



Survey for the status of anthracnose of greengram in Northern Karnataka

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Abstract : A roving survey was conducted to assess the incidence of anthracnose of greengram during *Kharif* season of 2007-08 and 2008-09 in Bagalkot, Belgaum, Bellary, Bidar, Bijapur, Dharwad, Gadag, Gulbarga, Haveri, Koppal and Raichur districts of northern Karnataka. The disease severity during *Kharif* 2008-09 (38.34%) was higher than *Kharif* 2007-08 (35.53 %). The disease severity was highest in Bidar district (49.43%) followed by Gulbarga district (48.12 %) Humnabad taluk of Bidar district and Chincholli taluk in Gulbarga district were worst hit due to disease. Indi taluk in Bijapur district recorded least disease severity in both the years. Some fields in Chitaguppa, Dubalgundi (Bidar district) and Nidagunda (Gulbarga district) recorded up to 60 per cent disease severity during *Kharif* 2008-09. The congenial weather conditions like frequent rains, moderate temperature coupled with higher humidity might have helped in building up of high disease pressure in Bidar and Gulbarga districts.

Key Words : Survey, Greengram, Anthracnose, Disease severity, Weather

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INTRODUCTION

Greengram (*Vigna radiata* L.) is one of the important pulse crops of India. It is quite versatile crop grown for seeds, green manure and forage and it is also considered as “Golden Bean”. Presently in India greengram is cultivated over an area of 32.99 lakh hectare with a production of 13.74 lakh tones (Prasad, 2006). The major greengram growing states are Orissa, Maharashtra, Andra Pradesh, Rajasthan, Karnataka and Gujarat. It ranks third among all pulses grown in India after chickpea and pigeonpea. The Hyderabad Karnataka area particularly Bidar and Gulbarga districts has an extensive cultivated area of greengram, pigeonpea and chickpea hence this regions are called as “pulse bowl” of Karnataka. In Karnataka, anthracnose caused by *Colletotrichum truncatum* (Schw.) Andrus and Moore is one of the major diseases of greengram. In northern Karnataka, anthracnose severity was in the range of 18.2 to 86.57 per cent (Laxman, 2006). Very little work has been done on systematic survey of this disease in northern Karnataka. Hence, present investigation was initiated

on survey for anthracnose in major greengram growing districts of northern Karnataka, to identify the incidence of the disease over time and geographical locations.

MATERIALS AND METHODS

Roving method of survey was followed to assess the incidence of anthracnose in eleven major greengram growing districts of Northern Karnataka. The survey was conducted during *Kharif* 2007-08 and 2008-09 in three taluks of Bagalkot, one taluk of Belgaum, two taluks of Bellary, five taluks of Bidar, two talukas of Bijapur, four taluks of Dharwad, three taluks of Gadag, four taluks of Gulbarga, three taluks of Haveri, two taluks of Koppal and two taluks of Raichur districts. In each taluka, minimum of five villages were selected and in each village, minimum of five fields were selected to assess the severity of greengram anthracnose.

The anthracnose severity was recorded by following 0 – 9 scale of Mayee and Datar (1986). Further, these scales were converted to per cent disease index (PDI) using the formula

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given by Wheeler (1969).

$$PDI = \frac{\text{Sum of individual disease ratings}}{\text{No. of observations assessed}} \times \frac{100}{\text{Maximum disease rating}}$$

RESULTS AND DISCUSSION

The village-wise disease severity has been presented in Table 1 and 2 for *Kharif* 2007 and *Kharif* 2008, respectively.

Data pertaining to survey conducted during *Kharif* 2007 as presented in Table 1 revealed that, anthracnose of greengram was noticed with a range of 21.36 to 58.97 per cent. The anthracnose severity in Bagalkot district ranged from 25.15 per cent (Ballur) to 37.25 per cent (Bevoor). The disease index ranged between 27.22 (Inchal) to 35.20 per cent (Belavadi) in Belgaum district. In Bellary district, the disease ranged between 20.15 per cent (Sonna) to 33.16 per cent (Itagi). In Bidar, the disease index varied from 35.62 (Kamthan) to 60.54 per cent (Dubalgundi). In Bijapur district, the disease index ranged between 19.71 per cent (Halsangi) to 25.36 per cent (Almel). The disease index ranged between 27.81 (Gambyapur) to 50.17 per cent (Hirenarti) in Dharwad district. In Gadag district, the disease index ranged between 35.16 per cent (Advisomapur) to 52.64 per cent (Kalkeri). In Gulbarga, the disease index varied from 35.29 (Tengali) to 60.19 per cent (Pechanpalli). In Haveri district, the disease index ranged between 32.18 per cent (Basapur) to 41.08 per cent (Antarvalli). In Koppal, the disease index varied from 27.33 (Chikkenkoppa) to 38.11 per cent (Talkal). The disease index ranged between 26.75 (Guragunta) to 35.22 per cent (Heerapur) in Raichur district.

