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Effect of Soil and Foliar Application of Fertilizers on Chick Pea (*Cicer arietinum*)

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Chickpea is an important legume crop sharing nearly 48% of the total production of pulses in India. It has also vital place in the cropping pattern of the country due to its role in soil fertility build up and protein rich food supply to both human beings and animals. However, its productivity in the country is only 700 kg ha^{-1} which is quite low as compared to 1670 kg/ha^{-1} in Egypt and 1220 $kgha^{-1}$ in Turkey. One of the major causes of low yields of this crop in India is imbalanced use of fertilizers. Fertilizer source and method of application also influences yield.

Keeping the above facts in view the present study was carried out to explore the possibilities of improving the yields of chickpea, economically, by using suitable P source Di-ammonium phosphate (DAP) or Triple super phosphate (TSP) and method of application (soil, foliar or soil + foliar). The field experiment was conducted at JNKVV-Regional Agril. Research Station, Bilaspur during 1981-82 and 1982-83 in randomized block design with three and four replications during two respective years. The soil was sandy loam with 100, 10.4 and 225 $kgha^{-1}$ available nitrogen, phosphorus and potash respectively, having pH 6.5 and conductivity 0.723 mmhos/cm in 1981-82. The available N, P and K during 1982-83 were 142.5, 15.0 and 500 $kgha^{-1}$ respectively. The crop was sown on 26th and 17th October in respective years in rows 30 cm apart. There were seven treatment combinations as given in Table 1. A uniform quantity of 18 kg Nha^{-1} was applied in all treatments, which included application of phosphorus through Triveni to balance the nitrogen supplied through DAP. The fertilizers as per treatments were applied in the furrows below the seed at the time of sowing. The DAP and TSP fertilizers were sprayed at flower initiation and pod formation stages. The fertilizers applied through soil as basal application gave significantly higher grain yield over soil + foliar of foliar application during both the seasons (Table 1). Almost similar trends were observed in case of number of branches per plant and 100 grain weight also but the number of pods per plants showed inconsistent pattern in case of foliar and soil + foliar application, although the values remained highest under soil application. The application of fertilizers at the time of sowing ensured a sustained supply of phosphorus during different stage of crop growth which could be the reason for better performance of crop under soil application when compared to

TABLE 1

Grain yield, attributes and additional production and net profit over control as influenced by various treatments.

Treatments	Grain yield kg/ha		No. of branches/pl.		No. of pods/plant		Test weight of 100 grains		Average over additional production over control (kg/ha)	(%)	Two years additional net profit over control (Rs/ha)
	81-82	82-83	81-82	82-83	81-82	82-83	81-82	82-83			
No fertilizer	917	1235	11.40	16.45	26.53	38.3	12.33	15.00	—	—	—
100 kg DAP Soil application	1189	1469	15.60	22.55	38.40	61.15	14.66	16.37	303	29.53	538
100 kg DAP foliar application	1040	1289	12.80	17.50	29.06	54.80	13.66	15.12	138	13.45	43
50 kg DAP soil + 50kg DAP foliar application	1048	1346	12.66	20.45	29.60	49.99	13.66	15.62	171	17.00	142
100 kg Triveni soil application	1307	1407	14.60	21.00	39.06	56.80	15.00	16.12	331	32.26	627
100 kg Triveni foliar application	939	1253	12.20	16.35	28.60	41.70	13.33	15.25	70	6.82	156
50 kg Triveni soil+ 50 kg Triveni foliar application	1134	1283	13.80	17.20	30.13	43.95	14.66	15.62	182	17.74	180
C. D. at 5%	65	75	N.S	N.S	N.S	14.03	N.S	N.S	—	—	—

soil + foliar or foliar application. Similar results have been reported by Suryawanshi and Chaudhari (1979). The additional yield and net profit realised due to soil application of D.A.P. and Triveni were 303 and 331 kgha^{-1} and Rs. 538 and Rs. 627 ha^{-1} respectively, over the control. Therefore soil application of phosphatic fertilizers seems to be better as compared to soil + foliar and foliar application in these soils.

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