

## Effect Of Gypsum And Plant Growth Regulators On Yield Attributes And Yields Of Groundnut (*Arachis Hypogaea L.*)

R.L. Jat\*<sup>1</sup> and Pushpendra Singh

Rajasthan College of Agriculture (MPUAT) - Udaipur-313 001

### ABSTRACT

A field experiment was conducted during rainy seasons of 2000 & 2001, to find out the optimum dose of gypsum and its time of application and to assess the effect of NAA, kinetin and their mixture on groundnut (*Arachis hypogaea L.*) productivity. Thirty two treatment combinations consisted of 8 gypsum levels and 4 plant growth regulators (NAA, kinetin) foliar spray. The application of gypsum 250kg at sowing + 125kg ha<sup>-1</sup> at flowering significantly increases the number of pods/plant, seed index, shelling per cent, pod & kernel yield and harvest index over lower levels and control but statistically at par with 250kg at sowing + 125kg ha<sup>-1</sup> gypsum at flowering. The mean increase in groundnut pod yield with 250kg at sowing + 125kg ha<sup>-1</sup> gypsum at flowering over control was 37.2 per cent. The study also revealed that foliar spray of the mixture of NAA and kinetin brought about significant improvement in various yield component and pod, kernel and haulm yield and harvest index and proved more effective than either NAA or kinetin. When compared with water spray (15.74q ha<sup>-1</sup>) mixed spray of NAA and kinetin increased pod yield by 20.7 per cent.

**Key words:** Gypsum, NAA, Kinetin and Groundnut.

### INTRODUCTION

India is the chief producer of groundnut and accounts for nearly 30 per cent of world production. Groundnut ranks first among the oilseed crops in India. The productivity of groundnut is 913 kg ha<sup>-1</sup> in India, which is far below the world average (1336 kg ha<sup>-1</sup>). Thus there is ample scope for increasing production through use of gypsum and plant growth regulators.

In groundnut apart from N and P, the need for the secondary nutrients especially Ca & S is frequently failed, as deficiency of these nutrients has deleterious effect on plant productivity. Gypsum is the cheapest and best source of Ca & S, which play a key role in improving the yield of this oilseed crop. Sulphur plays vital role in chlorophyll and protein synthesis. In the state of Rajasthan, too sulphur deficiency has been reported from number of locations Moezi, (1993). Calcium is an essential element as it is a constituent of cell wall and plays key role in plant development. It prevents the abortion of under utilized ovules at a very early stage and reduces the pops.

Another important opportunity lies in the application of plant growth regulators to modify crop plants for increased productivity. In this context the role of plant growth regulators like NAA and kinetin in increasing the yield of grain legumes is notable Singh, *et al* (1994). In the present study, an experiment was conducted to study

the effect of gypsum and foliar application of NAA and kinetin on yield and yield attributes of groundnut.

### MATERIALS AND METHODS

The experiment was conducted during *Kharif* season of 2000 and 2001 with groundnut crop var. JL-24 at Instructional Farm, Rajasthan College of Agriculture, and Udaipur. The soil of the site was well drained, clay loam, having pH 8.1. EC (dsm<sup>-1</sup>) 1.08, available Sulphur 9.8 ppm and CaCO<sub>3</sub> 3.60%. The experiment was laid out in split plot design with three replications. The total number of combinations were 32, comprising 8 levels of gypsum, viz. (control, 125kg ha<sup>-1</sup> at sowing, 125kg ha<sup>-1</sup> at flowering, 125kg at sowing + 125kg ha<sup>-1</sup> at flowering, 250kg ha<sup>-1</sup> at sowing, 250kg ha<sup>-1</sup> at flowering, 250kg ha<sup>-1</sup> at sowing + 125kg ha<sup>-1</sup> at flowering and 250kg at sowing + 250kg ha<sup>-1</sup> at flowering) in the main plot and 4 foliar treatments (water spray, NAA 10ppm, kinetin 5ppm and the mixture of NAA and kinetin) in sub plots. The basal application of nitrogen and phosphorus to the crop was 20 and 40kg ha<sup>-1</sup> were applied through area Urea and DAP, respectively.

Two foliar sprays of plants growth regulators were given at 45 and 55 days after sowing, NAA and kinetin were dissolved in 2ml solution of diluted NaOH and then mixed into required quantity of water. Groundnut var. "JS-24" was sown at 30cm x 10cm spacing during July and harvested in November during first year and in October in

<sup>1</sup> K.V.K. Anta (Baran) 325 202 Rajasthan

\*Author for correspondence