During *Kharif* 2008, the disease severity was noticed with a range of 24.67 to 60.07 per cent (Table 2). In Bagalkot district, the anthracnose severity ranged from 28.52 per cent (Sunag) to 41.27 per cent (Bevoor). In Belgaum district, the disease index was in the range of 28.66 per cent (Inachal) to 40.16 per cent (Nesargi). The disease index in Bellary was in the range of 22.51 per cent (Hampasagar) to 35.21 per cent (Masalwad). In Bidar, the disease index varied from 40.31 per cent (Janawad) to 61.80 per cent (Chitaguppa). In Bijapur district, the disease index ranged between 20.19 per cent (Golasar) to 30.06 per cent (Atharga). The disease index ranged between 30.56 per cent (Kannyanayakanakoppa) to 52.41 per cent (Hirenarti) in Dharwad district. In Gadag district, the disease index ranged between 38.43 per cent (Hulkoti) to 54.17 per cent (Chikkanaragund). In Gulbarga, the disease index varied from 38.91 per cent (Kerur) to 60.10 per cent (Nidagunda). In Haveri district, the disease index ranged between 36.75 per cent (Hosalli) to 46.19 per cent (Kodihalli), while in Koppal district the range was 29.27 per cent (Hanumasagar) to 40.10 per cent (Talkal). Similarly, in Raichur district, the disease index was in the range of 29.78 per cent (Gudanal) to 38.61 per cent (Matmari).

The consolidated district-wise observation on severity

is given in Table 3. The data indicated that, the disease appeared to be in severe form during both the years (*Kharif* 2007 and 2008). But, the severity during *Kharif* 2008 was more (38.34%) than *Kharif* 2007 (35.53%).

During *Kharif* 2007, highest disease severity was observed in Bidar district (48.35%) followed by Gulbarga (46.94%), Gadag (43.40%), Dharwad (41.32%), Haveri (38.74%), Koppal (31.88%), Belgaum (31.87%), Raichur (30.62%), Bagalkot (28.51%), Bellary (27.13%) and Bijapur (22.11%). Among the taluks, Humnabad of Bidar district recorded maximum severity (58.97%) followed by Chincholli (54.27%) of Gulbarga district. All other talukas recorded less than 51 per cent. Indi taluk of Bijapur district recorded the least severity (21.36%).

During *Kharif* 2008, the severity of anthracnose was more compared to *Kharif* 2007 in all surveyed talukas. Highest severity was observed in Bidar district (50.51%), followed by Gulbarga (49.30%), Gadag (45.78%), Dharwad (43.83%), Haveri (41.05%), Belgaum (36.02%), Raichur (34.57%), Koppal (33.81%), Bagalkot (32.31%), Bellary (29.00%) and Bijapur (25.60%) districts. Humnabad taluk of Bidar district recorded highest severity (60.07%) followed by Chincholli (56.80%) and Sedam (52.19%) talukas in Gulbarga district, Basavakalyan (51.68%), taluk of Bidar district and Naragund (51.49%) of Gadag district. All other talukas recorded less than 51 per cent severity. Indi taluka of Bijapur district recorded the least severity (24.67%).

In the present study, an intensive roving survey for anthracnose of greengram was carried out during *Kharif* 2007 and 2008 in major greengram growing areas of northern Karnataka to get precise information on the distribution and intensity of the disease. The data on survey revealed that the anthracnose severity varied from locality to locality, because of type of variety grown, environmental conditions, cropping pattern and build up of inoculum. The average disease severity varied in various locations in different districts owing to varied agro-climatic conditions and also different cultivars used. In northern Karnataka, the disease severity was found more in Bidar district (49.43%) followed by Gulbarga (48.12%) and Gadag (44.59%) and the least in Bijapur with 23.86 per cent. Such variations in anthracnose severity and wide spread nature have been reported by earlier workers (Saxena and Gupta, 1981; Madhusudhan, 2002 and Laxman, 2006). However, on an average, disease severity was higher during 2008 (38.34%) compared to 2007 (35.53%). The higher incidence of anthracnose during *Kharif* 2008 may be attributed to the low temperature and high relative humidity prevailing during the crop period which were favourable for disease development and spread.

