



Research Note

Effect of weed control practices on soil microflora in chickpea (*Cicer arietinum*)

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ABSTRACT : A field experiment was conducted during winter season 2010-2011 at farm of Agronomy Department, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, to study the effect of herbicides and cultural practices on soil microbial population in Chickpea (*Cicer arietinum*). But after spraying of herbicide, there were considerable differences among the treatments. After spraying of herbicide microbial count was reduced in herbicidal treatment (T_2 and T_9) than cultural method of weed control treatment (T_{10}). Treatment weedy check (T_1) shows maximum microbial count before and after spraying of herbicide.

KEY WORDS : Pigeonpea, *Helicoverpa armigera* (Hübner) Hardwick

How to cite this Article : Bhutada, P.O., Bhale, V.M. and Bokare, P.D. (2014). Effect of weed control practices on soil microflora in chickpea (*Cicer arietinum*). *Internat. J. Forestry & Crop Improv.*, 5 (1) : 28-29.

Article Chronical : Received : 05.02.2014; Accepted : 30.05.2014

Chickpea is an important crop of *Rabi* crop besides limited moisture crop has to compete with weeds. Timely weed management practices play an important role in the successful cultivation of the crop. Chickpea suffers severely due to competition stress of weeds with yield reduction to the tune of 20 to 49.5 per cent depending on nature and density of weeds. The conventional method of weed control by hoeing and hand weeding are very laborious, expensive and time consuming and needs to be often repeated at different intervals, Therefore, the present investigation was planned to find out efficacy of herbicides and cultural management on weed control in Chickpea

(*Cicer arietinum*).

An investigation was carried out during 2010-2011 at farm of Agronomy Department, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. The experiment was laid out in Randomized Block Design with 3 replication and 10 treatments. These treatments combination of pre and post emergence herbicides with cultural practices and one weedy checks. Treatments combinations as weed check (T_1), Imazethapyr PRE 75 g ha⁻¹ (T_2), Imazethapyr POE 75 g ha⁻¹ (T_3), Pendimethalin PRE 1 kg ha⁻¹ (T_4), Quizalofop-p-ethyl POE 50g ha⁻¹ (T_5), Imazethapyr PRE 75 ha⁻¹ + 1H at 30 DAS (T_6), Imazethapyr POE 75g ha⁻¹ + 1H at 40 DAS (T_7), Pendimethalin PRE 1kg ha⁻¹ + 1H at 40 DAS (T_8), Quizalofop-p-ethyl POE 50g ha⁻¹ + 1 H at 40 DAS (T_9), 2H at 15 and 40 DAS + 1 HW at 30 DAS (T_{10}). The Chickpea variety (Jaki 9218) sown at Gross plot size 5 x 5.5 m and net plot size 4.2 x 4 m, on 4th November, 2010. Effect on microbial population bacteria, fungi and actinomycetes were workout.

It would be observed from the data that differs among the treatments for bacterial, fungal and actinomycetes count before spraying of herbicides to be non-significant. But after spraying of herbicide, there were considerable differences

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Table 1: Soil microbial population affected by different treatments in chickpea

Treatments	Bacterial count (x 10 ⁷ cfu g ⁻¹ soil)		Fungal count (x10 ⁴ cfu g ⁻¹ soil)		Actinomycetes count (x 10 ⁶ cfu g ⁻¹ soil)	
	Before spraying	After spraying	Before spraying	After spraying	Before spraying	After spraying
T ₁ - Weedy check	28.25	-	21.46	-	23.99	-
T ₂ - IMZ PE @ 75 g ha ⁻¹	25.30	16.12	18.45	12.12	22.52	16.09
T ₃ - IMZ POE @ 75 g ha ⁻¹	26.45	17.45	18.88	12.55	21.55	17.43
T ₄ - Pen @ 1000 g ha ⁻¹ PE	27.72	21.38	20.38	16.38	22.58	20.92
T ₅ - QZF @ 50 g ha ⁻¹ POE	25.43	18.76	18.1	13.43	22.33	18.33
T ₆ - IMZ @ 75 g ha ⁻¹ PE+1H at 30DAS	26.02	16.18	19.18	11.52	22.18	15.95
T ₇ - IMZ POE @ 75 g ha ⁻¹ +1H at 40DAS	26.5	16.50	18.83	11.83	21.83	16.17
T ₈ - Pen @ 1000 g ha ⁻¹ PE+1H at 40DAS	27.55	22.88	21.22	17.88	22.65	21.68
T ₉ - QZF @ 50 g ha ⁻¹ POE +1H at 40DAS	26.63	21.41	20.41	16.07	22.61	19.94
T ₁₀ - 2H at 15 and 40 DAS+1HW at 30 DAS	27.6	23.50	21.43	18.77	23.10	22.77
S.E. ±	1.05	0.56	2.50	0.90	0.88	0.96
C.D. (P=0.05)	-	1.68	-	2.67	2.62	2.88
G.M.	26.74	17.42	19.83	13.05	22.53	16.93

among the treatments. After spraying of herbicide microbial count was reduced in herbicidal treatment (T₂ and T₉) than cultural method of weed control treatment (T₁₀). Treatment weedy check (T₁) shows maximum microbial count before and after spraying of herbicide.

Before and after spraying of herbicides the samples were drawn for microbial study and it was observed that before spraying of herbicide the bacterial, fungal and actinomycetes count were more or less similar. The bacterial population was ranged between 25.43 to 28.25 x 10⁷ cfu g⁻¹ soil. However, after post emergence spraying Quisalofof ethyl 50 gha⁻¹ reduced the bacterial population from 25.43 to 18.76 x 10⁷ cfu g⁻¹ soil. There was least effect on bacterial population when Pendimethalin 1.0 kgha⁻¹ was sprayed. The bacterial population was reduced with post emergence spray of Imazethapyr 75 gha⁻¹. Cultural practices has no effect on bacterial population. Fungal population was ranged between 18.10 to 21.43 x 10⁴cfu g⁻¹ soil, before spraying of herbicides. The fungal growth was reduced (11.52 x 10⁴ cfug⁻¹ soil) with post emergence spray of Imazethapyr 75 gha⁻¹. Pendimethalin has less effect on fungal population. The actinomycetes population was ranged from 21.83 to 23.99 x 10⁶ cfu g⁻¹ soil which was (16.17x10⁶cfu g⁻¹ soil) reduced due to Imazethapyr spray 75 gha⁻¹. Lower effect of Pendimethaline (21.68 x 10⁶ cfu g⁻¹ soil) on actinomycetes

activity was noticed.

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