International Journal of Plant Protection, Vol. 1 No. 2 : 58-60 (Oct. 2008)

Survey for the incidence of necrosis virus disease and *thrips* in sunflower growing areas of southern Karnataka

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Accepted : *August, 2008*

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ABSTRACT

The sunflower necrosis virus disease was prevalent in all the sunflower fields visited during survey with the maximum necrosis disease incidence of 24 per cent and highest thrips numbers 3.4 per five plants during March 2005. The highest incidence of necrosis of 22 per cent and high mean thrips numbers 2.42 per five plants was observed on KBSH-1 in Bagepalli taluk in the May 2006 sown crop. However, least incidence of necrosis disease was observed in Bangalore (4%), and Shimoga (4%) followed by HD Kote (6%) and Honnalli (6%) during September 2006. The survey revealed that the disease and the thrips vectors were least during *rabi* months whereas, it were more in *kharif* sown crops. The weed hosts such as, *Euphorbia geniculata, Galinsoga parviflora*, *Phyllanthus niruri* and *Malvestrum coromandelianum* were found to be prevalent in most of the surveyed fields especially during summer months thus these weeds serve as source of inoculum for necrosis disease by harbouring the thrips vectors and the virus. Symptoms of the infected plants showed systemic mosaic, mottling, twisting, puckering and yellowing of leaves and such plants were stunted with reduced internodal length compared to healthy plants.

Key words : Sunflower, Necrosis Virus Disease, Survey, Thrips vector.

Sunflower is one of the important oilseed crops of the world and ranks third, after soybean and groundnut in area and production. In India, it is grown over an area of 20.14 lakh ha with the production of 10.86 million tones and productivity of 539 kg/ha (Anonymous, 2004). Karnataka is one of the leading sunflower growing states in the country with acreage of 11.25 lakh ha and production of 4.22 million tones with a productivity of 375 kg/ha (Anonymous, 2004).

A virus disease on sunflower with necrotic symptoms causing severe yield loss was reported to occur around Bangalore (Anonymous, 1997; Singh *et al.*, 1997). The disease incidence was reported from several parts of Karnataka *viz*., Dharwad, Raichur, Chitradurga, Haveri, Ranebennur, Naragund, Gadag, Tumkur and Kolar districts (Anonymous, 1998). An unusual necrosis disease on sunflower was observed in serous proportion in parts of Karnataka during the summer in 1997 (Nagaraju *et al.*, 1998).

MATERIALS AND METHODS

The survey was undertaken in experimental plots and in farmer's field in southern Karnataka during different months of 2005 and 2006. In each of the plot surveyed, five rows were randomly selected and the per cent disease incidence was calculated as given below.

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

Information regarding places visited, genotypes involved, stage of crop, month of survey, name of the farmer, cropped area, date of sowing and weed hosts found in the surveyed fields were recorded during the course of survey.

RESULTS AND DISCUSSION

The symptoms were observed on sunflower during the survey under field condition. The symptoms on infected sunflower plants initially appeared as chlorotic spots on leaves which suddenly turned necrotic on a part of the leaf lamina between mid rib and leaf margin, making the leaf to twist.

During surveys, the necrosis disease incidence was observed to be highest in Pavagada, Challakere and Gowribidanur taluks. In Pavagada, the disease incidence recorded on sunflower hybrid KBSH-1 was 24 per cent during summer 2005, whereas in Gowribidanur taluk, it was 20 per cent under irrigated condition during April 2005. Similarly, the disease incidence of 20 per cent was recorded in Challakere during March 2006 under irrigated condition (Table 2); while it was minimum with 6 per cent in H D Kote during June 2005 (Table 1). Minimum per cent disease incidence (4.0) was observed on KBSH-1 in Shimoga (Kunchenahalli) under rainfed condition during July 2005, Table 2 while it was maximum of 13.3 per cent in Hiriyur during August 2005 under rainfed condition (Table 1). At GKVK, in seed production plot, the necrosis disease incidence on A-line was 4 per cent, on GKVK-1 it was 16 per cent under rainfed during March 2006 (Table 1)