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Survey and Surveillance for TMV Disease of Bidi Tobacco to Identify the Pest Free Areas in Northern Karnataka

B Siva Prasad, S Jahgirdar, A S Byadgi and S Kulakarni
Department of Plant Pathology, College of Agriculture, University of Agricultural Sciences, Dharwad 580 005

ABSTRACT

Survey and surveillance was taken up in Nipani area during September 2006. Totally 21 villages were surveyed by roving survey method. The investigations revealed presence of mosaic disease in all the fields surveyed except Yadanwadi village. The disease incidence ranged from 4.3 to 7.2 per cent during September month with a mean high disease percentage (5.67). The areas such as Akkol, Appachiwade, Khadalklat, Sadalga, Kodni, Shirpewadi, Walki and Sankeswar are considered as major severe zones for TMV in Nipani area. Being highly infectious in nature the tobacco mosaic virus easily spreads from one plant to another through contaminated hands of workers engaged in desuckering and other cultural operations which might account for high incidence of the disease in most of the fields. In general the infected plant exhibited mosaic, mottling, distortion, vein banding. Interestingly a single variety Anand-119 was under cultivation in all the fields surveyed.

Key words : Bidi tobacco, Surveillance, Survey,Tobacco mosaic virus.

Different types of tobacco are being cultivated in India under different agro-climatic conditions. Nipani area of Belgaum district in Karnataka is known for production of excellent quality bidi tobacco in our country. The area under bidi tobacco is around 20,000 ha with a productivity of 2000 kg/ha. Bidi tobacco suffers from many abnormalities caused by a wide range of pathogens viz., fungi, nematodes, bacteria, viruses, flowering plant parasites and phytoplasma (Lucas, 1975). The losses due to these diseases ranged between 5 and 15 per cent. Among all viral diseases, tobacco mosaic caused by *Tobacco mosaic virus* (TMV) causes leaf mosaic and severe crop losses. The infected tobacco plants showed mosaic symptoms as dark green islands surrounded by light green areas and reduced leaf size. Since there was limited information on change in severity pattern of TMV and disease free areas in Nippani areas, the present study was aimed on survey and surveillance of TMV disease in Nipani area of Northern Karnataka.

MATERIAL AND METHODS

Roving survey was undertaken at 21 locations in the bidi tobacco growing areas of Nipani during the entire cropping period, i.e, from September 2006 to February 2006. The disease diagnosis in the field was based on symptomatology. In each village five fields were selected observations were made at random in different locations in the field and incidence was calculated, later computed for the entire village. The per cent disease incidence was calculated using the formula as given below.

$$\text{Per cent disease incidence} = \frac{\text{No. of plants infected}}{\text{Total no. of plants observed}} \times 100$$

RESULTS AND DISCUSSION

The data pertaining to the roving survey undertaken at 21 locations in Nipani area during the crop growth period (September 2006 to February 2006) are presented in Table 1. The mean incidence during crop growth period ranged from 2.98 to 5.67. The disease pressure was high initially during the months of September, October and November but decreased in the month of December. During September 2006, maximum incidence of TMV was recorded in Khadaklat (7.2%) and minimum incidence of 4.3 per cent was recorded in Benadi. Interestingly Yadanwadi was free from the disease during September 2006. The

Table. Survey and Surveillance of tobacco mosaic virus disease in Nipani area during 2006-07.

