

## Insecticide microflora interactions in banana rhizosphere

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A field trial was conducted to study the impact of different insecticides recommended for the Control of pests of banana on different soil flora (Fungi, Bacteria and Actinomycetes) in the soil. The samples were drawn at monthly intervals till harvest of the crop. In carbaryl treatment, microbial population was low initially, but got restored later. With carbofuran, slight reduction of microbial population was observed immediately after the application of insecticides and got restored before harvest. But, with phorate, a slight enhancement of the population of bacteria and fungi was observed after the application of insecticides and it was restore at par with control before harvest of the crop.

Key words : Fungi, Actinomycetes, Bacteria Stimulatory effect, Suppressing effects.

### INTRODUCTION

**B**anana (*Musa paradisiaca* L.) is the most important fruit in the tropical and subtropical regions. In India the crop is extensively grown in Kerala, Tamil Nadu, Maharashtra, Karnataka, Assam and Andhra Pradesh. In the northern districts of Kerala the production and productivity of the crop are seriously affected by the incidence of rhizome weevil and different species of nematode pests, while southern districts the incidence of devastating bunchy top disease is the major limiting factor in production. For containing these pests and disease problems, insecticides were applied as per the Kerala Agricultural University recommendations 2002 and the treatment is being extensively adopted by the farmers. Indeed, soil micro organisms play a major role in the degradation of organic wastes available in the agro ecosystem and which can be harnessed and utilized in the farming practices. Obviously the application of synthetic insecticides are highly toxic to nontoxic organisms. In this context an attempt to assess the extent to which the adoption of the recommended control measures against banana pests and diseases which in turn affect the useful soil flora in banana fields was studied in detail.

### MATERIALS AND METHODS

A field trial was conducted at college of Agriculture, Vellayani, adopting a randomized block design using nendran variety of banana. The plot size is 120 m<sup>2</sup>. The treatments were drenching rhizome and soil with carbaryl

for controlling banana pseudostem weevil, application of carbofuran 1 g ai/plant (7.5 kg ai ha<sup>-1</sup>) at planting and at 150 days after planting (DAP) for the control of nematodes; and application of phorate 2.5 g ai/plant (6.25 kg ai ha<sup>-1</sup>) at 20<sup>th</sup>, 75<sup>th</sup> and 165<sup>th</sup> DAP for the control of banana aphid. Phorate and Carbofuran granules were applied around the basins.

Population of the soil flora *viz.*, bacteria, actinomycetes and fungi was estimated in soil samples once prior to the planting and then at monthly intervals. Rhizosphere soil samples (10 g each) were collected from two different spots in each plot. Soil samples were taken from the basins one foot away from the basal region of the plant. Microflora were estimated by serial dilution and plating technique of Johnson and Curl (1972). Nutrient agar, Kauster's agar and Martin's rose Bengal agar were used for the isolation of bacteria, actinomycetes and fungi, respectively. Serial dilutions of different rhizosphere samples were prepared up to 10<sup>-7</sup> dilution by using appropriate sterile water blanks. One ml each of 10<sup>-7</sup>, 10<sup>-5</sup> and 10<sup>-3</sup> dilution was transferred to Petridishes of bacteria, actionmycetes and fungi with the appropriate medium. Then the plates were incubated at room temperature and counts were taken.

### RESULTS AND DISCUSSION

*Bacteria :*

The results presented in Table 1 showed that the bacterial colonies in the carbaryl was generally lower than those of control through out the period of observation. But the