

Response of cowpea to fertilizer and protective irrigation

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A field experiment was conducted at the G.K.V.K. Campus, University of Agricultural Sciences, Bangalore, during early *kharif*, season of 1987-88 on a red sandy clay loam soil of medium fertility to know the response of cowpea to fertilizer and protective irrigations. The soil was slightly acidic in reaction (pH 6.2). The experiment was laid out in factorial RBD with six treatments and four replications.

All the treatments received basically 5 tonnes FYM per ha. The treatments constituted three levels of fertilizer, with (I₁) and without (I₀) protective irrigations. The cowpea var. C-152 was sown at 40 cm row spacing on May, 20, in the early *kharif*, season of 1987. Fertilizer was applied as per the treatments (Table 1) and measured water (5 cm) was given during dry spells only in I₁ treatment in the form of

Table 1. Growth, yield and yield attributes, in cowpea as influenced by fertilizer levels and protective irrigation

Treatments	Total drymatter production (g/plant)	No. of branches per plant	Leaf area (cm ² /plant)	No. of pods/plant	Pod weight/plant (g)	Seed yield/plant (g)	Seed yield/ha (kg)	Green stalk yield (t/ha)
F ₀ : No fertilizer	19.06	4.27	770.8	9.97	14.58	10.86	788.61	5.30
F ₁ : 25 : 25 : 25 kg N, P ₂ O ₅ , K ₂ O/ha	21.38	4.85	966.2	11.20	13.93	10.22	1059.32	6.13
F ₂ : 25 : 50 : 25 kg N, P ₂ O ₅ , K ₂ O/ha	19.26	5.57	700.2	11.55	15.92	12.20	900.93	5.62
S. Em ±	1.45	0.49	91.5	1.33	2.18	1.68	68.65	0.39
CD at 5%	NS	NS	NS	NS	NS	NS	205.89	NS
I ₀ : No protective irrigation	17.21	4.42	784.6	9.13	12.59	9.50	677.74	4.97
I ₁ : Protective irrigation	22.58	5.36	840.2	12.68	17.04	12.69	1151.49	6.39
S.Em ±	1.18	0.40	74.7	1.08	1.78	1.37	56.06	0.32
CD at 5%	3.57	NS	NS	3.28	NS	NS	168.92	0.97

protective irrigations on 27 and on 55 days after sowing.

Drymatter and yield attributes of cowpea were not significantly influenced due to fertilizer levels (Table 1). However, the highest total dry matter production was recorded at F₁ fertility level at harvest. This was due to highest leaf area recorded at F₁. The higher number of branches in F₂ and F₁ contributed to higher number of pods per plant. The highest number of pods, pod-weight and seed-yield per plant were recorded in F₂. Seed-yield was significantly higher at F₁ as compared to no fertilizer application (F₀) but was on par with F₂. The variations in green stalk-yield due to fertilizer application were not significant. However, the highest green stalk-yield was obtained in F₁ as compared to F₂ and F₀.

The per cent increase in grain and green stalk-yield at 25 : 25 : 25 fertility level was 34.32 and 15.67 per cent, respectively over no fertilizer application. The increased yield of cowpea in F₁ and F₂ could be attributed to the increased availability of P through added fertilizers on a soil medium in fertility.

Protective irrigation recorded higher dry matter and yield attributes as compared to no protective irrigation. I₁ recorded significantly higher dry matter production and number of pods per plant as compared to I₀. The seed-yield and green stalk-yield of cowpea were significantly higher in I₁ than I₀. The increase in grain and green stalk-yield due to protective irrigation was 69.9 and 28.57 per cent, respectively over no protective irrigation.