5- SUMMARY AND CONCLUSION

This study was an attempt to investigate the effect of plant spacing and nitrogenous fertilizer on the dry seed yield and quality of three varieties of cowpea.

Two field experiments were carried out during the summer season of 1983 and 1984 at El-Mania, Kalubia.

The experimental design used was a split-split plot with four replications. Three cultivars i.e Azmerly, Cream-7 and Fetriat were grown at the main plots while three plant spacings (10, 30 and 40 cm.) splitted the main plots to act as sub-plots. However, nitrogen levels (0,75 and 150 kg. of calcium nitrate/ fed.) were the sub-sub-plots.

The recorded data included some vegetative growth characters, chemical constituents of the plants, flowering, fruit-setting, dry seed yield components and its quality as well as chemical constituents of dry seeds.

Obtained results were as follows:

I. Plant growth characteristics:

The three used cultivars varied in their stem

length and diameter as well as their total fresh and dry weight. Azmerly variety was superior in this respect.

Plant growth characteristics expressed as stem diameter as well as total plant fresh and dry weight were enhaned by wide spacings (30 and 40 cm.) and increasing nitrogen fertilization level. Stem length and branching were also stimulated by nitrogen application whereas they were not significantly affected by spacing.

The plants of the variety Azmerly showed the most vigorous growth than other ones specially when sown at 40 cm. apart and fertilized with 150 kg of calcium nitrate per / fed.

II. Chemical composition of plant parts:

Chlorophyll and carotene contents of cowpea plant leaves tended to increase by increasing level of N-fertilization, whereas they were not significantly affected by spacing.

The uptake of NPK was increased by wide spacings as well as by increasing nitrogen fertilization level. Total carbohydrate content in cowpea foliage was significantly increased as the nitrogen level increased whereas it did not reflect any significant difference as a result of spacing.

III. Flowering and fruit-setting:

Total number of flowers per plant increased as both spacing between plants and nitrogen level increased. The highest total number of flowers per plant was obtained with the combination of the widest spacing (40 cm.) and the highest nitrogen level (150 kg of calcium nitrate / fed.).

The response of flowering to spacing or nitrogen level varied among the three used varieties. Azmerly variety showed the best response, Cream-7 was intermediate, whereas Fetriat variety ranked last in this respect.

Fruit - setting percentage did not reflect any significant difference as a result of plant spacing or nitrogen fertilization.

IV. Yield components:

Azmerly variety outyielded the other two varieties either in yield per plant or per feddan.

Azmerly variety was superior than other used varieties in its number of pods per plant and number of seeds per pod.

Number of pods per plant significantly increased as both spacing between plants and nitrogen level increased.

Number of seeds per pod slightly increased as nitrogen level increased whereas it did not reflect any significant increase as a result of plant density.

The average weight of 100-seeds did not reflect any significant difference due to either spacing or nitrogen fertilization.

The closest spacing (10cm.) produced the lowest seed yield per plant, but the highest seed yield per feddan.

Dry seed yield per plant increased as nitrogen level increased.

Dry seed yield per feddan significantly increased as nitrogen level increased up to 150 kg. of calcium nitrate / fed. at the closest spacing (10 cm.). However, at wider spacing (30 or 40 cm.) such yield increased with 75 kg of calcium nitrate / fed., but showed no increase above this rate.

Generally, the highest yield of cowpea seed per feddan was obtained from plants of the variety Azmerly grown at 10cm. apart and fertilized with 150 kg of calcium nitrate / fed.

V. Chemical constituents of seeds:

The seeds of the variety Azmerly contained higher

amounts of chemical constituents, in general, than the other two varieties.

The dry seeds content of NPK, total carbohydrate and Protein-N did not reflect any significant differences as a result of plant spacing.

Nitrogen fertilization significantly increased N and K contents, but did not affect P content in dry seeds.

Total carbohydrate and protein-N contents in dry seeds,which are the major components of seed reserve food, were significantly increased as the nitrogen level increased.

Generally it may be concluded that dry seeds of the variety Azmerly,which yield highest seed yield, contained highest N, P, K, protein and carbohydrate content compared with other varieties under conditions of this work.