH-33-1 Bt, NCS-854 BG-II and NHH-44 Bt recorded resistant reaction (Bhattiprolu *et al.*, 2017). Twenty fields were surveyed in Coimbatore district covering three taluks such as Annur (6), Kinathukadavu (5) and Coimbatore (9) and recorded less to moderate (2.0 to 8.5 PDI) disease incidence with an average of 5.5 PDI (Table 4). The cotton growing areas of Tamil Nadu to record fungal leaf spot disease of cotton including *Alternaria*, *Cercospora*, *Myrothecium* and found that disease incidence ranged from 8.5 to 19.8 PDI. In Andhra Pradesh and Tamil Nadu, the disease incidence was less due to irrigated conditions. Kumar *et al.* (2021) carried out survey for leaf spot of mung bean

caused by *Cercospora canescens* in five districts of Rajasthan. They found that disease incidence varied from 29.28 to 51.20 in surveyed areas with a mean PDI of 44.25.

Plant stress is the main reason which reduces the plant immunity and increases the susceptibility to pathogens especially foliar fungi, that causes leaf spots and blights. Balanced nutrition (potassium and others) and timely irrigation schedule will reduce the stress in plants and increase the plant immunity to pathogens. Maintaining the plant vigour is foremost precaution measures to be followed for prevention of early infection of *Cercospora* in cotton. Removing and burning of infected plant debris will further reduce the inoculum density and disease incidence. Researchers stated that potassium deficiency in soil and plant tissues along with moisture stress are the main factors for reducing the plant vigour that favours the pathogen attack in weaker or less immune plants. Poor root development in nutrient deficient plants favours pathogen infection in plants. Increased boll load in plants and less uptake of potassium and other nutrients from soil impacting the plant innate immunity. Frequent rains coupled with excess moisture favours the disease development in plants.

During the survey it was observed that the *Cercospora* pathogen was infecting cotton plants in abiotic stress conditions. Nutrient and moisture stress are the two main factors which influencing the disease appearance and its severity on plants. In some fields, though nutrient application and availability are optimum, uptake is hindered by water availability. Plants with heavy boll load requires optimum nutrient and moisture in time. Premature defoliation was observed in severely infected fields. Those fields, bolls are forced to open due to arrest of photosynthetic activity and fibre quality is seriously affected. In future, there is lot possibility that *Cercospora* leaf spot disease of cotton may emerge as major disease.

Table 2: Percent Disease Index (PDI) of *Cercospora* leaf spot recorded in different districts of Telangana during survey.

Sr. No.	Place of collection			Hybrid (H)	Cercospora leaf spot incidence (PDI)	GPS	
	District	Taluk	Village			Latitude	Longitude
1.	Ranga Reddy	Shankarpally	Maharajpet (Mahyco farm)	BGII hybrid	6.5	17° 25' 07"	70° 13' 35"
2.	Ranga Reddy	Shankarpally	Maharajpet (Rallis farm)	BGII hybrid	5.5	17° 23' 28"	78° 12' 52"
3.	Warangal	Warangal	RARS farm	Rasi Neo BGII	6.0	18° 0' 39"	79° 35' 51"
4.	Warangal	Warangal	Oorugonda	BGII hybrid	5.0	18° 25' 39"	78° 39' 11"
5.	Warangal	Damera	Damera	Goldi 333 BGII	7.0	18° 03' 23"	79° 39' 25"
6.	Warangal	Damera	Oglapur	Rasi 659 BGII	5.0	18° 02' 57"	79° 39' 52"
7.	Nirmal	Mudhole	ARS farm, Mudhole	Co-14	7.0	18° 58' 23"	77° 55' 09"
8.	Nirmal	Mudhole	Dahegaon	Rasi 659 BGII	4.0	19° 42' 51"	77° 56' 36"
9.	Nirmal	Bhainsa	Thimmapur	V-Sport BGII	5.0	19° 06' 15"	78° 02' 14"
10.	Nirmal	Dilwarpur	Rampur	Ajeet 155BGII	6.5	19° 05' 41"	78° 11' 34"
11.	Nirmal	Dilwarpur	Sirgapur	Rasi 659 BGII	3.0	19° 05' 46"	78° 17' 26"
12.	Adilabad	Ichoda	Islam Nagar	Rasi Neo BGII	6.5	19° 23' 20"	78° 26' 41"
13.	Adilabad	Neradikonda	Neradigonda	Ajeet 155BGII	5.0	19° 18' 42"	78° 24' 38"
14.	Adilabad	Adilabad	ARS farm	Ajeet 155BGII	4.0	19° 38' 02"	78° 31' 08"
15.	Adilabad	Adilabad	ARS farm	BGII hybrid	6.5	19° 38' 56"	78° 31' 11"

Table 3: Percent Disease Index (PDI) of Cercospora leaf spot recorded in Kurnool district of Andhra Pradesh during survey.