Sl No	Village	Disease Incidence(%)/month						Symptoms
		Area (acres)	Sep	Oct	Nov	Dec	Mean	
1	Akkol	1.5	6.3	5.9	4.2	3.8	5.05	Mosaic, mottling, distortion
2	Galataga	1.0	5.1	4.7	3.8	2.7	3.97	Mosaic, distortion, shoe string and stunted
3	Sadalga	0.5	5.5	4.7	4.2	2.9	4.32	Mosaic, distortion, vein banding
4	Kodni	2.0	5.3	4.8	4.4	4.2	4.67	Vein banding, mottling and distortion
5	ARS, Nipani	1.0	4.8	4.3	4.4	2.0	3.87	Mosaic, mottling, distortion
6	Sirguppi	1.5	5.4	4.8	3.2	3.1	4.12	Mosaic, mottling, distortion
7	Pangeri A	0.5	5.4	4.6	4.2	3.8	4.50	Mosaic, mottling, distortion
8	Nagnur	2.0	4.9	4.2	3.6	3.2	3.97	Vein banding, mottling, distortion
9	Jatrat	1.5	5.4	5.3	4.8	4.0	4.87	Mosaic, vein banding, mottling
10	Khadaklat	0.5	7.2	6.9	5.8	4.3	6.05	Mosaic, mottling, shoe string and stunted
11	Aadi	1.5	6.1	5.4	4.9	3.2	4.90	Mottling, distortion, mosaic
12	Benadi	0.5	4.3	3.1	2.8	1.6	2.95	Vein banding, distortion, mottling
13	Shirpewadi	1.0	5.6	4.9	4.5	3.6	4.66	Mosaic, vein banding, mottling
14	Hunnargi	1.5	6.2	4.9	4.6	3.2	4.72	Mosaic, mottling, vein banding
15	Pattankudi	1.0	5.6	4.8	3.9	2.1	4.10	Mottling, distortion, vein banding
16	Appachiwade	1.0	6.9	5.8	4.2	3.1	5.00	Mosaic, vein banding, mottling
17	Yadanwadi	0.5	—	5.2	3.1	2.5	3.60	Mosaic, mottling, distortion
18	Walki	2.0	6.9	5.2	4.4	3.1	4.90	Vein banding, mottling, distortion
19	Tavandi	1.0	5.6	4.5	3.9	2.6	4.15	Mosaic, mottling, distortion, shoe string
20	Sankeshwar	0.5	6.1	5.5	4.1	2.0	4.42	Mosaic, mottling, distortion
21	Giragan	1.0	4.8	3.2	2.9	1.6	3.12	Vein banding, mosaic, mottling
	Mean		5.67	4.87	4.09	2.98		

mean disease incidence of 5.67 per cent was noticed in September 2006. In the month of October 2006 the incidence for TMV ranged from 3.1 to 6.9 per cent, with mean incidence 4.87 per cent. The TMV incidence continued to be maximum (6.9%) in Khadaklat area followed by 5.9 per cent in Akkol area. Minimum incidence of 3.1 per cent was recorded in Benadi area. In the month of November 2006, TMV incidence ranged from 2.9 to 5.8 per cent with mean incidence of 4.09 per cent, all the areas recorded less than 5 per cent incidence of TMV except Khadaklat (5.8%). In the month of December 2006, TMV incidence showed decreasing trend, ranged from 1.6 to 4.3 per cent. The locations which recorded more than 4 per cent for TMV were Kodni, Jatrat and Khadaklat.

Thus the investigations revealed that September and October months are favourable for TMV incidence which recorded a mean incidence of 5.67 and 4.87 respectively. The areas such as Akkol, Khadaklat, Sadalga, Kodni, Shirpewadi, Walki and Sankeswar are considered as major severe zones for TMV. The major reason being the production of maximum suckers by the plants during this period and desuckering is being done in majority of the places manually. This results in increased severity of the disease apart from favourable weather during the period. Similar reports of severe incidence of TMV and frog eye leaf spot were reported by Anon (2004 and 2005). Yadanwadi area was free from TMV during September 2006. Similar reports were observed by Broadbent (1964), Giri and Mishra (1990), Ramakrishnan *et al.* (1964), Silva *et al.* (1986), Gardener and Kendrick (1992).

Hence, the study clearly identified the areas such as Akkol, Khadalklat, Sadalga, Kodni, Shirpewadi, Walki and Sankeswar as hot spots for TMV infection while Yedanawadi area as relatively disease free areas in Nippani area of Karnataka.

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