With respect to individual talukas, Humnabad taluka (59.52%) of Bidar district recorded highest disease severity followed by Chincholli taluka (55.54%) of Gulbarga district, wherein conditions for development and spread of the disease

Table 1: Survey for the severity of anthracnose of greengram caused by *Colletotrichum truncatum* during Kharif 2007 in different villages of northern Karnataka

Sr. No.	District	Taluk	Village	No. of fields	Stage of the crop (DAS)	Per cent disease index (PDI)		
1.	Bagalkot	Bagalkot	Anagawadi	5	35	28.56		
			Bevoor	6	45	37.25		
			Halloor	5	35	30.16		
			Kamatagi	7	35	29.22		
			Sannapur	5	35	27.75		
		Mean					30.59	
		Bilagi	Amalzari	5	35	27.55		
			Ballur	5	35	25.15		
			Sunag	6	40	27.70		
			Tumarmatti	5	38	26.15		
			Yadahalli	6	40	28.25		
			Mean				26.96	
			Hungund	Amingad	6	40	28.75	
		Ilakal		5	42	29.78		
		Kandagallu		5	35	27.63		
		Karadi		6	40	28.21		
		Kesarwadi		5	32	25.55		
		Mean					27.98	
		2.	Belgaum	Bailhongal	Belavadi	6	45	35.20
					Budarakatti	5	40	30.16
Inchal	5				40	27.22		
Kenganur	5				41	32.15		
Nayanagar	5				45	34.60		
Mean						31.87		
3.	Bellary	Hadagali	Hagarnoor	5	32	28.75		
			Hirehadagali	6	35	30.25		
			Holgundi	5	35	31.40		
			Itagi	5	45	33.16		
			Uattangi	6	30	25.81		
		Mean				29.87		
		Hagaribommanalli	Maratagi	6	35	21.85		
			Morigeri	5	40	27.22		
			Ramnagar	5	42	30.02		
			Shivanandnagar	5	35	22.65		
			Sonna	6	30	20.15		
		Mean				24.38		
		4.	Bidar	Aurad	Kandagul	5	45	41.55
					Khanapur	5	40	40.61
Kouta(B)	6				45	49.28		
Kouta (K)	5				45	45.16		
Santapur	6				48	50.23		
Mean						45.37		

Table 1: Contd.....

Table 1: Contd.....

	Basavakalyan	Dhanuur	5	50	50.12	
		Kherda	5	50	60.11	
		Rajeshwar	6	45	48.31	
		Rajola	6	45	45.21	
		Yarabag	5	50	49.75	
	Mean				50.70	
5.	Bijapur	Bhalki	Byalhalli	5	50	49.98
			Chalkapur	6	45	43.11
			Halbarga	6	45	47.52
			Mehekar	5	45	44.67
			Nittur	5	48	45.29
	Mean				46.11	
	Bidar	Chikpeth	6	45	41.34	
		Janawad	5	40	39.75	
		Kamthan	5	40	35.62	
		Markhal	5	40	45.23	
		Noubad	5	45	41.08	
	Mean				40.60	
	Humnabad	Alur	6	50	56.71	
		Dhummansur	5	50	59.72	
		Dubalgundi	5	52	60.54	
		Hallikhed (B)	5	50	60.21	
		Nimbur	6	45	57.65	
	Mean				58.97	
	Indi	Chadchan	5	35	20.15	
		Halsangi	6	35	19.71	
		Rodagi	5	40	22.10	
		Salotagi	5	35	23.78	
		Tamba	5	35	21.06	
	Mean				21.36	
	Sindagi	Almel	6	45	25.36	
		Koralli	5	35	21.41	
		Malaghan	5	35	19.75	
		Shivanagi	5	30	23.18	
		Somajal	6	40	24.53	
	Mean				22.85	
6.	Dharwad	Dharwad	Garag	6	45	41.30
			Lokur	6	50	48.21
			Narendra	5	50	46.53
			Neeralkatti	5	55	49.62
			Tadkod	5	45	39.28
	Mean				44.98	
	Hubli	Byahatti	5	35	38.61	
		Ingalahalli	6	45	46.33	
		Manakod	5	45	40.15	
		Sattur	5	48	39.75	
		Unakal	6	35	35.82	
	Mean				40.13	

Table 1: Contd.....

