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Status and Location of Hot Spots of Stem and Pod Rot of Groundnut in Karnataka, India

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ABSTRACT

Keywords

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A survey was conducted in major groundnut growing areas of Karnataka during *kharif* 2013 and *kharif* 2014 to identify hot spots of stem and pod rot of groundnut. A total of 80 different locations of eight districts of Karnataka were covered during the survey. During *kharif* 2013, the highest stem rot (62.80%) and pod rot (73.67%) was recorded in Chitradurga district followed by Tumkur district which recorded stem rot incidence of 42.59% and pod rot of 40.70%. Least incidence of stem rot (17.19%) was recorded in Koppal district and pod rot (8.33%) in Gadag district. During *kharif* 2014, highest incidence of stem rot (57.83%) and pod rot (71.63%) was observed in Chitradurga district followed by Tumkur district recorded stem rot (46.09%) and pod rot (48.34%). Least stem rot of (17.23%) and pod rot of (8.58%) was recorded in Koppal district. Among surveyed districts, Chitradurga showed highest mean incidence of stem rot (60.31%) and pod rot (72.65%) followed by Tumkur (44.34% and 44.52%, respectively). Hence, Chitradurga and Tumkur districts were considered as hot spot for stem and pod rot of groundnut in Karnataka. However, the lowest mean incidence was observed in Koppal (stem rot - 17.21% and pod rot - 11.29%) followed by Gadag (stem rot - 17.93% and pod rot - 10.79%) and Kalaburgi (stem rot - 21.31% and pod rot - 18.45%).

Introduction

Groundnut (*Arachis hypogaea* L.), is an important leguminous oilseed crop, belonging to the family Fabaceae (Nordern *et al.*, 1982). Groundnut is called as the 'king' of oilseeds. It is one of the most important food and cash crops of our country. Groundnut is grown under rainfed and as well as irrigated condition. Groundnut is grown in 254.60 lakh ha with a production of 453.08 lakh tons and productivity of 1780 kg/ha in the world

(Anon., 2014). It is grown nearly in 100 countries worldwide and the major groundnut producing countries are China, India, Nigeria, USA, Indonesia and Sudan. In India, groundnut is the principal oilseed crop and is grown in an area of 52.50 lakh ha with an annual production of 94.72 lakh tons and a productivity of 1804 kg ha⁻¹ (Anon., 2014). Major groundnut growing states of India include Gujarat, Maharashtra, Karnataka, Tamil Nadu, Telangana, Andhra Pradesh. Among the states, Andhra Pradesh, Telangana and Gujarat

contribute to more than half the crop area in our country (Anon., 2014). Six States namely Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Rajasthan and Tamil Nadu account for about 90% of the total groundnut area of the country. Andhra Pradesh and Gujarat contribute >55% of the total area and production of groundnut (Anon., 2014). However, the yield of groundnut is reducing day by day because of various biotic and abiotic factors. Among the biotic factors diseases are the most important constraints for the yield reduction. The majority is caused by fungi and several of them are yield reducers in certain regions and seasons. Among the soil borne diseases stem and pod rot caused by *Sclerotium rolfsii* Sacc. is emerging as a major problem and has become an economically important soil borne pathogen. Symptoms of stem and pod rot disease are initially there will be yellowing and partial or complete wilting of the stem or one or more branches. In advanced stage of the disease, white mycelial growth at the junction of stem and soil, spreads over the soil and the basal canopy of the plant. The sclerotia of the size and colour of mustard seeds, appear on the infected area as the disease develops. The entire plant may be killed or only two or three branches may be affected. Infected pods were completely covered with white mycelial growth and in severe cases rotting of pod were observed (Plate 1). During the recent years this disease causes significant losses in groundnut growing areas of Karnataka. Hence, the present study was conducted with an objective to locate hot spots for stem and pod rot of groundnut in Karnataka during *kharif* 2013 and 2014.

Materials and Methods

Roving survey was taken up from major groundnut growing places of Karnataka during *kharif*, 2013 and *kharif*, 2014 between 90 to 110 days old crop to know the incidence of stem and pod rot of groundnut. Samples were collected from eight districts and from each

district predominant groundnut growing areas were chosen for sample collection and assessment of disease. All samples showing typical symptoms of stem rot and pod rot disease were collected in butter paper bags brought to the laboratory and stored for further isolation studies. For recording the disease, five spots in each field and 100 plants at each spot were selected randomly. The total number of plants presents and number of plants showing stem rot symptoms due to *Sclerotium rolfsii* at each spot were counted and recorded. Later, the per cent stem rot incidence in these locations was calculated using following formula.

