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Effect of Foliar Sprary of Antibiotic and Fertilizer on Nodule Number, Shoot and Root Length *Vicia Faba Linn.*

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Abstract: *Foliar application of all the three concentration viz 50 ppm, 100ppm and 200ppm inhibited the number of nodule significantly whereas these concentrations promoted the shoot and root length. Maximum inhibition in nodule number and promotion in the length of shoot and root was observed in 200 ppm*

Keywords: Foliar application; Antibiotic; Nodule number; shoot and root length

I. INTRODUCTION

Seeds were surface sterilized with 0.1% aqueous HgCl2 solution and in small earthenware pots containing equal amount of double sterilized soil and precaution was taken to prevent contamination of soil with *Rhizobium* until inoculation. Six days after, the 10 seedling of equal size were selected and retained in each pot and the rest were removed.

Before spraying, the post were inoculated with equal amount of a homogenous suspension of an appropriate strain of *Rhizobium*. Latter was isolation from the effective (pink) nodules and was grown on the yeast extract mannitol agar medium. Three concentrations of antibiotic (subamycin) and fertilizer (N.P.K.) viz 50ppm, 100ppm and 200ppm were prepared in sterilized distilled water. Two spraying were made, first when plants become 15 days old for two consecutive days and the second eight days after the first spraying. Control plants were sprayed with sterilized distilled water. Home spray atomizer was used as sprayer. Soil contamination of solutions was prevent by covering the soil surface with sterilized cotton. Fifteen Days after the second spraying, nodule number, shoot and root length were record. Data were subjected to 't' test.

II. RESULT AND DISCUSSION

Table-1 Effect of foliar spray of Subamycin (antibiotic) on nodule number, shoot and root length.

Treatment	Concentration (ppm)	Mean number of nodules	Value of 't'	Mean shoot length (cm.)	Value of 't'	Mean of root length (cm.)	Value of 't'
Subamycin	C	27	-	15.41	-	25.31	-
	50	28	0.53	16.27	0.81	28.43	1.54
	100	32	2.82*	16.02	0.73	28.54	1.76
	200	19	4.82**	15.15	0.30	23.23	1.11

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Table-2 Effect of foliar spray of N.P.K. (fertilizer) on nodule number, shoot and root length.

Treatment	Concentration (ppm)	Mean number of nodules	Value of 't'	Mean shoot length (cm.)	Value of 't'	Mean of root length (cm.)	Value of 't'
Nitrogen	C	32	-	20.25	-	28.78	-
Potassium	50	25	3.37**	21.05	0.63	28.03	0.47
Phosphate	100	19	5.96**	20.02	0.18	27.95	0.45
	200	15	7.80**	18.3	1.39	25.22	1.85

C = Control
* Significant at 5% level
** Significant at 1% level

In the case of subamycin treated plants it has been found that concentration of 50 ppm insignificantly increased the number of nodule while with 100 ppm and 200 ppm significant decreases in number of nodules were noted. Maximum decrease was noted at 200 ppm (Table –1).

All the concentration of nitrogen potassium phosphate inhibited the growth of shoot and root but maximum inhibition shoot was record at 200 ppm whereas 100 ppm and 200 ppm inhibited significantly the root length (Table –1).

In case of nitrogen potassium phosphate spraying 50 ppm concentration apparently increased the number of nodule but this increase was insignificant 100 ppm and 200 ppm inhibited significantly the number of nodule. Maximum inhibition was noted at 200 ppm. Significant decrease in shoot and root length was noted at 200 ppm (Table –2). The present findings, so far as high concentrations are concerned are in accordance with the observation of Gupta (1974) and Jain (2001) who reported that the increasing concentration of subamycin caused a decrease in both nodule number and nodule volume. EI- Shakweer, Farah and Barakat (1983)

and Saito et.al. (1985) reported that low concentrations of nitrogen potassium phosphate significantly increased the number of nodules while higher concentrations proved to be toxic for nodulation. Jamro and larik (1988) reported that foliar spray of nitrogenous fertilizer on *Phaseolus vulgaris* has adverse effect on nodulation at higher concentration.

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