Research Paper :

Transmission modes of sunflower necrosis virus- determination and confirmation

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SUMMARY

Sunflower (*Helianthus annuus* Linn.), is infected by sunflower necrosis virus (SNV), which causes chlorosis and necrosis of a leaf lamina and distortion of leaf. To know the various modes of transmission, investigations were carried out through sap, thrips, seed and pollen. The disease was successfully transmitted through sap using 0.05 M potassium phosphate buffer with 0.075 per cent thioglycerol as anti-inhibitor. Mean transmission which ranged from 46.80 to 57.40 per cent. The disease could not be transmitted through seeds and pollens. Further, these results were confirmed by subjecting the samples for serological assay through Direct Antigen Coated- Enzyme Linked Immuno Sorbent Assay (DAC-ELISA).

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Sunflower (*Helianthus annuus* Linn.), a member of Asteraceae, is a major edible oilseed crop in importance after soybean and groundnut at the global level. Sunflower is infected by many fungal and bacterial agents. Many virus diseases have also been reported to reduce the yield from several countries (Kolte, 1985). A new virus causing necrotic symptoms and severe yield losses has been reported (Anonymous, 1997 and Singh *et al*., 1997) thus paralyzing the cultivation of this crop. It is considered as one of the threatening diseases because of its fast spreading nature and severity (Nagaraju, *et al.,* 1998). The sunflower necrosis disease is initiated as necrosis of part of the leaf lamina followed by various types of necrosis and mosaic mottling symptoms (Ajith Prasad *et al.,* 2004). It was concluded that the causal virus of Sunflower Necrosis Disease as a strain of tobacco streak Ilarvirus on the basis of serological cross reaction with tobacco streak virus antiserum by Prasada Rao *et al*. (2000). However the knowledge about the source of inoculum and modes of transmission of SNV in the field are still lacking. Therefore the present study was conducted in order to identify the same so that proper control measures can be employed to prevent yield loss.

MATERIALS AND METHODS

The sunflower test plants were raised in 6' x 4' polythene bags, containing mixture of soil, sand and FYM in 2:1:2 ratio (w/w) and were maintained in glasshouse.

Sap transmission:

Standard inoculum of the virus was prepared using 0.05M phosphate buffer. Young tender sunflower leaves showing clear necrosis symptoms were collected from the field. The sample was macerated in pestle and mortar using phosphate buffer (1ml/g of leaf tissue). The resultant extract was used as standard inoculum for sap inoculation. Sunflower seedlings at two leaves stage were used for the experiment. Each set of plants inoculated thus was labeled separately and kept in glasshouse. These plants were maintained for symptom expression up to 30-40 days and per cent transmission of the disease was recorded.