



## Effect of agro-chemicals on microflora in soybean rhizospheric soil

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**Abstract :** After application of agrochemicals at 1, 30 DAS and at harvest the total number of fungi, bacteria, actinomycetes, *Pseudomonas*, *Azotobacter*, *Rhizobium* were counted. The result with regard to bacterial population in soybean field were significantly influenced by bioinoculant viz., *Rhizobium*. The bacterial populations were inhibited by herbicides alachlor in soybean and fungicides i.e. thiram and mancozeb in soybean. After 30 days of spraying of chemicals the bacterial populations were restored. With regard to *Rhizobium* population, the bioinoculant were significantly influenced the population soybean field. The herbicides and fungicides significantly decreased bioinoculant population, maximum inhibition was observed in mancozeb treated plot at 30 DAS. The results with regards to *Pseudomonas*, Actinomycetes and fungi, population were influenced by bioinoculant viz., *Rhizobium*. While population were inhibited by alachlor, thiram and mancozeb in soybean field. The *Pseudomonas*, Actinomycetes and fungi population were restored after 30 days of spraying. Yield of soybean was significantly influenced by bioinoculant in combination with herbicide and fungicide.

**Key Words :** Agro-chemicals, Bio-inoculants, Soybean

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### INTRODUCTION

Soil is a dynamic living system and consists of a variety of micro flora viz., bacteria, actinomycetes, fungi, etc. Modern agriculture is really associated with the use of different agrochemicals. Different classes of agro-chemicals like fungicides, herbicides and insecticide are being used in integrated crop management. Taking in to account the present investigation is an attempt to see the effect of agro-chemicals on soil micro flora in soybean rhizospheric soil. Agrochemical residues usually occur in the top fifteen cm layer of soil. It is also the region of greatest activity of soil micro flora. *Trichoderma* and *Pseudomonas* help for controlling harmful soil borne plant pathogens viz., *Pythium*, *Phytophthora*, *Fusarium*, *Rhizoctonia* etc. Agro-chemicals are a potential threat for soil microorganisms and in the long term may alter their productive, protective and adaptive capacities (Soulas and Lors, 1999). In India, the total agro-chemicals consumption is about 80,000 million tones per year. Among

these insecticides occupies 63 per cent, fungicides 18 per cent, herbicides 16 per cent and other chemicals 3 per cent. Agro-chemicals are intended to protect crops, they may affect non target organisms and contaminate soil environment resulting in alterations the equilibrium of soil processes for shorter or longer period. The observed changes in the soil activity depend on the intensity and spectrum of activity as well as persistence of the chemicals (Margini *et al.*, 2002).

### MATERIALS AND METHODS

During the course of present investigation, a series of experiments were carried out in the field at All India Coordinated Research Project on Weed Control at Marathwada Agricultural University, Parbhani. The seeds of soybean (JS-335) were used for sowing in field experiment. The bioinoculants used for seed treatments were *Rhizobium* and herbicide, alachlor was used in soybean crop at different dosage.

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