Stem rot incidence (%) =

$$\frac{\text{Number of stem rots infected plants}}{\text{Total number of plants}} \times 100$$

Recording pod rot incidence, dry pods of five plants were plucked randomly from each spot and total number of pods per plant and number of pods infected by *S. rolfsii* pathogen were counted and recorded. Later, the per cent pod rot incidence in these locations was calculated using following formula.

Pod rot incidence (%) =

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

Meantime, the co-ordinates of surveyed fields were also recorded with the help of GPS and details of co-ordinates were listed in Table 1 and Table 2.

Results and Discussion

In the present study, an intensive roving survey for stem and pod rot of groundnut was carried out during *kharif* 2013 and 2014 in major groundnut growing areas of Karnataka

to get precise information on the distribution and intensity of the disease. The data on survey revealed that, the stem and pod rot incidence varied from locality to locality, because of varieties grown *viz.*, KRG-1, TMV-2 and JL-24, environmental conditions *viz.*, relative humidity, temperature and soil moisture content and during the survey we could able to observe cropping pattern like maize-groundnut, sorghum-groundnut and groundnut-groundnut. Even, it could also be attributed to the existence of variability or pathogenic diversity present in the fungus. This is in agreement with (Kulkarni, 2007) who reported variable incidence of *S. rolfii* at different localities of Belganvi and Dharwad districts.

The overall mean incidence of stem rot (62.80%) and pod rot (73.67%) was more during *kharif*, 2013 compared to *kharif* 2014 (stem rot-57.83% and pod rot-71.63%). This may be due to variations in climatic conditions prevailed during the years at different locations (Fig. 1, 3 and 6).

During *kharif* 2013, the highest stem rot (62.80%) and pod rot (73.67%) was recorded in Chitradurga district followed by Tumkur district which recorded stem rot incidence of 42.59% and pod rot of 40.70%. Least incidence of stem rot (17.19%) was recorded in Koppal district and pod rot (8.33%) in Gadag district (Table 3). During *kharif* 2014, highest incidence of stem rot (57.83%) and pod rot (71.63%) was observed in Chitradurga district followed by Tumkur district recorded stem rot (46.09%) and pod rot (48.34%). Least stem rot of (17.23%) and pod rot of (8.58%) was recorded in Koppal district (Table 4).

The highest mean incidence of stem rot (64.44%) and pod rot (79.99%) was recorded in Hiriyur taluk followed Challakere (56.23% and 65.31%) of Chitradurga district (Fig. 7) and Pavagada taluk of Tumkur district

(48.26% and 47.16%) (Fig. 8). The least incidence of stem rot (13.42%) and pod rot (1.66%) were recorded in Kushtagi taluk of Koppal district (Fig. 2). Among surveyed the districts, Chitradurga showed highest mean incidence of stem rot (60.31%) and pod rot (72.65%) followed by Tumkur (44.34% and 44.52%, respectively) and Ballari for stem rot (31.81%) and Raichur for pod rot (32.28%) over two seasons. However, the lowest mean incidence was observed in Koppal (17.21% and 11.29%) followed by Gadag (17.93% and 10.79%) (Fig. 4) and Kalaburgi (21.31% and 18.45%) (Fig. 5). Data also indicated that the overall mean incidence (Table 5) in the Karnataka state for stem rot was 31.02% whereas 30.10% for pod rot.

These results are in conformity with the results of Siddaramaiah *et al.*, (1979) who reported that Dharwad district recorded an average incidence of 7.8% stem rot. Ramakrishna and Kolte (1988) found that, average incidence of pod rot of groundnut in India was about 15-30 per cent. Similarly, Pande and Rao, 2000 conducted survey in fields during 1999 rainy season in five districts (Mahaboobnagar, Chittoor, Kurnool, Kadapa and Anantapur) of Andhra Pradesh, two districts (Raichur, Kolar) of Karnataka and one district (Dharmapuri) of Tamilnadu. Highest incidence (29%) was observed in Raichur district of Karnataka and lowest was observed in Chittoor district of Andhra Pradesh.

