

Effect of various nutrient sources on productivity and economics of groundnut (*Arachis hypogaea* L.)

Chatra Ram, H.B. Singh, R.B. Patel, Hanuman Singh and Gopal Kumar

B.A. College of Agriculture, Anand Agricultural University, Anand 388 110 (Gujarat)

Groundnut is one of the most important oilseed crop of India. Gujarat being the leading state in groundnut production contributes about 27 percent of national production. Over the time it has been observed that the groundnut production is not stable and national average yield of 991 kg/ha (Agricultural Statistics at a Glance, 2011) is far below than potential as well as global average. There are several factors responsible for low and unstable yield of groundnut viz. lack of improved varieties, poor fertility status of soils besides biotic and abiotic stresses. Moreover, most of the soils of Gujarat, where groundnut is being cultivated are low in organic carbon and available nitrogen. One of the most important aspects in this regard is proper nutrient management. So far most of the farmers are relying on application of chemical fertilizers that too with low doses. The other source viz. organic manures and biofertilizers though proven under controlled condition are yet to show presence in farmer's field. With the introduction of intensive cropping, independent use of neither the chemical fertilizer nor the organic sources can sustain the fertility of the soil and productivity of crops. Therefore considering the importance of organic and biological sources of nutrient for increasing the productivity a field study was undertaken to study the effect of chemical fertilizer, organic manures and biofertilizers on growth and productivity of groundnut with an aim to identify most remunerative combination.

An experiment was conducted during *kharif* 2008 at Agronomy Farm of Anand Agricultural University, Anand situated between 22°-35' North latitude and 72°-55' East longitude with an altitude of 45.1 m above mean sea level. Climate of the location is semi-arid to sub-

tropical. The soil popularly known as 'Goradu' is alluvial in origin, loamy sand in texture. The soil had 7.8 pH, 0.21% organic carbon, 190 kg KMnO_4 oxidizable N/ha, 30.3 kg 0.5N NaHCO_3 extractable P/ha and 355.6 kg 1N ammonium acetate exchangeable K/ha. The experiment was laid out in Randomized Block Design and replicated thrice. The treatment consisted of recommended dose of fertilizers i.e. 12.5 kg N + 25 kg P_2O_5 /ha (RDF), vermicompost @10 q/ha (VC) and poultry manure @ 5 q/ha (PM) in combination with biofertilizers (seed inoculation) viz., control, Rhizobium, VAM and PSB. The vermicompost and poultry manure were applied prior to sowing and seed of groundnut was inoculated with Rhizobium, PSB and VAM as per treatments. Gujarat groundnut-20 (GG-20), a semi spreading variety was sown on 9 June, 2008 with seed rate of 100 kg /ha at 45 cm row spacing. Other management practices were adopted as per recommendations for the crop.

Growth parameters like number of branches per plant, number of effective nodules per plant and dry weight of nodules per plant did not influenced due to application of fertilizers and manure (Table 1), while plant height (36.59 cm) under RDF was observed significantly higher than VC and PM. Application of RDF significantly improved yield attributes and yield viz. number of pods per plant, pod yield, haulm yield and shelling percent over VC and PM. The maximum pod yield (2.61 t/ha) was obtained with application of RDF being significantly superior over application of PM (2.38 t/ha) and VC (2.29 t/ha), while haulm yield was found at par under RDF and PM treatment. Higher pod yield may be attribute to easy availability of nutrients from inorganic sources as compared to organic sources might have