Table 1: Contd.....

		Khalaghatgi	Bgudihal	5	35	30.28
			Dumwad	6	40	34.26
			Emmatti	5	30	29.75
			Gambyapur	5	30	27.81
			Jammihal	6	35	38.15
		Mean				32.05
7.	Gadag	Kundagol	Gudageri	5	45	50.15
			Hirenarti	6	50	50.17
			Kalasa	5	50	48.35
			Ramankoppa	6	45	43.28
			Saunshi	5	45	48.70
		Mean				48.13
	Gadag		Advisomapur	6	40	35.16
			Beladadi	6	45	41.28
			Hirehandigol	5	35	39.11
			Hulkoti	5	40	37.39
			Papanashi	5	45	42.70
		Mean				39.13
	Naragund		Biranatti	5	45	45.16
			Chikknaragund	6	50	50.10
			Kalkeri	5	52	52.64
			Konnur	5	45	49.81
			Yaragal	6	40	48.78
		Mean				49.30
	Ron		Abbigeri	6	40	38.75
			Chikkamannur	5	45	41.65
			Doudi	5	50	45.18
			Mallapur	6	50	43.51
			Nidagundi	5	45	39.80
		Mean				41.78
8.	Gulbarga	Chincholli	Kodli	6	48	50.15
			Nidagunda	5	50	57.41
			Pechanpalli	5	55	60.19
			Ratakal	5	45	49.28
			Sulepeth	6	50	54.33
		Mean				54.27
	Chittapur		Hirur	5	35	38.81
			Kandagul	5	40	42.38
			Sugareddy	5	45	45.15
			Tengali	6	35	35.29
			Vatavatti	6	50	49.11
		Mean				42.15

Table 1: Contd.....

Table 1: Contd.....

		Gulbarga	Firozabad	5	52	40.81
			Mahagaon	5	40	36.89
			Partabad	5	45	41.28
			Pattan	6	50	46.36
			Sannu	5	45	38.75
		Mean				40.82
9.	Haveri	Sedam	Gounalli	5	55	59.42
			Handaraki	6	45	42.38
			Kodla	5	48	45.60
			Namar	5	52	56.23
			Surawar	6	50	48.91
		Mean				50.51
		Byadagi	Budapanhalli	6	45	38.51
			Chikkhanji	5	40	37.90
			Hirehanji	5	35	36.63
			Kagenhalli	5	48	39.18
			Motebennur	6	45	40.34
		Mean				38.51
		Haveri	Basapur	6	35	32.18
			Guttal	5	45	40.75
			Hosaritti	5	45	39.63
			Kurugunda	5	40	35.24
			Neglur	6	40	38.06
		Mean				37.17
		Ranebennur	Antarvallli	5	50	41.08
			Hullatti	5	45	39.75
			Itagi	6	42	42.33
			Kamadod	6	45	38.65
			Khunbevu	5	45	40.91
		Mean				40.54
10.	Koppal	Kushtagi	Aralhalli	6	40	33.10
			Gotagi	5	40	35.21
			Hanumsagar	6	35	28.56
			Kyadaguppi	5	35	30.16
			Yelloagal	5	40	30.05
		Mean				31.42
		Yalburga	Binnal	6	35	31.50
			Chikkenkoppa	5	40	27.33
			Karmudi	5	40	35.42
			Talkal	6	40	38.11
			Yerihanchinal	5	38	29.28
		Mean				32.33
11.	Raichur	Lingasugur	Guragunta	5	40	26.75
			Madkihal	5	45	30.23
			Maski	6	50	32.50
			Mudgal	6	40	29.78
			Santekallur	5	40	31.56
		Mean				30.16
		Raichur	Ashapur	5	40	32.36
			Chandrabanda	5	35	29.62
			Heerapur	6	45	35.22
			Kudlur	5	38	27.40
			Yaragera	5	40	30.78
		Mean				31.08