The higher incidence of stem and pod rot disease in Chitradurga and Tumkur districts is due to growing of susceptible variety such as TMV-2 and continuous cropping of groundnut in large area and presence of pathogen over long period. Karunakaran *et al.*, (2013) reported that groundnut is one of the major crop in Chitradurga district where groundnut is grown in large area as a sole crop.

Table.1 Coordinates of villages selected for survey of stem and pod rot of groundnut during *kharif*, 2013

District	Taluk	Village	Longitude	Latitude
Raichur	Raichur	Chandrabanda	16.253686	77.455222
		Yapaldinni	16.279181	77.502022
	Lingasugur	Karadkal	16.156622	76.552197
		Eachanahal	16.172592	76.437133
	Deodurga	Galag	16.270347	76.841867
		Kajjibandi	16.24630286	76.85944303
Koppal	Koppal	Muddaballi	15.281225	76.151714
		Halagera	15.362364925	76.093352717
	Kushtgi	Kanakoppa	15.756508	76.071914
		Byalihal	15.753356	76.131053
	Yelburga	Bandi	15.732483850	76.053142873
		Rajoor	15.536357229	75.989076582
Ballari	Ballari	Kakkabevinahalli	15.143761	77.003622
		Bommanahal	15.004289	76.980067
	Sirguppa	Dasapur	15.427253	76.869094
		Konchigeri	15.409547134	76.872852113
	Kudligi	Kudligi	14.925039697	76.368576281
		Sivapura	14.963372083	76.364659925
Gadag	Gadag	Mulgund	15.265431	75.523794
		Chinchalli	15.287206	75.481506
	Ron	Gajendragad	15.731642	75.958167
		Goudageri	15.730825	75.988322
Kalaburgi	Kalaburgi	Taj Sulthanpur	17.398089	76.816578
		Kamalapur	17.571672	76.981425
	Aland	Aland rural	17.593719	76.574661
		Telkuni	17.613867	76.568906
Yadgir	Yadgir	Ramsamudra	16.775416766	77.229311726
		Hattikuni	16.844886	77.145364
	Shahpur	Bheemarayangudi	16.732428	76.799144
		Gundapur	16.707428925	76.628222925
	Shorapur	Naganoor	16.686880727	76.603037682
		Khanapur	16.692208	76.601472
Chitradurga	Challakere	Challakere rural	14.289023966	76.595261528
		Nandanhalli	14.28245	76.590558
	Hiriyur	Yarballi	14.103679021	76.651842727
		Hartikote	14.070933	76.639233
Tumkur	Pavgada	Kenchammanahalli	14.193957693	77.004791771
		Lingadahalli	14.185172	77.041086
	Sira	Dwaranakunte	14.005609328	76.867745423
		Karehalli	13.990644	76.880889

Table.2 Coordinates of villages selected for survey of stem and pod rot of groundnut during *kharif*, 2014

District	Taluk	Village	Longitude	Latitude
Raichur	Raichur	Idapnur	16.022166127	77.474291382
		Jambaldinni	16 04 58.083	77 27 57.344
	Lingasugur	Neeralkera	16.143617	76.4491
		Bannigol	16.65313167	77.02761333
	Deodurga	Karadigudda	16.42173	76.952055
		Gabbur	16.296821595	77.158786155
Koppal	Koppal	Indargi	15.42052	76.3335
		Ginigeri	15.35728	76.26949
	Kushtagi	Gumgeri	16.79128667	77.13874833
		Ganganhal	16.800456	77.147858
	Yelburga	Talakal	15.382486	76.015933
		Boodagumpa	15.73214833	75.993895
Ballari	Ballari	Bevinahalli	15.145619	76.989172
		Upanayakanahalli	15.11928127	76.25304522
	Sirguppa	Shanavasapur	15.407958	76.899464
		Siddaramapura	15.429553	76.854856
	Kudligi	Bande basapur	14.950995026	76.362529235
		Hireheggadahall	14.924419	76.358919
Gadag	Gadag	Seethalahari	15.255739	75.521219
		Yalavatti	15.257733	75.513478
	Ron	Purthageri	15.735453	75.955697
		Rajur	15.739311	75.938533
Kalaburgi	Kalaburgi	Wadagera	17.577753	77.015142
		Tawargera	17.415592	76.885208
	Aland	Honhalli	17.584089	76.607333
		Mamdapur	17.570892	76.609597
Yadgir	Yadgir	Anapoor	16.79128667	77.13874833
		Bandalli	16.800456	77.147858
	Shahpur	Bhimanahalli	16.93961736	77.19700128
		Raajaapoor	16.754075	76.79272333
	Shorapur	Kavdimatti	16.494355	76.75099833
		Shellagi	16.54950167	76.65966333
Chitradurga	Challakere	Gowripura	14.247728457	76.945109446
		Parusharampura	14.220265984	76.958669963
	Hiriyur	Devarkotta	14.017957642	76.725594283
		Kandikere	14.109558	76.672411
Tumkur	Pavgada	Kottagudda	14.08912	77.10233
		Rajavanthi	14.03515	77.16714
	Sira	Nejanthi	14.008608	76.880164
		Vajarahalli	13.983925	76.8685

