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**EFFECT OF LEVELS OF PHOSPHORUS AND POTASSIUM
ON YIELD AND QUALITY
OF PEANUT (Arachis hypogaea L.) IN REGOSOLS**

BY

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ABSTRACT

A Field Experiment was conducted during March-July 1992 at the Agriculture Faculty farm at the Eastern University, Vantharumoolai, to study the effect of levels of phosphorus and levels of potassium on yield and quality of peanut grown in regosols.

The experiment tested three levels of phosphorus (32.5, 65.0, and 130.0 kg P_2O_5 /ha) and three levels of potassium (22.5, 45.0, 90.0 kg K_2O /ha), as basal application with 40 kg Nitrogen/ha given uniformly for all treatments.

Increasing the level of phosphorus from 32.5 kg/ha to 65.0 kg/ha increased leaf area by 18.00, 17.57 and 19.03 % at 45, 60 and 110 Days After Planting (DAP) respectively. Further increase from 65.0 to 130.0 kg P_2O_5 /ha increased leaf area by 10.17, 8.19, and 13.25 % at 45, 60, 110 DAP respectively.

Phosphorus treatment did not increase dry matter accumulation of the plant during early growth stages (at 45 and 60 DAP) but at 110 DAP, increasing phosphorus from 32.5 kg/ha to 65.0 kg/ha increased dry weight of plants by 24.13 %. Increasing level of phosphorus from 65 to 130 kg/ha increased plant dry weight by 11.60 % .

The effective number of nodules per plant was not influenced by phosphorus treatment during early growth stages (45 and 60 DAP). At harvest however, while increasing level of phosphorus from 32.5 to 65.0 kg/ha had no influence on number of nodules, at 130 kg P₂O₅ /ha number of nodules increased by 33.54 and 16.71 % compared with that at 32.5 and 65.0 kg/ha respectively.

Increasing the level of phosphorus from 32.5 to 65 kg/ha increased pod number per plant by 45.52, 33.55 and 17.32 % at 45, 60, 110 DAP respectively. Further increase from 65 to 130 kg P₂O₅/plant decreased pod number per plant by 14.85, 12.38 and 15.33 % at 45, 60 and 110 DAP respectively.

Pod dry weight per plant was increased by 10.84, 26.98 and 26.31 % at 45, 60 and 110 DAP respectively when phosphorus was increased from 32.5 kg/ha to 65.0 kg/ha. Further increase from 65 to 130 kg P₂O₅/ha increased pod weight by 10.13, 20.71 and 20.33 % at these same growth stages.

Pod yield increased by 25.19 % when phosphorus increased from 32.5 kg/ha to 65.0 kg/ha. Further increase from 65 to 130 kg P₂O₅/ha increased pod yield by 20.49 %.

Increasing the level of phosphorus from 32.5 to 65.0 kg/ha increased kernel oil content by 7.64 % . Further increase from 65.0 to 130.0 kg P₂O₅/ha increased oil content by 9.17% .

Crude protein content of kernel was increased by 10.28 % when phosphorus level increased from 32.5 to 65.0 kg/ha. An increase phosphorus from 65.0 to 130.0 kg/ha also increased protein content by 7.53 %.

Shelling percentage was increased by 6.77 % when phosphorus level increased from 32.5 to 65.0 kg/ha. Further addition of phosphorus from 65.0 to 130.0 kg/ha also increased shelling percentage by 7.15 % .

Hundred kernel weight increased by 15.16 % when phosphorus increased from 32.5 kg/ha to 65.0 kg/ha. Further increase from 65 to 130 kg P_2O_5 /ha increased hundred kernel weight by 11.07 %

Increasing potassium from 22.5 to 45 kg/ha increased leaf area by 8.5 , 6.58, and 6.74 % at 45, 60 and 110 DAP respectively. However, further increase of potassium from 45 to 90 kg/ha did not influence leaf area at any growth stage.

At 45 and 60 DAP, the application of potassium fertilizer did not show any favourable effect on dry weight of plants. At harvest, potassium at 45.0 kg/ha increased dry weight of plants by 11.06 % compare with that at 22.5 kg/ha. When potassium was increased from 45 to 90 kg/ha plant dry weight was reduced by 6.08 %.

Pod dry weight per plant, total pod yield, shelling percentage and effective nodule number were not influenced by potassium applicaiton at any growth stage.

Increasing potassium from 22.5 to 45.0 Kg/ha increased oil content by 12.04 % but further addition of potassium from 45 to 90 kg/ha did not affect oil content.

Increasing potassium from 22.5 to 45.0 Kg/ha or from 45.0 to 90.0 did not influence crude protein content of kernel and hundred kernel weight. However, kernel protein content and hundred kernel weight at 90 kg K_2O /ha were higher than that at 22.5 kg/ha.

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