

Effect of potassium and foliar spray of cow urine on growth and yield of green gram [*Vigna radiata* (L.) Wilczok]

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Green gram is a short duration and widely adopted crop and it has an ability to fix atmospheric nitrogen eubiotically. Indian soils are abundant in potassium, but their availability to crops is less. Taking into consideration, it was decided to use foliar spray of cowurine as an organic source in conjunction with fertilizers applied in soil for enhancing the nutrient availability.

A field experiment was conducted at Mahatma Phule Krishi Vidyapeeth, Rahuri during summer 2005. The soil of experimental plot was clayey, low in available nitrogen, medium in phosphorus and high in available potash.

The field trial was laid out in a factorial randomized block design with 8 treatment combinations, replicated

thrice with four levels of potash (0,25,37.5 and 50 kg K₂O ha⁻¹) and foliar spray of cowurine and water. Potassium levels along with recommended dose of fertilizer 25 kg N and 50 kg P₂O₅ was given at the time of sowing. Fresh diluted cowurine was sprayed at age of 15, 35 and 50 days on green gram.

The plant height, dry matter and grain yield were increased by different potash levels and foliar spray of cowurine (Table 1). The plant height was significantly highest in treatment 50 kg K₂O ha⁻¹ applied in soil with RDF (19.16, 40.39, 63.03 and 64.10 cm at 20, 40, 60 DAS and at harvest, respectively) at all the crop growth stages and was statically at par with 37.5 kg K₂O ha⁻¹ level of

Table 1 : The plant height, dry matter and grain yield of green gram as influenced by different treatments

Treatments	Plant height (cm)				Dry matter (g)				Grain yield (q ha ⁻¹)
	20 DAS	40 DAS	60 DAS	At harvest	20 DAS	40 DAS	60 DAS	At harvest	
Potash levels (kg K₂O ha⁻¹)									
0	14.87	31.35	48.91	49.75	0.25	10.22	18.20	20.67	9.30
25	17.06	35.95	56.10	57.05	0.29	11.72	20.87	23.67	10.66
37.5	18.48	38.94	60.77	61.81	0.31	12.70	22.61	25.67	11.55
50	19.16	40.39	63.03	64.10	0.32	13.17	23.45	26.63	11.98
C.D. (P=0.05)	0.913	1.924	3.003	3.056	0.015	0.628	1.116	1.266	0.57
Foliar sprays									
Cow urine	18.16	38.27	59.71	60.74	0.30	12.48	22.22	25.23	11.35
Water	16.63	35.04	54.69	55.62	0.28	11.43	20.35	23.09	10.40
C.D. (P=0.05)	0.646	1.360	2.124	2.161	1.011	0.444	0.789	0.895	0.40
Interaction									
C.D. (P=0.05)	NS	NS	NS	NS	NS	NS	NS	NS	NS

NS=Non-significant

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potash. These findings are in conformity with Sangakkara (1990) and Shaha *et al.* (1994). Similar trend was noticed in plant height due to foliar spray of cowurine over water spray.

The mean dry matter was found to be highest with 50 kg K₂O ha⁻¹ along with RDF (0.32, 13.17, 23.45, 26.63 g at 20, 40, 60 DAS and at harvest, respectively) at all the crop growth stages and was at par with 37.5 kg K₂O ha⁻¹ level of potash. Similar results were obtained by Akhtar *et al.* (1984) and Mathan *et al.* (1996). Due to cowurine spray, the mean dry matter per plant was significantly highest over water spray at all the crop growth stages.

The mean grain yield was significantly highest at 50 kg K₂O ha⁻¹ (11.98 q ha⁻¹) and was statically at par with 37.5 kg K₂O ha⁻¹ (11.55 q ha⁻¹). Similar results were also obtained by Akhtar *et al.* (1984) and Jamadagni and Birari (1994). Due to foliar spray of cowurine, grain yield was significantly highest (11.35 q ha⁻¹) over water spray.

However, the interaction effect of potassium levels and foliar spray was found to be non significant for plant height, dry matter and grain yield.

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