Indian J. Agron. **40** (2) : 325–327 (June 1995)

Dry-matter production and uptake of nitrogen, phosphorus and potassium in rainfed groundnut (*Arachis hypogaea*)

M. YAKADRI AND V. SATYANARAYANA

Department of Agronomy, Andhra Pradesh Agricultural University, Hyderabad 500 030

Received: December 1990

A field experiment was conducted during the rainy season of 1989 at Rajendrangar, Hyderabad. The treatments comprised 6 combinations of N (0 and 30 kg N/ha) and P (0, 30 and 60 kg P_2O_5/ha) in main plots and 4 levels of K (0, 30, 60 and 90 kg K_2O/ha) in subplots, replicated thrice in split-plot design. The soil was red sandy loam with pH 7.4, low in available N (250 kg/ha), medium in available P_2O_5 (23.5 kg/ha) and K_2O (180 kg/ha), with electrical conductivity 0.52 mmhos/cm at 25°C. 'TMV 2' groundnut was sown during the second week of July at 30 cm x 10 cm spacing and harvested on 28 October.

The uptake of N, P and K by both pods and haulms at harvest significantly increased with increasing levels of fertilizers (Table 1). Application of 30 kg N, 60 kg P_2O_5 and 60 kg K_2O/ha recorded higher uptake of N, P and K over the rest of the treatment combinations. The higher uptake of N, P and K at higher levels of these nutrients can be attributed to the poor nutrient status of the soil and might have resulted from dense canopy, more growth, root proliferation by phosphorus and due to complementary effect of potassium. These results are in conformity with those of Nair *et al.* (1982). Pods removed more N than haulms, whereas haulms removed more P and K than pods. Nitrogen removal by pods was 18% more than that of haulms. This could be attributed to the fact that major part of dry matter was shared by pods than haulms (Nephade, 1970). The higher N uptake by pods on account of K @ 60 kg K_2O/ha was resulted due to active role of K in the efficient translocation of nutrients from haulms to pods. The higher removal of P and K in haulms was due to higher content of P and K in haulms than in pods. Application of K beyond 60 kg K_2O/ha decreased the uptake of N, P and K. This may be due to antagonistic effect of higher level of K on P (reflecting in low P content), which ultimately affected the N uptake. Similar trend was observed by Patel and Patel (1988).

Production of dry matter by pods and haulms also followed the similar pattern of nutrient uptake. Dry matter of pods and haulms was maximum due to application of N, P and K at higher levels than lower levels. The increase in dry-matter production due to higher levels of N, P and K could be attributed to increased uptake and adequate supply of these nutrients to plants for proper growth and metabolic process. Production of lower dry matter at higher dose of K could be due to antagonistic effect of K on availability of P in soils, thereby suppressing the uptake of these nutrients. The results confirm the findings of Udayabhanu (1982).

It was concluded that there is close rela-

Table 1. Dry-matter accumulation and nutrient uptake in groundnut as affected by N, P and K application

Treatment	Dry matter (kg/ha)		N uptake (kg/ha)			P uptake (kg/ha)			K (uptake (kg/ha)		
	Pods	Haulms	Pods	Haulms	Total	Pods	Haulms	Total	Pods	Haulms	Total
N (kg/ha)											
0	1,374.1	2,844.2	40.7	34.5	75.2	2.6	4.1	6.7	9.1	39.8	48.9
30	1,545.2	3,143.2	49.7	42.1	91.8	3.2	5.0	8.2	11.2	48.5	59.7
CD (P = 0.05)	45.2	55.8	1.4	1.01		0.62	0.7		0.37	1.15	
P_2O_5 (kg/ha)											
0	1,334.3	2,781.4	38.3	32.8	71.1	2.4	4.0	6.4	8.6	37.9	46.5
30	1,460.0	3,020.0	45.8	38.9	84.7	2.9	4.6	7.5	10.3	44.9	55.2
60	1,543.3	3,180.0	51.4	43.1	94.5	3.3	5.1	8.4	11.5	49.6	61.1
CD (P = 0.05)	55.5	68.4	1.7	1.24		NS	0.84		0.45	1.42	
K_2O (kg/ha)											
0	1,211.5	2,550.0	31.3	27.4	58.7	2.0	3.3	5.3	7.0	37.7	44.7
30	1,420.3	2,968.5	43.2	37.3	80.5	2.7	4.5	7.2	9.7	43.0	52.7
60	1,598.0	3,270.0	54.7	45.4	100.1	3.5	5.4	8.9	12.3	52.3	64.6
90	1,553.6	3,186.6	51.7	43.0	94.7	3.3	5.1	8.4	11.6	49.6	61.2
CD (P = 0.05)	105.1	96.7	2.7	2.51		0.79	1.09		1.11	3.07	

tionship between nutrient uptake and dry-matter production. Application of N, P and K @ 30, 60 and 60 kg/ha respectively could result in higher nutrient uptake and total dry-matter production (reflecting in final pod yield) when compared with the other levels of these nutrients.

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Indian J. Agron. **40** (2) : 327–329 (June 1995)

Efficacy of herbicides in the control of weeds infesting Indian mustard (*Brassica juncea*)

R. B. S. BHADORIA AND D. V. S. CHAUHAN

College of Agriculture, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Gwalior, Madhya Pradesh 473 002

Received: January 1994

A field experiment was carried out during 1990–91 to evaluate the weed-control efficacy of Basalin, Stomp, Tolkon and Ronstar, and of hand-weeding in 'Pusa Bold' Indian mustard [*Brassica juncea* (L.) Czernj. & Cosson] at Gwalior. The soil of the experimental plot was sandy loam in texture with pH 7.8, organic carbon 0.42%, available nitrogen 110 kg/ha, P 36.5 kg and K 380 kg/ha respectively. The seed rate was kept @ 5 kg/ha, and 75 kg N/ha and 40 kg P_2O_5/ha were applied uniformly in all the plots. The treatments comprised 8 treatments (T_1, weedy check; T_2, hand-weeding 30 days after sowing; T_3, weeding at 30 days with wheel hoe; T_4, Basalin @ 0.75 kg ai/ha; T_5, Stomp @ 0.75 kg ai/ha; T_6, Tolkan @ 0.75 kg/ha; T_7, Ronstar @ 0.75 kg/ha; and T_8, weed-free check). Basalin was applied at preplanting, Stomp and Ronstar as pre-emergence, and Tolkan at post-emergence (30 days after sowing) stages. The trial was conducted in randomized block design with 4 replications. The major weeds infesting the Indian mustard crop were *Anagalis arvensis* L., *Avena fatua* L., *Chenopodium album* L., *Chenopodium murale* L., *Convolvulus arvensis* L., *Desmodium trifolium* DC., *Lathyrus aphaca* L., *Melilotus indica* All., *Medicago hispida* (L.) Gaertn., *Spergula arvensis* L. and *Vicia sativa* L.