Sr. No.	Place of collection			Hybrid (H)	Cercospora leaf spot incidence (PDI)	GPS	
	District	Mandal	Village			Latitude	Longitude
1.	Kurnool	Manthralayam	Manthralayam	Jaadoo BG II	6.0	15° 55' 53"	77° 25' 16"
2.	Kurnool	Manthralayam	Chikaladona	Jaadoo BG II	7.0	15° 52' 50"	77° 25' 37"
3.	Kurnool	Nandavaram	Dharmapuram	Rasi Neo BGII	5.0	15° 48' 05"	77° 26' 07"
4.	Kurnool	Yemmiganur	Halaharvi	Rasi Neo BGII	2.5	15° 50' 21"	77° 26' 34"
5.	Kurnool	Yemmiganur	Hanumapuram	Yuva BGII	5.0	15° 44' 24"	77° 26' 19"
6.	Kurnool	Yemmiganur	Kotekal	ATM BGII	6.5	15° 41' 34"	77° 24' 40"
7.	Kurnool	Adoni	Adoni	Jaadoo BGII	5.0	15° 36' 11"	77° 20' 21"
8.	Kurnool	Adoni	Nayalapura	Yuva BGII	5.5	15° 39' 04"	77° 21' 0"
9.	Kurnool	Alur	Manikurthi	Rasi Neo BGII	6.5	15° 29' 32"	77° 14' 36"
10.	Kurnool	Alur	Manikurthi	Jaadoo BGII	4.0	15° 41' 26"	77° 01' 26"

Table 4: Percent Disease Index (PDI) of Cercospora leaf spot recorded in Coimbatore district of Tamil Nadu during survey.

Sr. No.	Place of collection		Variety (V)/ Hybrid (H)	Cercospora leaf spot incidence (PDI)	GPS	
	Block	Village			Latitude	Longitude
1.	Annur	Allapalayam	Mahyco BGII (H)	4.5	11° 14' 54"	77° 09' 47"
2.	Annur	Rudriyampalayam	RCH 2 BGII (H)	5.5	11° 14' 38"	77° 09' 12"
3.	Annur	Kumaragoundanpudur	Mahyco BGII (H)	2.0	11° 12' 57"	77° 08' 21"
4.	Annur	Kanjappalli	Mahyco BGII (H)	3.5	11° 12' 42"	77° 08' 17"
5.	Annur	Mathireddipalayam	RCH 2 BG II (H)	7.5	11° 16' 25"	77° 08' 11"
6.	Annur	Kaanurpudur	RCH 2 BG II (H)	4.0	11° 16' 21"	77° 10' 38"
7.	Kinathukkadavu	Sattakalpudur	Ankur HB 2110 BG II (H)	5.5	10° 49' 06"	76° 55' 24"
8.	Kinathukkadavu	Kallapuram	MRC 6918 XXL (H)	8.0	10° 50' 16"	76° 59' 09"
9.	Kinathukkadavu	Sokkanur	MRC BGII (H)	8.5	10° 48' 24"	76° 55' 45"
10.	Kinathukkadavu	Palanigoundanur	Ankur HB 2110 BG II (H)	6.0	10° 47' 48"	76° 57' 01"
11.	Kinathukkadavu	Singarayapuram	Ankur HB 2110 BG II (H)	5.0	10° 47' 47"	76° 57' 48"
12.	Coimbatore	TNAU Cotton	LRA 5166 (V)	6.5	11° 00' 55"	76° 55' 36"
13.	Coimbatore	TNAU Cotton	MCU 5 (V)	2.5	11° 01' 17"	76° 55' 42"
14.	Coimbatore	TNAU Cotton	RCH 2 BG II (H)	7.5	11° 01' 24"	76° 56' 40"
15.	Coimbatore	TNAU Cotton	Co 14 (V)	7.0	11° 01' 14"	76° 55' 38"
16.	Coimbatore	TNAU Cotton	MRC 7375 (H)	8.0	11° 00' 55"	76° 55' 38"
17.	Coimbatore	CICR RS	Subhiksha (V)	3.0	11° 00' 54"	76° 55' 43"
18.	Coimbatore	CICR RS	Suraj (V)	5.5	11° 00' 59"	76° 55' 39"
19.	Coimbatore	CICR RS	Suraksha (V)	3.5	11° 00' 49"	76° 55' 31"
20.	Coimbatore	CICR RS (New area)	Suvin (V)	7.0	11° 00' 36"	76° 54' 51"

CONCLUSIONS

Cercospora leaf spot of cotton is observed and recorded in all cotton growing states of South Zone. PDI varied from 2.5 to 12.0 in surveyed area. Nutrient and water stress are the two major factors facilitate the pathogen infection and disease severity. Premature defoliation occurs due to this disease which results in immature fibre development. Proper irrigation and nutrient management will reduce the appearance of the Cercospora leaf spot of cotton and yield reduction.

FUTURE SCOPE

Collection of a greater number of Cercospora leaf spot samples from major cotton growing areas of India and study on cultural, morphological, pathological variability and genetic diversity will precisely identify the virulence map of the pathogen in India. It will be further useful for disease resistance breeding programmes and management aspects.

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