

Status of Parthenium Diseases in Tamil Nadu

C. Jeyalakshmi¹, Sabitha Doraiswamy and V. Valluvaparidasan

Department of Plant Pathology

Tamil Nadu Agricultural University, Coimbatore-641 003 (T. N.), India

Parthenium hysterophorus L., a poisonous and problematic weed, accidentally introduced into India, is now posing a serious threat to crop cultivation and also to human and animal health. In nature, various diseases were reported to affect the *Parthenium* grown under cropped and non-cropped areas (Evans, 1997). Since the disease causing pathogens were reported to cause considerable damage to its growth, establishment and multiplication, a survey was undertaken to evolve a suitable bioherbicide in future to manage this weed.

Survey was conducted in all the 28 districts of Tamil Nadu, India to find out the occurrence of various diseases under cropped and non-cropped areas. A taluk was selected from each district and two villages were selected from each taluk using simple random sampling method. In the cropped area, four farmers' fields were selected randomly from each village. In each field, five sampling plots (1 m² each) were marked representing four corners and the center of the field and the disease incidence was recorded. For foliar diseases, 25 leaves were selected from each plot at random and the disease intensity was graded using 1 to 9 scale of Tamil Nadu Agricultural University score chart and the Percent Disease Index (PDI) was worked out using the formula given by McKinney (1923). For systemic diseases, total number of healthy and diseased plants/plot was counted and the per cent incidence (PI) was calculated separately using the formula suggested by Kataria and Grover (1976).

The results clearly indicated the incidence of leaf blight, leaf spot, wilt, dieback powdery mildew

and phyllody diseases (Table 1). Occurrence and intensity of the above diseases were more under non-cropped area than cropped area. Cuddalore, Vellore, Theni and Coimbatore districts of Tamil Nadu recorded the maximum average incidence of all diseases under cropped and non-cropped area. The variation in the intensity and distribution of each disease may be due to the variation in the local climatic conditions.

Out of the six diseases recorded, the leaf blight and powdery mildew incidence were observed in the cropped and non-cropped area of all districts of Tamil Nadu, which encountered for cent per cent distribution, followed by dieback. It was imperative to note that the heavily shaded *Parthenium* plants had more powdery mildew incidence. Wilt incidence was more in the non-cropped area (26 districts) than the cropped area (4 districts). Phyllody incidence was restricted to both cropped and non-cropped area of Cuddalore, Vellore, Theni and Coimbatore districts and non-cropped area of Madurai, Perambalur, Tirunelveli and Tiruvannamalai districts of Tamil Nadu.

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¹P. J. N. College of Agriculture & Research Institute, Karaikal-609 603 (T. N.), India.

Table 1. Survey for the occurrence of Parthenium diseases in Tamil Nadu

District	Leaf blight PDI (%)		Leaf spot PDI (%)		Dieback PI (%)		Wilt/ Root rot PI (%)		Powdery mildew PDI (%)		Phyllody PI (%)	
	C	NC	C	NC	C	NC	C	NC	C	NC	C	NC
Coimbatore	40.0	60.0	10.0	18.4	22.0	60.0	2.0	26.5	26.5	64.5	1.3	35.0
Cuddalore	37.7	55.6	9.6	32.1	15.3	62.0	6.0	68.5	21.5	52.1	4.0	50.0
Dindigul	28.1	48.6	7.9	22.5	12.8	44.5	-	42.5	26.7	58.2	-	-
Dharmapuri	20.0	44.4	4.4	25.0	17.5	46.0	-	28.0	29.2	58.4	-	-
Erode	18.4	37.4	6.6	20.1	13.0	18.5	-	40.0	26.7	58.7	-	-
Kanchipuram	21.4	50.1	-	-	15.0	52.0	-	60.0	20.0	30.0	-	-
Kanyakumari	12.5	20.4	-	-	12.8	18.0	-	14.5	17.8	18.6	-	-
Karur	11.3	28.7	7.4	25.6	16.0	22.5	-	44.0	27.8	57.8	-	-
Madurai	22.2	58.4	10.0	27.1	18.3	44.0	-	50.0	18.0	59.0	-	26.0
Nagapattinam	24.5	34.7	-	-	12.0	20.0	-	40.0	23.5	34.6	-	-
Namakkal	22.0	33.3	-	-	10.0	34.5	-	32.0	21.1	47.3	-	-
Perambalur	30.7	41.1	8.6	17.7	15.0	59.5	-	52.0	10.0	31.1	-	15.0
Pudukottai	14.7	38.2	-	-	10.0	34.0	-	25.0	8.6	20.0	-	-
Ramnadapuram	9.3	29.2	-	-	4.0	14.0	-	49.8	6.5	28.7	-	-
Salem	10.9	40.0	4.0	20.0	9.0	31.0	-	38.0	11.1	55.6	-	-
Sivagangai	5.8	30.0	-	-	-	-	-	46.5	11.5	30.0	-	-
Tanjore	15.5	41.1	-	-	12.5	50.0	-	29.0	10.0	44.7	-	-
The Nilgris	7.3	8.7	-	-	-	-	-	-	6.8	14.9	-	-
Tirunelveli	10.0	30.7	2.1	10.0	10.0	39.0	-	25.0	8.7	28.3	-	19.5
Tiruvallore	38.7	54.7	-	-	12.5	50.5	-	56.0	17.6	31.1	-	-
Tiruvarur	12.5	36.8	-	-	16.5	42.5	-	17.0	6.4	28.9	-	-
Tiruvannamalai	10.7	40.0	10.1	20.0	8.0	58.8	-	30.0	9.6	28.6	-	25.0
Trichy	6.5	47.8	13.5	21.5	12.0	55.0	-	41.0	10.0	50.0	-	-
Tuticorin	2.0	20.0	1.7	8.7	1.0	16.5	-	15.5	1.7	12.5	-	-
Theni	16.3	57.7	16.3	29.1	11.0	51.0	2.5	54.0	11.1	60.4	2.0	43.0
Vellore	18.9	62.5	13.3	26.4	9.8	53.5	3.8	56.0	8.9	60.2	3.0	44.0
Villupuram	8.6	32.1	-	-	4.3	30.0	-	31.5	6.4	43.9	-	-
Virudhunagar	4.0	18.7	-	-	-	-	-	-	4.9	20.0	-	-

C-Cropped area, NC-Non-cropped area.