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EFFECT OF LEVELS AND TIME OF APPLICATION OF NITROGEN AND GYPSUM ON PERFORMANCE OF GROUNDNUT (*Arachis hypoagaea.* L) IN REGOSOL IN VANTHARUMOOLAI

BY

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ABSTRACRT

An experiment was conducted during the period July to October 1998, at the Agronomy farm of Faculty of Agriculture, Eastern University, to study the effect of levels of nitrogen and gypsum on performance of groundnut, in sandy regosols.

The experiment tested four levels of nitrogen (0, 30, 45 & 60 kg /ha) and two levels of gypsum (500 & 750 kg /ha). A uniform application of 15 kg N /ha, 45 kg K_2O and 60 kg P_2O_5 /ha was made as basal dressing. Top dressing was done at the rate of 15 kg N /ha as single, double and triple split doses.

The LAI and dry weight of leaves were correlated with each other, both parameters at early stages of growth were influenced by the application of different levels of nitrogen and gypsum. The rate of 45 kg N /ha + 750 kg gypsum /ha and 30 kg N /ha + 750 kg gypsum /ha showed significantly (P=0.05) higher LAI and dry weight of leaves than other treatments at 45 DAP. Treatment with 60 kg N /ha + 500 kg gypsum /ha and 45 kg N /ha + 750 kg gypsum /ha showed significantly (P=0.05) higher in LAI and dry weight of leaves than 0 and 60 kg N /ha with 750 kg gypsum /ha at 75 DAP. The application of different treatments did not have influence on both LAI and dry weights of leaves at 125 DAP. The dry matter accumulation showed increase trend between 45 to 75 DAP and declined there after.

Dry weight of stems and roots were influenced by different level of treatments at early stage (45DAP) of growth that not in later stages. The treatment 30 kg N /ha + 750 kg gypsum /ha was significantly (P=0.05) higher in dry weight of stems than other treatments. The treatments at 30 kg N /ha and 45 kg N /ha with 750 kg gypsum /ha were significantly (P=0.05) higher than treatments at 0 kg N /ha and 30 kg N /ha with 500 kg gypsum /ha in dry weight of roots at 45 DAP.

Pod yield showed response to different levels of nitrogen and gypsum application. Treatment at 45 kg N /ha + 750 kg gypsum /ha was significantly (P=0.05) higher in pod yield than 0 kg N /ha + 750 kg gypsum /ha and 30 kg N + 500 kg gypsum /ha. Level of gypsum increased from 30 to 60 kg N /ha increased the pod yield. Pod yield

of 45 kg N /ha + 750 kg gypsum /ha was higher by 44.4 % than 30 kg N /ha + 500 kg gypsum /ha.

Different levels of nitrogen and gypsum during the growth period did not influence pod number. The treatments with 0 kg N /ha 750 kg gypsum /ha and 30 kg N /ha + 500 kg gypsum /ha that produced lowest dry weight of pods at both 45 and 75 DAP. At 75 DAP the treatments 45 kg N /ha and 60 kg N /ha with 500 kg gypsum /ha were significantly (P=0.05) higher in dry weight of pods than 30 kg N /ha + 500 kg gypsum /ha and 0 kg N /ha + 750 kg gypsum /ha. The dry weight of pods at 125 DAP did not influence by different level of nitrogen and gypsum.

Different levels of nitrogen and gypsum did not have influence on dry weight of nodules at early stages of growth but later and influence was noticed (125 DAP). The treatments with 45 kg N /ha at both levels of gypsum were significantly higher in dry weight of nodules than 0 kg N /ha + 500 kg gypsum /ha. Number of nodules was respond in and with treatments throughout the stages of growth.

Different levels of treatments did not influence the shelling percentage. The treatments influenced the hundred kernel weight and the treatments with 30 kg N /ha + 500 kg gypsum /ha gave lowest hundred kernel weight which was significantly (P=0.05) different from other treatments.

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