Madras Agric. J. 90 (4-6) : 355-356 April-June 2003

Research Notes

Effect of phosphorus levels on forage yield of cowpea varieties

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In recent years, cowpea (*Vigna unguiculata* (L.) Walp) is gaining importance in Maharashtra as a fodder legume crop and is grown during summer and *kharif* seasons. It is a heavy forage yielder raised as a pure crop or in association with cereals like maize, sorghum and bajra so as to enrich their nutritive value due to its higher protein content. Besides, it also improves the fertility status of soil and reduce the nitrogen requirement of companion or succeeding crop in rotation. With the advent of new high yielding varieties responsive to irrigation and fertilizers, it become necessary to test three varieties for their response to nutrient especially phosphorus. With these considerations in view, the present investigation was undertaken.

A field experiment was conducted at MPKV, Rahuri during *kharif* season of 2000-01. The soil of the experimental field was clayey in texture, low, medium and high in available NPK respectively. The treatments comprised of four varieties and three phosphorus levels (Table 1). The full dose of nitrogen i.e. 20 kg ha^{-1} and phosphorus as per the treatments were applied at sowing. The crop was sown at 30 cm row spacing and harvested at 50 per cent flowering.

The differences in green forage, dry matter and crude protein yields were significant for the varieties. Among the varieties, UPC-606 recorded the highest yield of green forage (271.68 q ha^{-1}), dry matter (56.23 q ha^{-1}) and crude protein (12.46 q ha^{-1}) as compared to other varieties but it was at par with UPC05286 for green forage yield. The next best variety was UPC-5286, which recorded 260.64, 50.95

Table 1. Mean green forage, dry matter and crude protein yield (q ha^{-1}) of cowpea as influenced by different treatments.

Treatments	Green forage yield (q ha^{-1})	Dry matter yield (q ha^{-1})	Crude protein yield (q ha^{-1})
I. Varieties			
V_1 - Bundel lobia-1	222.96	43.06	8.94
V_2 - Bundel lobia-2	236.04	44.35	9.74
V_3 - UPC-5286	260.64	50.95	10.68
V_4 - UPC-606	271.68	56.23	12.46
S.E.+	5.33	1.02	0.23
C.D. (P=0.05)	15.62	3.00	0.69
II. 'P' levels (kg ha^{-1})			
P_1 - 30	236.61	45.86	9.76
P_2 - 45	246.15	48.12	10.31
P_3 - 60	260.73	51.97	11.30
S.E.+	4.61	0.89	0.20
C.D. (P=0.05)	13.53	2.60	0.60
III. Interaction			
S.E.+	9.23	1.77	0.41
C.D. (P=0.05)	NS	NS	NS

and 10.68 q ha^{-1} green forage, dry matter and crude protein. As regards to phosphorus, increasing the level from 0 to 60 kg ha^{-1} progressively increased the forage yield.

Significantly higher yields of green forage (260.73 q ha^{-1}), dry matter (51.97 q ha^{-1}) and crude protein (11.30 q ha^{-1}) were obtained with application of 60 kg phosphorus per hectare. The favourable effect of phosphorus on yield may be ascribed to its role in the constitution of ribonucelic acid, deoxyribonucleic acid and ATP which regulate the vital metabolic processes in the plant, helping in root formation, nitrogen fixation and finally the crop yield. This confirms the findings of Tripathi *et al.* (1977), Sairam *et al.* (1984), Tripathi *et al.* (1984), Sheoran *et al.* (1994) and Mishra and Baboo (1999). The interaction effect due to varieties and phosphorus levels was found to be non significant.

The results indicated that growing of UPC-606 with application of 60 kg phosphorus per hectare showed better proposition for achieving higher forage yield in cowpea.

References

Mishra, S.K. and Baboo, R. (1999). Effect of nitroge phosphorus and seed inoculation of cowp (*Vigna unguiculata*). *Indian J. Agron.* 4 373-376.

Sairam, R.K., Tomer, P.S. and Ganguly, T.K. (1984 Growth, nitrogen uptake and forage yie of cowpea as affected by phosphoru application and inoculation. *Agric. Sc Digest.* 4: 83-86.

Sheoran, R.S., Ram, S., Joshi, U.S. and Singl J.V. (1994). Response of forage cowpe varieties to varying levels of phosphoru under irrigated condition. *Forage Res.* 2(185-189.

Tripathi, H.P., Gill, P.S. and Kapoor, M.L. (1977 Response of fodder varieties of cowpea t phosphorus application. *Forage Res.* 3: 121 123.

Tripathi, S.N., Singh, R.A. and Gill, A.S. (1984) Evaluation of cowpea varieties for forag and seed yields under different row spacing and levels of phosphorus. *Agric. Sci. Diges* 4: 102-104.

(Received : March 2002 ; Revised : April 2003

Madras Agric. J. 90 (4-6) : 356-360 April-June 2003

Research Notes

Degradation and persistence of chlormequatchloride in soil and water

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Plant growth regulators (PGRs) are applied to the plants to modify the vegetative characters and thereby enhancing the yield of crops. PGRs are having dynamic role in various physiological and biochemical process in plants. The PGRs after application to plants reaches the soil through drift and foliar wash off. The persistence of this PGR in soil may pose problems of persistence and residues. Any xenobiotic that reaches the soil should degrade fast to innocuous products without any residue hazards.

Chlormequatchloride (CMC) is an aqueous solution to the alkyl ammonium chloride. It is very stable in the form and is very resistant to acid hydrolysis. Decomposition in water below pH 5 is negligible but at pH above 10 is significant. McCall *et al.* (1979) reported that often the applied growth regulator remain in the soil for longer periods posing the environmental hazard. Considering the necessity for such information an attempt was made in the present investigation to study the degradation of CMC in soil and water.

Laboratory experiments were conducted at Department of Soil Science and Agricultural Chemistry, Tamil Nadu Agricultural University,