

ON FARM TRIAL: EFFECT OF RECOMMENDED DOSE OF FERTILIZER APPLICATION IN GROUNDNUT (*Arachis hypogaea*)

P. C. Chaplot* and I. J. Mathur**

ABSTRACT

Agriculture is the main stage of the India's rural economy contributing significantly towards employment and income generation. The study was carried out at two IVLP villages namely Bagthal and Morjai of tehsil Vallabhnagar representing rainfed agro-ecosystem. A total of 20 farmers were randomly selected for the study. Farmers were using 10 kg N + 25 kg P₂O₅/ha in groundnut crop. Hence, an On Farm Trial (OFT) was conducted to evaluate the feasibility and economic viability of using recommended dose of fertilizer. The results of the OFT brings out that the groundnut crop fertilized with 20 kg N + 60 kg P₂O₅/ha through Urea and SSP or DAP and Gypsum recorded highest pod yield, net returns and B:C ratio over farmers practice. As both fertilizer sources are easily available in the market and are better option for increasing groundnut yield on farmers' field.

INTRODUCTION

Groundnut (*Arachis hypogaea*) occupies on area of about 6.7 million ha and contributes 7.3 million towards oilseed production. India stands first in area, second in production and fifth in productivity. The productivity of groundnut is low in India mainly due to rain dependency (85%), monoculture (60%) and cultivation on marginal soils of low fertility. Indian Council of Medical Research recommended consumption of 20 g edible oil/day/person, by 2020 AD, India requires around 20.3 million t of edible oil. To meet this demand, it is essential to enable the productivity through location specific nutrient management practices. To augment groundnut production, FAO conceptualized the ideas of integrated use of all possible and available resources of plant nutrient for better resource use. The rapid increase in food production over the last three decades was at the cost of corresponding increase in the removal of nutrients from the soil resulting depletion of nutrient reserve of soil. The negligence shown to the conservation and use of organic sources of nutrients has not only caused the exhaustion of soil nutrient reserves but also resulted in an imbalance among the available nutrients. Groundnut responds significantly to the application of S (Rao and Shaktawat, 2001) which is involved in the biosynthesis of primary

metabolites for improving yield under balanced fertilization. Both SSP and gypsum are good source of S and particularly advantageous due to beneficial effect of Ca on pod formation. Groundnut responds well to integrated nutrient management particles (Kausale *et al.* 2006). Thus, there is a need to prioritize our research programme as per the clientele preferences. The technologies generated should be appropriate, profitable, environmentally sound and sustainable to improve the livelihood of the farming communities. This paper tries to assess the impact of IVLP intervention *i.e.* effect of recommended dose of fertilizer application in groundnut.

RESEARCH METHODOLOGY

The On-Farm Trail was conducted for two consecutive years (2001 and 2002) in *Kharif* season in NATP-IVLP (TAR) adopted villages Bagthal and Marjai, tehsil Vallabhnagar falls under sub-humid southern plain zone of Rajasthan representing rainfed agro-ecosystem. 20 innovative and receptive farmers from both the villages were selected for conducting the trial to ensure their active participation. The soil of the village was sandy loam with pH ranging from 7.2-8.5. These soils were low in organic matter and available P₂O₅ while medium in available K₂O. Three treatments viz. farmers practice 10 kg N + 25 kg

* Professor, Directorate of Extension Education, MPUAT, Udaipur.

* Director Extension Education, DEE, MPUAT, Udaipur.

P_2O_5 /ha, recommended doses of fertilizer 20 kg N + 60 kg P_2O_5 /ha through SSP and Urea and recommended doses of fertilizer 20 kg N + 60 kg P_2O_5 /ha through DAP + gypsum 250 kg/ha were tested with 20 replications. Each farmer field was considered as a replication accommodating all the three treatments. The crop was sown with the onset of monsoon with a spacing of 30 cm x 10 cm in a plot size of 2000 m². A net plot area of 50 m² was harvested for pod yield from each plot. The trial was also envisaged with four fundamental assumptions as suggested by Pillai (2003).

RESULTS AND DISCUSSION

The yield performance and cost benefit ratio of On Farm Trial due to recommended technology and farmers practice were analyzed and presented in Table 1. Results of two years revealed that application of recommended dose of fertilizer i.e. 20 kg N+60 kg P_2O_5 /ha improved the pod yield of groundnut by 60 to 65 per cent over farmer's practice (10 kg N + 25 kg P_2O_5 /ha). Among the sources of Phosphorus used, the yield obtained under application of 20 kg N + 60 kg P_2O_5 /ha through SSP + Urea and DAP supplemented with gypsum were at par in first year while in second year application of recommended dose of fertilizer through SSP + Urea yielded 60 kg more pod yield over DAP along with gypsum. The recommended fertility level yielded better over farmers prac-

tice indicating the need for education to the farmers about the fertilizer recommendation that is costing them clearly. Further economic analysis indicated that recommended practice i.e. application of 20 kg N+60 kg P_2O_5 /ha through Urea and SSP fetched highest mean net returns or Rs. 5124/ha and B:C ratio 1.56 which was found at par with the application of 20 kg N + 60 kg P_2O_5 /ha through DAP + Gypsum with net returns of Rs. 4689/ha and B:C ratio 1.52 however both the practices enhanced net returns by 166-190 per cent over farmer practice. Outcome of the OFT organized clearly brings out that the adoption of recommended practice is feasible and economically viable. The demonstration could convenience most of the farmers to use recommended technology to get higher groundnut yield.

CONCLUSION

Based on two years investigation on farmer's field, it may be concluded that groundnut crop may be fertilized with recommended dose of nitrogen and phosphorus through DAP along with 250 kg gypsum/ha or through urea + SSP for higher yield and economic returns. It is suggested that such participatory approach involving extension workers and farmers in demonstration of research emanated proven technology may go a long way to curtail losses on account various abiotic stresses.

Table 1 : Effect of recommended dose of fertilizer on yield and economics of groundnut

Treatments	Pod yield (kg/ha)			Net returns (Rs/ha)			B:C ratio		
	2001	2002	Mean	2001	2002	Mean	2001	2002	Mean
Farmer's practice (10 kg N + 25 kg P_2O_5 /ha)	645	642	643	842	2678	1760	1.12	1.38	1.25
Recommended dose (20 kg N + 60 kg P_2O_5 /ha) through SSP + Urea	1160	960	1060	5186	5062	5124	1.51	1.54	1.56
Recommended dose (20 kg N + 60 kg P_2O_5 /ha) through DAP + Gypsum 250kg/ha	1150	900	1025	4703	4675	4689	1.58	1.53	1.52
S. Em.±	35.68	98.88							
C.D.5%	27.6076.50		-	-	-	-	-	-	-

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Received : January, 2013

Accepted : January, 2014