Table 2: Survey for the severity of anthracnose of greengram caused by *Colletotrichum truncatum* during Kharif 2008 in different villages of northern Karnataka

Sr. No.	District	Taluk	Village	No. of field	Stage of the crop (DAS)	Per cent disease index
1.	Bagalkot	Bagalkot	Anagawadi	5	35	30.15
			Bevoor	5	45	41.27
			Dodwad	6	45	40.35
			Kamatagi	5	35	31.23
			Lokapur	5	40	38.55
			Mannakatti	6	45	35.23
			Mean			36.13
		Bilagi	Amalzari	5	35	31.06
			Ballur	5	40	30.15
			Sunag	5	40	28.52
			Tumarmatti	6	45	30.23
			Yadahalli	5	35	29.75
			Mean			29.94
			Hungund	Amadihal	6	40
		Amingad		5	42	31.20
		Ilakal		5	35	32.11
		Kandagallu		5	40	29.23
		Karadi		5	32	30.62
		Nandawadgi		6	35	30.15
		Mean				30.85
		2.	Belgaum	Bailhongal	Belavadi	5
Budarkatti	5				40	32.75
Inchal	5				40	28.66
Kenganur	5				41	37.25
Nayanagar	6				45	39.10
Nesargi	5				45	40.16
Mean						36.02
3.	Bellary	Hadagali	Hirehadgali	6	32	31.50
			Hirekolati	5	35	30.65
			Holgundi	5	35	33.25
			Itagi	5	45	30.23
			Masalwad	6	30	35.21
			Uttangi	5	32	29.45
			Mean			31.72
		Hagaribommanalli	Gaddikeri	5	35	32.50
			Hampasagar	5	40	22.51
			Maratagi	6	42	23.65
			Morigeri	5	35	26.05
			Ramnagar	6	30	28.75
			Shivanand nagar	5		24.15
			Mean			26.27
4.	Bidar	Aurad	Ganeshpur	6	45	52.72
			Kamalnagar	5	40	48.51
			Kandagul	7	45	45.06
			Khanapur	6	45	47.15
			Kouta (K)	7	48	47.21
			Thanakushnoor	5		43.63
			Mean			47.38

Table 2: Contd.....

Table 2: Contd.....

	Basavakalyan	Dhannur	6	50	58.18	
		Islampur	6	50	42.33	
		Kherda	7	45	55.37	
		Pandergera	5	45	49.76	
		Rejeshwar	6	50	56.25	
		Sadlapur	5		48.16	
	Mean				51.68	
	Bhalki	Byalhalli	5	50	50.15	
		Halabarga	5	45	46.05	
		Khatakchincholli	6	45	49.11	
		Korur	7	45	43.91	
		Mehakar	6	48	48.45	
		Nidaban	6		48.50	
	Mean				47.70	
	Bidar	Basantpur	7	45	41.83	
		Chickpeth	6	40	42.21	
		Godmpalli	5	40	49.15	
		Hokran	6	40	50.46	
		Janawad	7	45	40.31	
		Markhal	7	45	47.50	
		Sultanpur	6		48.75	
	Mean				45.74	
	Humnabad	Alur	5	50	59.21	
		Chitaguppa	6	50	61.80	
		Dhummansur	5	52	60.05	
		Dubalgundi	5	50	61.11	
		Kabirabadwadi	5	45	59.30	
		Kallur	6	50	58.75	
		Kodambal	5		60.27	
	Mean				60.07	
5.	Bijapur	Indi	Atharga	5	35	30.06
			Benakanhalli	5	35	23.28
			Chadachan	6	40	21.23
			Golasar	6	35	20.19
			Roogi	5	35	26.73
			Salotagi	6	35	25.11
			Tadawalaga	5	35	28.18
			Tamba	5	35	22.59
	Mean				24.67	
	Sindagi	Almel	6	45	27.31	
		Devaranavadgi	5	35	30.05	
		Golageri	5	35	26.42	
		Kannolli	5	30	29.10	
		Koralli	5	40	23.15	
		Rampur	6	35	28.38	
		Somajal	6	38	25.27	
		Yenkanchi	6	35	22.56	
	Mean				26.53	

Table 2: Contd.....

Table 2 : Contd.....

