

Effect of nitrogen, ferrous sulphate and zinc sulphate on groundnut (*Arachis hypogaea*) yield in deep black soils

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Received: March 1992

Chlorosis of groundnut (*Arachis hypogaea* L.) is an important problem on most of the black soil of Tunga Bhadra Project area. Factors such as high pH of the soil, high soil moisture, excess phosphorus application and high calcium favour chlorosis. Keeping these points in view an experiment was conducted at Siruguppa during the rainy season of 1988 to study out the response of groundnut to levels of N, FeSO_4 and ZnSO_4 .

The experiment consisting of 7 treatments

(Table 1) was laid out in randomized block design with 3 replications. Groundnut ('JL 24') seeds were dibbled on 27 August 1988 at 30 cm $\times$ 15 cm spacing. The gross plot and net plot sizes were 4.5 m $\times$ 4.9 m and 3.3 m $\times$ 3.2 m respectively. Iron sulphate and zinc sulphate were applied to the soil @ 10 kg/ha (at sowing) or sprayed @ 0.5%, 30 days after sowing as per the treatment (Table 1). Phosphorus and potassium were applied @ 75 and 25 kg/ha respectively in all the treatments. The crop was harvested on 5 December 1988. The soil was deep black

Table 1. Yield and yield-attributing characters of groundnut as influenced by N levels, soil and foliar application of ZnSO_4 and FeSO_4

Treatment	Pod yield (q/ha)	Pods/plant	100-grain weight (g)	Branches/plant
T ₁ , 25 kg N/ha	7.61	4.4	25.27	4.1
T ₂ , 25 kg N/ha + 25 kg N/ha (30 DAS)*	8.99	5.5	25.48	4.6
T ₃ , 25 kg N/ha + 25 kg N/ha (45 DAS)	7.94	4.5	24.72	4.0
T ₄ , T ₂ + ZnSO_4 @ 0.5% spray	10.51	6.4	25.81	4.6
T ₅ , T ₂ + ZnSO_4 @ 10 kg/ha soil application	9.13	5.5	25.60	4.4
T ₆ , T ₂ + FeSO_4 @ 0.5% spray	9.78	5.9	25.36	4.4
T ₇ , T ₂ + FeSO_4 @ 10 kg/ha soil application	9.59	5.9	25.43	4.4
CD (P = 0.05)	1.13	0.70	NS	NS

* DAS, Days after sowing

with pH 8.3.

Top-dressings of 25 kg N/ha at 30 days after sowing gave significantly more yield than no top-dressing (Table 1). However, this treatment was on a par with top-dressing at 45 days after sowing. This indicated necessity of top-dressing with 25 kg N/ha at 30 days after sowing. Spraying with 0.5% ZnSO₄ gave significantly higher yield

compared than no spraying. However, soil application of 10 kg ZnSO₄/ha at sowing gave at par yield with no ZnSO₄ application. This indicates that groundnut responds to foliar spray but not to soil application. Ferrous sulphate either applied to soil at sowing or sprayed did not show any significant increase in pod yield over no application of ferrous sulphate.

Indian J. Agron. **38** (2) : 330-332 (June 1993)

Effect of nitrogen and phosphorus fertilizers on yield and nutrient uptake in sunflower (*Helianthus annuus*)

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Received: April 1992

A field experiment was carried out at Navasari during the winter (*rabi*) 1988-89 to determine the uptake of nitrogen, phosphorus and potash by sunflower (*Helianthus annuus* L.) under different levels on N and P. Treatments comprising 4 levels of both N and P₂O₅ (0, 30, 60 and 90 kg/ha) were tried in randomized block design with 4 replications. Ammonium sulphate, urea and single superphosphate were used as a source of N and P. The soil was clay, having pH 7.7, available N, P₂O₅ and K₂O 227.5, 47 and 327 kg/ha respectively. Sunflower 'EC 68414' was sown at a spacing of 60 cm × 20 cm on 5 December 1988 and harvested on 23 March 1989.

Nitrogen fertilization increased the seed yield, stalk yield and content and uptake of N, P and K up to 90 kg/ha, but significant difference was observed only up to 60 kg/ha. N @ 60 and 90 kg/ha were found statistically at par. Similar results were reported by Singh *et al.* (1988) for yield and by Kalra and Tripathi (1980) for content and uptake of N, P and K.

Phosphorus had no effect on the yield as well as content and uptake of N, P and K. The response trend confirms the nutrient status of soil which was low in N and medium in available P.

It was concluded that sunflower in south Gujarat conditions, especially in black

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