

Survey for Incidence of Potato Viral Diseases in South Karnataka

Potato (*Solanum tuberosum* L.) is one of the nutritive and staple food crops, which ranks fourth in production after wheat, rice and corn. Potato tubers contain at least 12 essential vitamins and minerals and is a good source of vitamin C containing about 14-25 mg/10gm of fresh tuber weight. At present China is the largest producer of potato in the world producing about 43.477 m t of tubers from 3.202m ha area with productivity of 13577 kg/ha. India stands fifth with an area of 1.32 m ha producing about 22.1 m t of tubers with productivity of 16742 kg/ha which exceeds the world average of 16.02 t per ha (Shekhawat and Ezekiel, 1999). Though the average production is high still some more higher yield could be achieved if proper plant protection measures are followed especially against viral diseases. Therefore the present study was undertaken to assess the extent of viral diseases appearance and crop loss in South Karnataka.

To know the incidence of mosaic and leaf roll incidence in the farmer's fields when the potato crop was 1.5 to 2 months old, the Roving survey was conducted during kharif 1999-2000 in the month of August in Hassan district and during summer 2000-01 in the month of February in Kolar district, Karnataka. In Hassan district the survey was conducted in 102 fields spread over four taluks viz. Hassan, Alur, Belur and Arkalgudu. In Kolar district the total of 125 fields where potato crop was grown for commercial purpose under irrigated conditions spread over five taluks viz. Kolar, Chintamani, Chikballapur, Bangerpet and Malur were covered. In each taluk five villages and in each village five fields were randomly selected. The total number of plants and number of plants showing mosaics and leaf roll symptoms were recorded. The per cent disease incidence was calculated by using the following formula.

$$\text{Per cent disease incidence (PDI)} = \frac{\text{Number of infected plants}}{\text{Total number of plants}} \times 100$$

Survey among the four taluks of Hassan district (Table 1) showed that the highest percentage of incidence (46.10%) was noticed in Belur taluk followed by Hassan (45.96%), Alur (44.16%) and Arkalgudu (43.79%). The Hassan taluk recorded highest incidence of mosaic (29.62%) followed by Alur (27.74%), Belur (27.63%) and Arkalgudu (17.50%). Similarly highest incidence of leaf roll (26.31%) was recorded in Arkalgudu taluk followed by Belur (18.00%), Hassan (16.59%) and Alur (16.42%).

Survey among the five taluks of Kolar district, the most prevalent disease was leaf roll in all the surveyed fields. Chikballapur taluk recorded the highest incidence of leaf roll virus (16.32%) followed by Chintamani (12.30%), Malur (10.68%), Bangerpet (8.12%) and Kolar (6.80%). However, mosaics occurrence was not predominant.

The survey work indicated that in Hassan district, Kufri Chandramukhi and Kufri Jyothi were commonly cultivated, whereas in Kolar district only Kufri Jyothi was grown under irrigated conditions. The average incidence of viral disease during kharif was more (45.00%) compared to summer (10.84%) in both the districts. Mean incidence of mosaics ranged from trace to 29.62% and leaf roll incidence ranged from 6.80, to 46.10%. These results are in agreement with reports of Khurana *et al.* (1998) and Anil Kumar (1999). Leaf roll & Mosaic incidence were found to be more in Kharif than in Summer. These observations are in accordance with Gadewar (1991) who reported the incidence of both leaf roll (10.00%) and severe mosaic (2.80%) more in kharif than in summer. Similarly incidence and

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Table 1. Average incidence of potato viral disease in Hassan and Kolar districts

Locations	Condition	Mean per cent disease incidence		Total diseases incidence %
		M	LR	
Hassan district				
Hassan	Rainfed	29.62	45.96	75.58
Alur	Rainfed	27.24	44.16	71.40
Belur	Rainfed	27.63	46.10	73.73
Arakalgudu	Rainfed	17.50	43.79	61.29
Mean		25.49	45.00	70.50
Kolar district				
Kolar	Irrigated	T	6.80	6.80
Chintamani	Irrigated	T	12.00	12.00
Chikkaballapur	Irrigated	T	16.32	16.32
Bangerpet	Irrigated	T	8.12	8.12
Malur	Irrigated	T	10.68	10.68
Mean			10.84	10.84
*M-Mosaic	L-B-Leaf Roll	T-Trace		

*M-Mosaic LR-Leaf Roll T-Trace

distribution of viral diseases of potato caused by potato leaf roll virus and mosaics by PVX, PVY, PVS and PVM was reported by Choudhuri *et al.* (1992). Jan *et al.* (1994), Jan and Khan (1995)

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and Ahmad and Ahmad (1995). These observations enable the scientists to come out with a system to monitor and to develop management systems.

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