Table.3 Incidence of stem and pod rot in major groundnut growing districts of Karnataka during *kharif* 2013

District	Taluk	Village	No. of Fields	Variety	Soil type	DAS	Stem rot (%)	Pod rot (%)
Raichur	Raichur	Chandrabanda	3	Local	Red	75	33.3	45.4
		Yapaldinni	3	Local	Red	75-80	25.3	37.5
	Lingasugur	Karadkal	3	TMV-2	Red	70	37.3	33.3
		Eachanahal	3	TMV-2	Red	70	18.7	20.0
	Deodurga	Galag	3	TMV-2	Red	80-90	17.6	11.1
		Kajjibandi	3	TMV-2	Red	90-100	21.2	25.0
Mean							25.57	28.65
Koppal	Koppal	Muddaballi	3	Local	Red	90-100	14.0	9.1
		Halagera	3	Local	Red	85-90	10.7	7.7
	Kushtagi	Kanakoppa	3	GPBD 4	Red	90-95	11.3	6.7
		Byalihal	3	GPBD 4	Red	75-80	17.5	0.0
	Yelburga	Bandi	3	JL-24	Red sandy	70-80	26.7	33.3
		Rajoor	3	JL-24	Red sandy	85-90	22.4	27.3
Mean							17.19	14.00
Ballari	Ballari	Kakkabevinahalli	3	Local	Red sandy	90-100	38.5	25.0
		Bommanahal	3	Local	Red sandy	70-75	29.6	16.7
	Sirguppa	Dasapur	3	Local	Red sandy	75-80	28.0	33.3
		Konchigeri	3	Local	Red sandy	80-85	32.0	42.9
	Kudligi	Kudligi	3	Local	Red sandy	90-95	41.3	55.6
		Sivapura	3	Local	Red sandy	85-90	46.7	40.0
Mean							31.61	35.56
Gadag	Gadag	Mulgund	3	Local	Red	80-90	7.1	0.0
		Chinchalli	3	Local	Red	80-90	15.7	5.6
	Ron	Gajendragad	3	Local	Red	90-100	27.8	16.7
		Goudageri	3	Local	Red	70-80	18.5	11.1
Mean							17.25	8.33

Contd....

District	Taluk	Village	No. of Fields	Variety	Soil type	DAS	Stem rot (%)	Pod rot (%)
Kalaburgi	Kalaburgi	Taj Sulthanpur	3	Local	Red	80-90	21.2	28.6
		Kamalapur	3	Local	Red	90-100	30.6	46.7
	Aland	Aland rural	3	Local	Red	75-80	21.2	16.7
		Telkuni	3	Local	Red	70-80	16.9	7.7
Mean							22.45	24.89
Yadgir	Yadgir	Ramsamudra	3	Local	Red	70-80	24.7	22.2
		Hattikuni	3	Local	Red	80-90	21.2	12.5
	Shahpur	Bheemarayangudi	3	Local	Red	90-95	30.6	18.2
		Gundapur	3	Local	Red	90-100	29.4	37.5
	Shorapur	Naganoor	3	Local	Red	75-80	38.7	40.0
		Khanapur	3	Local	Red	80-85	32.9	23.5
Mean							29.56	25.65
Chitradurga	Challikere	Challakere rural	3	Local	Red sandy	80-85	57.3	58.3
		Nandanhalli	3	Local	Red sandy	90-100	54.7	63.6
	Hiriyur	Yarballi	3	Local	Red sandy	90-95	73.3	100.0
		Hartikote	3	Local	Red sandy	80-95	65.9	72.7
Mean							62.80	73.67
Tumkur	Pavagada	Kenchammanahalli	3	Local	Red sandy	80-90	43.5	37.5
		Lingadahalli	3	Local	Red sandy	80-90	52.9	46.2
	Sira	Dwaranakunte	3	Local	Red	75-80	42.7	41.7
		Karehalli	3	Local	Red	80-90	31.3	37.5
Mean							42.59	40.7

