

SUMMARY

Two field experiments were carried out at the Farm of Faculty of Agriculture, Al-Azhar University at Moustorod – Cairo , during the two successive seasons of 200/2003 and 2003/2004 to study the effect of mineral and biofertilizer of N and P on growth , yield and yield components of chickpea(*Cicer arietinum*,, L.)cultivar Giza 3.

Each experiment included 16 treatments, which were the combination of four treatments of nitrogen and four treatments of phosphorus .

- N treatments were Zero kg N,15 kg N , Biogen (500 gm) and Nitroben (500 gm) / fed .
- P treatments were Zero kg P₂O₅ , 15.5 kg P₂O₅ , 31 kg P₂O₅ and Phosphoren (300 gm) / fed .

The soil of the experiment was clay loam with a PH value of 7.7 and 0.95 % organic matter content.

A randomized complete block design was used with four replications.

Data on growth characters (at 60 and 90 days after sowing), flowering date, yield components and yield were recorded. Results could be summarized as follows :

A: Growth characters :

A.1. The nitrogen fertilizer treatments had a positive and significant effect on all growth attributes at the two different stages i.e, 60 and 90 DAS in the combined analysis of two seasons, except plant height at 60 DAS and number of days from sowing to 50 % flowering .

- At 60 DAS, application of 15 kg N / fed. significantly increased number of leaves / plant , dry weight of leaves and branches / plant and total dry weight / plant.
- Biogen application produced the highest branches number per plant followed by adding 15 kg N / fed. at 60 days. The difference between these two treatments was not significant.
- At 90 DAS, the tallest chickpea plant , the greatest number of branches / plant as well as the highest dry weight of branches and total dry weight per plant were produced when applied 15 kg N / fed. While , adding Biogen gave the highest number and dry weight of leaves per plant

A.2. Phosphorus treatments showed a significant effect on all growth measurements at the two samples in the combined analysis of two seasons, except number of branches per plant and dry weight of leaves per plant at 60 DAS and number of days from sowing to 50 % flowering

- At 60 DAS , application of 15.5 kg P_2O_5 / feddan gave the maximum mean values of plant height, number of leaves / plant as well as dry weight of branches and total dry weight per plant .
- At 90 DAS, the highest values of plant height , number of branches as well as dry weight of leaves , branches and total dry weight per plant were produced from adding 31 kg P_2O_5 / feddan , While Phosphoren produced the highest number of leaves per plant.

A.3. At 60 DAS, the effect of interaction between nitrogen and phosphorus fertilizer treatments was significant for plant height,

number of leaves / plant, dry weight of leaves , branches and total dry weight per plant

- The tallest chickpea plants were obtained at zero nitrogen + 15.5 kg P_2O_5 / fed.
- The highest number of leaves / plant was recorded with application Biogen + 15.5 kg P_2O_5 / fed.
- Application of 15 kg N + 31 kg P_2O_5 / fed. gave the maximum value of dry weight of branches / plant.
- The highest dry weight of leaves and total dry weight per plant were recorded with Nitroben + 31 kg P_2O_5 / fed .

A.4. At 90 DAS , the highest values of plant height ,number and dry weight of branches / plant and total dry weight / plant were obtained by 15 kg N + 31 kg P_2O_5 / feddan . On the other hand , the highest values for number and dry weight of leaves per plant were detected by Nitroben with phosphoren.

B: Yield and yield components:

B.1. The effect of nitrogen fertilizer was statistically significant on yield and yield components under study in the combined analysis .

- Application of 15 kg N / fed. significantly increased plant height , total weight / plant, weight of seeds / plant, seed index, seed and biological yield per fed. and harvest index.
- Nitroben application significantly increased number of pods per plant .

B.2. A significant effect of phosphorus fertilizer was obtained for yield and yield components under study in the combined analysis

- The highest values for total weight and number of pods per plant were detected by 31 kg P_2O_5 / fed.
- Phosphorene application gave the maximum mean values of plant height , weight of seed / plant , seed index , seed and biological yield per fed. and harvest index .

B.3.The effect of interaction between N and P fertilizer treatments was significant for yield and yield components in the combined analysis.

- The highest values of plant height, total weight / plant , weight of seed / plant , seed and biological yield / fed. and harvest index were obtained by 15 kg N / fed. with phosphorene .
- The highest means for number of pods / plant and seed index were detected by Nitroben and 31 kg P_2O_5 / fed .

C: Economic evaluation :

C.1. The maximum net farm return was 564.43 L.E. / fed .
recorded by adding 15 kg N / fed with phosphorene on the two
season's average .