



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



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التوثيق الإلكتروني والميكروفيلم

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**ASSESSMENT OF BIODIVERSITY AMONG SOME
SESAME GENOTYPES ON THE
MOLECULAR LEVEL**

By

NOURHAN ATEF ISMAIL ABOELNAGA

B.Sc. Agric. Sc. (Genetics), Fac. of Agric., Ain Shams University, 2016

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ABSTRACT

Nourhan Atef Ismail. Assessment of Biodiversity among some sesame Genotypes on the molecular level. Unpublished M.Sc. Thesis, Department of Genetics, Faculty of Agriculture, Ain-Shams University, 2021.

Biodiversity among thirty sesame (*Sesamum indicum* L.) genotypes that were obtained from various regions of Egypt and two local cultivars were assessed agronomically using different yield-related traits. Significant variations were observed in oil contents and morphometric traits such as plant height, shoot fresh weight, number of pods, pods weight and oil contents. The variation between the highest and the lowest genotypes in plant height ranged from 220 cm in cultivar Shandaweel 3 to 100 cm in genotype Qena5-85. Shoot fresh weight ranged from 802.2 to 99.5 g in Asyut-71 and Aswan1-82 genotypes, respectively. Pods weight varied from 202.6 to 32.2 g in Qena2-69 and Behera-81, respectively. No. of pods ranged from 75.7 to 10.3 in Sohag1-70 and Al Wadi Al Jadeed1-83, respectively, while oil content varied from 60% in Qena2-69 to 40.53% in Qena1-68. Using yield-related characteristics, the genotypes were grouped into two main clusters with high variation among them. Fifteen out of the 32 genotypes were chosen and subjected to ISSRs and SRAP PCR analyses to detect the level of genetic diversity in relation to geographical origins using 11 ISSR and 7 SRAP primers. ISSR primers generated 46 amplified bands. Four out of these primers were resulted in 6 unique markers among the 15 sesame genotypes. Molecular characterization revealed a polymorphism percentage of 47.82% for ISSR fragments, while SRAP primers exhibited a total of 23 bands and two out of these primers revealed 4 unique genotype specific marker polymorphism that calculated as 52.17%. The cluster analysis showed a high genetic diversity among the sesame genotypes and their diversities were consistent with their source pedigrees. The results of principal component analysis (PCA) were closely aligned with those of the cluster analysis. Considering the relatedness of

genotypes, geographical origin and their yield-related characteristics were reflected as the similarity of ISSRs and SRAP patterns.

Keywords: *Sesamum indicum* L., Biodiversity, Genetic diversity, ISSRs, SRAP, PCA

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