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Epidemiology of sunflower necrosis disease

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ABSTRACT

The occurrence of disease in a given crop is mainly influenced by weather parameters and biological factors. Therefore, the data pertaining to the incidence of Sunflower Necrosis Disease (SND) and *Thrips palmi* (Karny), vector of Sunflower Necrosis Virus (SNV) in sunflower across different sowing dates was subjected to correlation and multiple linear regression analysis with different meteorological parameters. The disease incidence in the crop sown at different dates varied, ranging from 0.67 per cent in the crop sown in November to as high as 39.30 per cent in the crop sown in January. It clearly revealed that, the disease incidence was very low in the crop sown during September and November months and moderate in the crop sown during July, August and December months. Also it was observed that disease incidence and thrips count positively correlated with bright sunshine hours, maximum and minimum temperature and negatively correlated with total number of rainy days, rainfall and relative humidity.

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Key words : Sunflower Necrosis Virus, *Thrips palmi*, Weather parameters, Correlation and multiple linear regression

INTRODUCTION

Sunflower (*Helianthus annuus* L.) is an important oilseed crop of India. Apart from many fungal diseases a new viral disease caused by Sunflower Necrosis Virus (SNV) is becoming a threat for sunflower cultivation. The disease was noticed for the first time in the country during 1997 at Bagepalli of Kolar district of Karnataka. Later its occurrence was recorded in different states like Tamil Nadu, Andhra Pradesh and Maharastra (Nagaraju *et al*., 1998). The disease is initiated as necrosis of part of the leaf lamina followed by various types of necrosis and mosaic mottling symptoms (Ajith Prasad and Nagaraju, 2005). Aravind (2002) reported that *Thrips palmi* was successful in transmitting the disease, thus acting as the vector of SNV. It was observed that the disease incidence being maximum in May-June sown crop but declined with the onset of rains during *Kharif* (Anonymous, 1997). With all these basic information experiments were laid out to study the exact influence of different sowing dates on SND and its vector and further correlation and regression analysis were done with the weather parameters.

MATERIALS AND METHODS

In this experiment, the sunflower hybrid KBSH-44 and open pollinated variety Morden (susceptible to necrosis virus disease) were sown in plots of 3m x 3m with a spacing of 60 x 30 cm laid as Randomized Complete Block Design and replicating thrice at ZARS, GKVK at monthly intervals starting from July to Jan 2006. The different dates of sowing were 21st July, 17th August, 10th September, 10th October, 24th November, 16th December 2005 and 28th January 2006. The recommended package of practice was followed during experimentation, except plant protection measures. The necrosis disease incidence was monitored from the germination of the crop till 50 per cent flowering stage in each of the sowing dates.

The per cent disease incidence and thrips per plant were recorded at 20, 40 and 60 days after sowing in all the replications and average was calculated. In each plot thrips population was recorded from randomly selected five plants (in each plant two leaves each at basal, middle and top level of canopy were selected). The number of nymphs and adults prevalent on these leaf surfaces was counted and expressed as total number of thrips per plant

Correlation between disease incidence and *Thrips palmi* with weather parameters:

The data pertaining to the disease incidence and thrips in sunflower across six different sowing dates was subjected to correlation and multiple linear regression analysis with meteorological parameters such as, maximum and minimum temperature, morning and evening relative humidity, bright sunshine hours, total rainfall and number of rainy days.

The weather parameters and the thrips count was correlated with the disease incidence by adopting the Karl

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