

comparative studies of qualitative and quantitative traits of some flax genotypes

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Flax (*Linum usitatissimum* L.) ranked first among the bast fiber crops group in A.R.E., great efforts were done to increase flax productivity through raising yield ability concerning quantity and quality. This goal could be achieved by releasing new flax varieties which surpass the commercial varieties in yield and quality under the environmental conditions of Egypt, where flax grown as dual purpose type for its fiber and seed yields. The present study aimed to evaluate some promising flax strains with two commercial varieties under mineral and bio nitrogen (*Rhizobacteren*) sources. Moreover, to study the interrelationships between yield and its components in addition to path coefficient analysis. Two field experiments were carried out at Zarzoura Agric. Res. Station farm, Etay El-Baroud, Behera governorate during the two successive seasons 1999/2000 and 2000/2001 to evaluate the four commercial varieties; Giza 8, Sakha 1, Sakha 2 and the imported Blanka (fiber type), in addition to four promising strains S. 402/3/3/7, S. 2465/1, S. 2467/1 and S. 3, the evaluation study occurred under four nitrogen levels (mineral and bio-nitrogen) in the following manner; 1- 30 kg N/faddan. 2- 45 kg N/faddan. 3- 30 kg N/faddan + *Rhizobacteren*. 4- 45kg N/faddan + *Rhizobacteren*. Sowing date was the third week of November in both seasons. Normal agricultural practices for flax crop were followed, except the nitrogen fertilizer levels under study. Characters studied: -1. Total plant height (cm). 2. Technical stem length (cm). 3. Main stem diameter (mm). 4. Number of seeds per capsule. 5. Number of capsules per plant. 6. Seed yield per plant (g). 7. Number of apical branches per plant. 8. Seed index (g). 9. Straw yield per plant (g). 10. Straw yield per faddan (ton). 11. Fiber yield per faddan (kg). 12. Fiber length (cm). 13. Seed yield per faddan (kg). 14. Oil percentage (%). 15. Oil yield per faddan (kg). 16. Fiber fineness (Nm). Results could be summarized as follows: 1- Total plant height (cm): Data indicated that Blanka variety ranked first and superior significantly in comparison with the other flax genotypes in both seasons and in combined data followed by Sakha 1. On the other hand, Giza 8 occupied the latest position when compared with flax studied in both seasons. Plant height reached maximum tall as resulted by applying 45 kg N/faddan + *Rhizobacteren*. Moreover, added *Rhizobacteren* to the two mineral nitrogen levels 45 and 30 kg/faddan caused significant increases by 6.82 and 6.22 cm., respectively. G x F interaction in both seasons and in combined data had significant effect on total plant height. Blanka fertilized by 45 kg N/fad. + *Rhizo.* had the tallest plants. 2- Technical stem length (cm): Blanka variety achieved the tallest technical stem length and surpassed significantly all flax genotypes either in both seasons or in the combined analysis, while Sakha 1 and Sakha 2 ranked second after Blanka in this case. But Giza 8 was the shortest technical length in comparison with the genotypes under study. This character increased significantly with increasing nitrogen levels from 30 kg N/faddan to 45 kg N/faddan + *Rhizobacteren* in both seasons, the excess tall was 6.15 and 6.24 cm, respectively. G x F interaction had significant effect on technical stem length only in the second season and in the combined analysis, but did not reach the level of significance in the first season. Blanka given by 45 kg N/fad. + *Rhizo.* had the tallest technical stem.