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V - SUMMARY

The present research is concerned with studying the response of some sesame new varieties to nitrogen fertilization and population density in upper Egypt. The study was carried in the Agricultural Research Station at El-Mattana, Agricultural Research Center Giza Egypt during the seasons of 2005 and 2006. The soil type was sandy loam. The statistical design was split-split-plot design. The new varieties were allotted in the main plots. They were Shandaweel 3, Toushki 1 and Sohag 3. The second variable was population densities was allotted in the sub-plot which were 35,000, 70,000 and 140,000 plants/ feddan. The third variable nitrogen fertilization rates were arranged in the sub-sub-plots. The rates were 30, 45, and 60 kg N/feddan.

Here, the result obtained from this study could be summarized as follows:-

- 1- Plant height at harvest was responded significantly to the varieties studied in favour of the variety Sohag 3 in the two growing seasons. The dense planting favoured plant height significantly. Plant height tended to be increased as nitrogen rates were increased.
- 2- Number of leaves /plant at harvest was influenced by the varieties studied in favour of the variety Sohag 3 in the two growing seasons. This trait was increased as population densities decreased. Here too positive relation was found between number of leaves /plant and nitrogen rate.

- 3- The height of first capsule was the highest in the variety Toushki 1 while the variety Shandaweel 3 gave the lowest first capsule. Population densities affected significantly this trait. The data showed that height of first capsule tended to be increased as population was increased. Nitrogen rate increased height of first capsule in the two growing seasons.
- 4- Length of fruiting zone reacted significantly in 2006 seasons to the varieties studied. However, Sohag 3 was characterized by longer fruiting zone. Population density affected significantly in favour of 35,000 plants/ feddan. For nitrogen rate, the data revealed that this trait tended to be increased as nitrogen rate was increased. This was true in the two growing seasons.
- 5- The average interval from planting date up to 50 % flowering did not react to the varieties studied. However, dense planting delayed the appearance of 50 % flowering. The data proved that the average interval tended to be increased as nitrogen rate was increased up to 60 kg N/ feddan.
- 6- The yield components of sesame such as number of capsule /plant, seed index and seed yield/ plant were affected by the variety studied in favour of the variety Shandaweel 3. The population density affected significantly the yield components in favour of less population. Here too numbers of capsules /plant, seed

index and seed yield/ plant were increased as nitrogen rate was increased up to 60 kg N/ feddan.

- 7- Seed yield in ardab/feddan showed that the maximum seed yield of sesame was produced from the variety Shandaweel 3 in the two growing seasons. From the population density the data obtained showed that the population of 70, 000 plants/ feddan produced the maximum yield. This population was distributed in two systems such as planting at 10 cm between hills and leaving one plant per hill or 20 cm between hills and leaving two plants per hill. However, the lowest yield was obtained from the densities of 35, 000 and 140, 000 plants/feddan. Average seed yield per unit area increased significantly as nitrogen rate was increased up to 60 kg N/ feddan. Here too all the involved interactions were significant in the two growing seasons.
- 8- The oil percentage was reacted significantly in favour of Sohag 3 variety in the two growing seasons. Oil percentage was decreased as population density was increased. Here too oil percentage was increased as nitrogen rate was increased.
- 9- Average yield of oil/feddan was affected significantly by the varieties studied in 2006. The data showed that Shandaweel 3 surpassed the other varieties in oil yield. However, the same trend was achieved in season 2005. Population density seemed to affect oil yield/feddan significantly in the two growing seasons. The population

of 70, 000 plants/ feddan produced the maximum oil yield/feddan. Consistent increase in oil yield was achieved as nitrogen rate was increased. This is true in the two growing seasons.