Table.4 Incidence of stem and pod rot in major groundnut growing districts of Karnataka during *kharif* 2014

District	Taluk	Village	No. of Field	Variety	Soil type	DAS	Stem rot (%)	Pod rot (%)
Raichur	Raichur	Idapnur	3	TMV-2	Red	77-80	33.8	38.5
		Jambaldinni	3	Local	Red	75-80	42.9	33.3
	Lingasugur	Neeralkera	3	Local	Red	85-90	37.3	44.4
		Bannigol	3	Local	Red	80-85	30.6	33.3
	Deodurga	Karadigudda	3	TMV-2	Red	80-90	32.5	22.2
		Gabbur	3	TMV-2	Red	90-100	30.6	43.8
Mean							34.6	35.9
Koppal	Koppal	Indargi	3	Local	Red	70-80	21.3	18.2
		Ginigera	3	Local	Red	80-85	15.7	8.3
	Kushtagi	Gumgeri	3	Local	Red	70-75	14.1	0.0
		Ganganhal	3	Local	Red	75-80	10.8	0.0
	Yelburga	Talakal	3	JL 24	Red	65-70	12.9	0.0
		Boodagumpa	3	Local	Red	70-75	28.6	25.0
Mean							17.23	8.58
Ballari	Ballari	Bevinahalli	3	Local	Red	70-80	23.3	15.4
		Upanayakanahali	3	Local	Red	70-80	32.2	17.7
	Siruguppa	Shanavasapur	3	Local	Red	75-80	25.3	11.1
		Siddaramapura	3	Local	Red	70-80	30.5	21.1
	Kudligi	Bande basapur	3	Local	Red sandy	75-85	38.7	44.4
		Hireheggadahali	3	Local	Red sandy	75-85	42.1	35.3
Mean							32.01	24.15
Gadag	Gadag	Seethalahari	3	Local	Red	75-85	17.8	15.4
		Yalavatti	3	Local	Red	75-80	24.4	21.4
	Ron	Purthageri	3	Local	Red	85-90	13.3	6.3
		Rajur	3	Local	Red	75-80	18.9	10.0
Mean							18.60	13.26

Contd....

District	Taluk	Village	No. of Fields	Variety	Soil type	DAS	Stem rot (%)	Pod rot (%)
Kalaburgi	Kalaburgi	Wadagera	3	Local	Red	65-85	27.8	14.3
		Tawagera	3	Local	Red	70-85	25.6	19.1
	Aland	Honhalli	3	Local	Red	65-70	14.7	4.2
		Mamdapur	3	Local	Red	70-80	12.6	10.5
Mean							20.17	12.01
Yadgir	Yadgir	Anapoor	3	Local	Red	80-90	15.4	7.1
		Bandalli	3	Local	Red	70-80	21.1	28.6
	Shahpur	Bhimanahalli	3	Local	Red	90-100	29.4	37.5
		Raajaapoor	3	Local	Red	70-80	31.4	16.7
	Shorapur	Kavdimatti	3	Local	Red	70-80	30.0	42.9
		Shellagi	3	Local	Red	70-80	36.7	42.9
Mean							27.33	29.27
Chitradurga	Challikere	Gowripura	3	Local	Red sandy	90-100	55.3	75.0
		Parusharampura	3	Local	Red sandy	90-100	57.7	64.3
	Hiriyur	Devarkotta	3	Local	Red sandy	90-100	62.7	85.7
		Kandikere	3	Local	Red sandy	80-85	55.7	61.5
Mean							57.83	71.63
Tumkur	Pavagada	Kottagudda	3	Local	Red sandy	70-85	42.9	46.7
		Rajavanthi	3	Local	Red sandy	70-85	53.8	58.3
	Sira	Nejanthi	3	Local	Red sandy	85-90	41.1	31.3
		Vajarahalli	3	Local	Red sandy	80-85	46.7	57.1
Mean							46.09	48.34

Table.5 Incidence of stem and pod rot of groundnut in parts of Karnataka during *kharif* 2013-2014 at different taluks