6.	Dharwad	Dharwad	Garag	5	45	42.17
			Kardigudda	5	50	40.28
			Lokur	5	50	50.17
			Mangalgatti	6	55	48.05
			Narendra	6	45	48.85
			Tadkod	5	52	45.51
		Mean				45.84
		Hubli	Agadi	5	35	45.83
			Byahatti	6	45	40.15
			Ingalhalli	5	45	48.21
			Manakod	6	48	41.33
			Palikoppa	5	35	39.75
			Sattur	5	40	40.10
		Mean				42.56
		Kalghatgi	Bgudihal	5	35	40.70
	Dumwad		5	40	35.62	
	Emmatti		6	30	39.25	
	Gambyapur		5	30	36.83	
	Jammihal		5	35	38.11	
	Kannyanayakankoppa		5	40	30.56	
	Mean				36.85	
	Kundagol	Hirenarti	5	45	52.41	
		Hosanagar	6	50	51.22	
		Jigalur	5	50	48.33	
		Kalsa	5	45	49.78	
		Kamadolli	5	45	50.10	
		Ramanakoppa	5	50	48.65	
Mean				50.08		
7.	Gadag	Gadag	Beladadi	5	40	42.16
			Hirehandigol	5	45	40.18
			Hulkoti	6	35	38.43
			Kurkoti	5	40	44.52
			Mulgund	5	45	43.20
			Papnashi	5	45	44.23
	Mean				42.12	
	Naragund	Biranatti	5	45	48.11	
		Chikkanargund	5	50	54.17	
		Kalken	6	52	53.34	
		Konnur	5	45	49.76	
		Yaragal	5	40	52.08	
Mean				51.49		
Ron	Abbigeri	5	40	40.51		
	Chikkamannur	5	45	45.10		
	Doudi	5	50	48.05		
	Mallapur	6	50	44.23		
	Nidagundi	5	45	40.75		
Mean				43.73		

Table 2 : Contd.....

Table 2: Contd.....

8.	Gulbarga	Chincholli	Inapur	5	48	51.16
			Kodli	6	50	57.28
			Nidagunda	6	55	60.10
			Pechanpalli	5	45	59.42
			Ratakall	6	50	54.51
			Sulepeth	6	50	58.33
		Mean				56.80
		Chittapur	Bimanhalli	5	35	49.23
			Kandagul	6	40	45.70
			Margol	5	45	44.61
			Ramtirth	6	35	40.32
			Satanur	5	50	39.75
			Vatavatti	5	52	50.15
		Mean				44.96
		Gulbarga	Firozabad	5	52	41.75
			Kadbur	6	40	45.32
			Kerur	5	45	38.91
			Partabad	6	50	46.15
			Pattan	5	45	47.50
			Sannur	5	40	39.81
		Mean				43.24
		Sedam	Handaraki	5	55	48.78
			Kodla	6	45	54.35
			Madana	5	48	44.52
			Namar	5	52	59.15
			Satapatanhalli	5	50	57.21
			Surawar	6	50	49.10
Mean				52.19		
9.	Haveri	Byadagi	Chikkahanji	5	45	39.23
			Hirehanji	6	40	38.75
			Kagenhalli	5	35	37.82
			Kodihalli	5	48	46.19
			Mallur	5	45	40.05
			Motebennur	6	45	42.50
		Mean				40.76
		Haveri	Guttal	6	35	41.08
			Hosalli	5	45	36.75
			Hosaritti	6	45	41.70
			Kabbur	5	40	42.19
			Kurugunda	5	40	37.52
			Negalur	6	45	40.10
		Mean				39.89
		Ranebennur	Antaravalli	5	50	43.27
			Asundi	5	45	41.70
			Hullatti	6	42	40.23
			Itagi	6	45	45.62
			Kamadod	5	45	44.38
			Yallapur	5	40	39.81
		Mean				42.50

Table 2: Contd.....

Table 2: Contd.....

