

Research Paper :

Studies on Effect of Weedicides on Microbial Population in Soil and Yield of Soybean

S.E. CHOUDHARI, C.D. DEOKAR, A.M. NAVALE AND R.B. SONAWANE

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See end of the article for authors' affiliations

Correspondence to :

S.E. CHOUDHARI

Department of Plant

Pathology and

Agricultural

Microbiology,

Mahatma Phule Krishi

Vidyapeeth, Rahuri,

AHMEDNAGAR

(M.S.) INDIA

SUMMARY

The application of herbicide influenced the soil biological activities. All the herbicides were found to be more effective inhibitors against bacteria. Fungal population was also affected while actinomycetes had negligible effect. Two hand weeding in soybean increased yield without affecting microbial population in soil. Post emergence weedicides were found to be effective against weed control and also had less effect on soil microbial population than other weedicides.

Key words :

Weed control,

Weedicides,

Micro-organisms

soybean

Soybean (*Glycine max*) is one of the important pulse and oilseed crops of the world. It became the miracle crop of the 20th century and often designated as 'Golden bean'. Among all oilseed crops, soybean occupied third position in the edible oil scenario of India next to groundnut and rapeseed. Soybean is grown on large area of Madhya Pradesh, Uttar Pradesh, Rajasthan, Himachal Pradesh, Bihar, Karnataka, Maharashtra and Andhra Pradesh. The area and production of soybean in Maharashtra was 2.92 lakh hectares and 4.8 lakh tonnes, respectively. Productivity was 1644 kg/ha in 2006 (Anonymous, 2007).

In Maharashtra soybean is mainly grown in the *kharif* season. In this season, weed control is serious problem. As per an estimate of the total annual loss of agriculture produce from various pests, weeds account for about 45 per cent, insect 30 per cent, diseases 20 per cent and other pests 5 per cent (Yaduraju, 2005). Complete mechanical and manual weeding may not be possible and cost effective. Under such conditions chemical weed control may be better alternative (Prasad and Rafey, 1995). There is an increase in use of weedicides for controlling weeds.

Microorganisms living in surface horizons play a vital role in cultivated soils. Many microorganisms like bacteria, fungi,

actinomycetes are associated with soybean crop in soil. Among these, some microorganisms are beneficial to crop by fixing atmospheric nitrogen and by solubilizing phosphorus etc. The continuous use of herbicides may have non target effect on soil microflora and microfauna. With this view the present investigation was planned with the objective to study the effect of weedicides on microbial population in soil.

MATERIALS AND METHODS

The experimental work was conducted on the Instructional Farm of Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth, Rahuri during *kharif* season of 2007. The experiment with eight treatments were laid out in Randomized Block Design with three replications. The treatment consisted of T₁ weedy check, T₂-two hand weeding, T₃ - Persuite @ 1 to 1.5 kg a.i./ha as post emergence, T₄ - Glyphosate @ 1 to 2 kg a.i./ha as post emergence, T₅ - Oxyflurofen @ 0.1 to 0.125 kg a.i./ha as pre emergence, T₆ - Paraquate @ 0.4 to 1 kg a.i./ha as post emergence, T₇ - Pendimethalin @ 0.75 to 1.25 a.i./ha as pre emergence, T₈ -Fluchloraline @ 1.25 to 1.75 kg a.i./ha as PPI.

Soil samples were collected from experimental field before sowing, 30 days after

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