District	Taluk	Stem rot (%)		Mean stem rot (%)	Pod rot (%)		Mean pod rot (%)
		2013	2014	2013-14	2013	2014	2013-14
Raichur	Raichur	29.33	38.30	33.81	41.45	35.89	38.67
	Lingasugur	27.99	33.96	30.97	26.66	38.88	32.77
	Deodurga	19.41	31.54	25.47	18.05	32.97	25.51
Mean		25.57	34.6	30.08	28.65	35.91	32.28
Koppal	Koppal	12.67	18.52	15.59	8.39	13.25	10.82
	Kushtagi	14.41	12.44	13.42	3.33	0.00	1.66
	Yelburga	24.51	20.75	22.63	30.3	12.5	21.41
Mean		17.19	17.23	17.21	14.00	8.58	11.29
Ballari	Ballari	34.04	27.77	30.90	20.83	16.51	18.67
	Sirguppa	30.00	27.89	28.94	38.08	16.08	27.08
	Kudligi	44.00	40.39	42.19	47.78	39.86	43.82
Mean		31.61	32.01	31.81	35.56	24.15	29.85
Gadag	Gadag	11.38	21.11	16.24	2.78	18.4	10.59
	Ron	23.13	16.11	19.62	13.89	8.12	11.00
Mean		17.25	18.60	17.93	8.33	13.26	10.79
Kalaburgi	Kalaburgi	25.87	26.67	26.27	37.61	16.67	27.14
	Aland	19.04	13.68	16.36	12.17	7.35	9.76
Mean		22.45	20.17	21.31	24.89	12.01	18.45
Yadgir	Yadgir	22.94	18.24	20.59	17.36	17.85	17.60
	Shahapur	30.00	30.42	30.21	27.85	27.08	27.46
	Shorapur	35.76	33.33	34.54	31.76	42.88	37.32
Mean		29.56	27.33	28.44	25.65	29.27	27.46
Chitradurga	Challakere	56.00	56.47	56.23	60.98	69.64	65.31
	Hiriyur	69.61	59.19	64.44	86.36	73.62	79.99
		62.80	57.83	60.31	73.67	71.63	72.65
Tumkur	Pavgada	48.23	48.30	48.26	41.82	52.51	47.16
	Sira	36.96	43.89	40.42	39.58	44.19	41.88
Mean		42.59	46.09	44.34	40.70	48.34	44.52
Overall mean incidence		30.87	31.17	31.02	30.66	29.55	30.10

Plate.1 Manifestation of symptoms of stem and pod rot of groundnut under field conditions

Yellowing and drooping of infected plant

Mycelial mat on stem portion

Sclerotial bodies on stem portion

Mycelium and sclerotial bodies on pods

Wilting of plants

Fig.1 GIS map showing incidence of stem and pod rot of groundnut during *kharif* 2013-14 in Raichur district

Fig.2 GIS map showing incidence of stem and pod rot of groundnut during *kharif* 2013-14 in Koppal district

Fig.3 GIS map showing incidence of stem and pod rot of groundnut during *kharif* 2013-14 in Ballari district

Fig.4 GIS map showing incidence of stem and pod rot of groundnut during *kharif* 2013-14 in Gadag district

Fig.5 GIS map showing incidence of stem and pod rot of groundnut during *kharif* 2013-14 in Kalburgi district

Fig.6 GIS map showing incidence of stem and pod rot of groundnut during *kharif* 2013-14 in Yadgir district

Fig.7 GIS map showing incidence of stem and pod rot of groundnut during *kharif* 2013-14 in Chitradurga district

Fig.8 GIS map showing incidence of stem and pod rot of groundnut during *kharif* 2013-14 in Tumkur district

Continuous cultivation of any crop over the seasons and years will build up inoculum level to such an extent that the epidemic will become a common phenomenon (Chaube and Singh, 2001). It was noticed during survey that, the farmers of these districts are not practicing any management strategies or rotation of non host crops even though there was high incidence of stem and pod rot disease every year. Whereas the least incidence of stem and pod rot was recorded in Koppal district during the survey wherein we could able to observe cropping pattern such as maize-groundnut, sorghum-groundnut, bajra-groundnut. Maize, sorghum and bajra crops were considered as non host crops for *S. rolfii* it can be a one of the reason for less incidence of stem and pod rot disease in Koppal district. Anahosur (2001) also reported that maize, sorghum and bajra were free from the infection of *S. rolfii* because the root exudates of these crops inhibit the germination of sclerotial bodies.

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