10.	Koppal	Kushtagi	Aralhalli	5	40	35.61		
			Gotagi	5	40	36.17		
			Hanumnal	6	35	30.75		
			Hanumasagar	5	35	29.27		
			Kyadaguppi	5	40	31.18		
			Yellohal	5	40	32.05		
		Mean					32.51	
		Ylaburga	Bannikoppa	5	35	37.05		
			Binnal	5	40	33.28		
			Halligudi	5	40	38.46		
			Hallikeri	5	40	29.87		
			Karmudi	5	38	36.18		
			Kuknur	5	40	30.75		
			Talkal	6	45	40.10		
			Mean					35.10
11.	Raichur		Lingasugur	Gudanal	5	40	29.78	
		Hatti		5	45	35.61		
		Kota		5	50	33.45		
		Maski		6	40	36.70		
		Mudagl		5	40	30.86		
		Santekallur		5	40	36.10		
		Mean					33.75	
		Raichur	Ashapur	6	40	35.28		
			Chandrabanda	5	35	32.54		
			Kapagal	5	45	37.32.		
			Kudlur	5	38	36.70		
			Matmari	5	40	38.61		
			Yargerra	6	35	31.85		
			Mean					35.38

were prevailing during *Kharif* season. These observations are in agreement with the earlier reports of Varaprasad (2000) in chickpea blight and Laxman (2006) in anthracnose of greengram.

Maximum disease severity of 60.54 per cent recorded in Dubalgundi followed by Hallikhed (B) (60.21%) and Dhummansur villages (59.72%) of Humnabad taluka of Bidar district may be attributed to extensive and continuous cropping of greengram. While, lower disease severity (19.71%) recorded in Halsangi followed by Malaghan village (19.75%) of Bijapur district, wherein unfavourable environment conditions and less availability of infected seed and source

of inoculum.

Further, the intensity varied to greater extent in different locations indicating the role of environment and/or existence of physiological races in the pathogen. In general, it is observed that the disease progress in natural conditions was in the second fortnight of July month which coincided with frequent rains with moderate temperature and high relative humidity. These results are in agreement with Kumar *et al.* (1999) in case of anthracnose of kidney bean and Thakur and Khare (1991) in anthracnose of greengram.

Considering the disease severity, the locations *viz.*, Bidar and Gulbarga districts are identified as 'hot spots' for

Table 3 : Per cent disease index of anthracnose of greengram caused by *Colletotrichum truncatum* during Kharif 2007 and 2008 in northern Karnataka

District	Taluk	Per cent disease index (PDI)		
		2007	2008	Average
Bagalkot	Bagalkot	30.59	36.13	33.36
	Bilagi	26.96	29.94	28.45
	Hungund	27.98	30.85	29.42
Mean		28.51	32.31	30.41
Belgaum	Bailhongal	31.87	36.02	33.95
Mean		31.87	36.02	33.95
Bellary	Hadagali	29.87	31.72	30.80
	Hagaribomnalli	24.38	26.27	25.33
Mean		27.13	29.00	28.07
Bidar	Aurad	45.37	47.38	46.38
	Basavakalyan	50.70	51.68	51.19
	Bhalki	46.11	47.70	46.91
	Bidar	40.60	45.74	43.17
	Humnabad	58.97	60.07	59.52
Mean		48.35	50.51	49.43
Bijapur	Indi	21.36	24.67	23.02
	Sindgi	22.85	26.53	24.69
Mean		22.11	25.60	23.86
Dharwad	Dharwad	44.98	45.84	45.41
	Hubli	40.13	42.56	41.35
	Kalagatagi	32.05	36.85	34.45
	Kundagol	48.13	50.08	49.11
Mean		41.32	43.83	42.58
Gadag	Gadag	39.13	42.12	40.63
	Naragund	49.30	51.49	50.40
	Ron	41.78	43.73	42.76
Mean		43.40	45.78	44.59
Gulbarga	Chincholli	54.27	56.80	55.54
	Chittapur	42.15	44.96	43.56
	Gulbarga	40.82	43.24	42.03
	Sedam	50.51	52.19	51.35
Mean		46.94	49.30	48.12
Haveri	Byadagi	38.51	40.76	39.64
	Haveri	37.17	39.89	38.53
	Ranebennur	40.54	42.50	41.52
Mean		38.74	41.05	39.90
Koppal	Kushtagi	31.42	32.51	31.97
	Yalburga	32.33	35.10	33.72
Mean		31.88	33.81	32.85
Raichur	Lingasugur	30.16	33.75	31.96
	Raichur	31.08	35.38	33.23
Mean		30.62	34.57	32.60
Grand mean		35.53	38.34	36.94

anthracnose of greengram. Intensive cultivation of greengram crop year after year, use of infected seed materials, non-adoption of disease management practices, favourable weather conditions and also the cultivation of highly susceptible varieties of greengram could be the reasons for higher incidence of disease in different locations of Karnataka state.

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