

EFFECT OF ORGANIC MANURE AMENDMENT ON NODULE NUMBER, SHOOT AND ROOT LENGTH OF *GLYCINE MAX*(L.) MERRILL.

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In pot experiment soil treated with organic manure (chicken manure and cow dung) was used to elucidate the effect on nodulation, shoot and root length of Glycine max (L.) Merrill. The treatments comprised 1, 2 and 5 g/pot organic manure. The analysis revealed that all treatments of both the organic manures significantly increased the number of nodule, shoot length and root length/plant. Maximum increase in the number of nodule, shoot and root length was recorded in chicken manure.

Keywords : Chicken manure; Cow dung; Nodulation; Shoot and root length; Soil amendment.

Effect of soil amendment with organic manure on nodulation and growth of leguminous plants have so far been studied by a few workers. Browaldh reported that Compost and Chicken manure significantly increased the growth and nodulation of bean plants. Selvam *et al.* conducted a field experiment in Tamil Nadu to evaluate effect of different organic manure, inorganic fertilizers and weed management practices in Soybeans. The number of root nodules recorded at 60 days after sowing, was significantly influenced by combined application of organic manure and inorganic fertilizers. Nagarjan and Balachandar reported that the organic manure amendment enhanced root nodulation and plant height of black gram.

Present study is designed to study the

effect of organic manure amendment to soil on nodule number, shoot and root length of *Glycine max* (L.) Merrill.

Seeds were surface sterilized with 0.1% aqueous HgCl₂ solution and sown in earthenware pots containing 3.5 kg of double sterilized soil. Organic manures (chicken manure and cow dung) were grinded properly and mixed in 3 doses viz 1, 2 and 5 g/pot separately. Untreated pots (pot without manure) were also kept side by side which served as control. The pots were inoculated with equal amounts of a homogenous suspension of an appropriate strain of *Rhizobium* which was isolated from the Pink nodules of the test plant. Plants were watered with equal amount of sterilized water at regular intervals. 60 days after sowing, plants were

Table 1. Effect of chicken manure amendment on nodule number, shoot and root length.

Treatment	Concentrations (gms)	Mean Number of nodules	Value of 't'	Mean Shoot length (cm)	Value of 't'	Mean Root length (cm)	Value of 't'
Chicken manure	Control	20.80	—	27.22	—	29.57	—
	1	22.20	2.18*	28.84	4.46**	30.73	2.44*
	2	23.60	4.72**	29.65	6.62**	32.02	4.73**
	5	24.70	5.49**	32.66	11.38*	34.32	9.43**

* Significant at 5% level = 2.101

** Significant at 1% level = 2.878

Table 2. Effect of cow dung amendment on nodule number, shoot and root length.

Treatment	Concentrations (gms)	Mean Number of nodules	Value of 't'	Mean Shoot length (cm)	Value of 't'	Mean Root length (cm)	Value of 't'
Cow dung	Control	20.80	—	27.22	—	29.57	—
	1	21.00	0.26	27.77	1.32	30.28	1.46
	2	22.10	1.94	28.92	3.36**	31.27	2.95**
	5	23.70	4.27**	31.25	8.86**	33.09	7.91**

* Significant at 5% level = 2.101

** Significant at 1% level = 2.878

uprooted carefully under the tape water. Nodule number, shoot and root lengths were recorded. Data were subjected to 't' test.

Results revealed that application of both organic manures had a positive effect on nodulation and significantly encouraged the shoot and root length. Application of 5 g/pot organic manure produced the highest value of nodule number and plant growth parameters. Though, both organic manures showed significant effect on plant growth parameters and nodulation but chicken manure is more effective than cow dung (Table 1 & 2, Fig. 1 & 2). Chorey *et al.*¹ reported that the effect of organic manures, in combination with fertilizers, significantly influenced the number of root nodules, plant height and root length. Selvam *et al.*² studied the effect of organic manures and inorganic fertilizers on nodulation in Soybean Cv. Col. and reported that the number of root nodules recorded at 60 days after sowing, was significantly influenced by the combined application of organic manures and inorganic fertilizers. Nagarjan and Balachandar³ reported that the organic manure amendment enhanced the plant growth and nodulation in case of black gram. Devi⁵ reported, organic manure amendments applied at 400 kg/ha to soil on arhar

(*Cajanus cajan*) and moong bean (*Vigna sinensis*), increased plant growth and nodulation.

The present findings are in accordance with the observation of Chorey *et al.*¹ and Nagarjan and Balachandar³.

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Fig.1. Effect of Chicken manure amendment on nodule number, shoot and root length of *G. max*.



Fig.2. Effect of Cow dung amendment on nodule number, shoot and root length of *G. max*.

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