DEVELOPMENT OF MOLECULAR MARKERS ASSOCIATED WITH ENHANCEMENT OF SOME QUALITY TRAITS IN SUGARCANE (*Saccharum* spp.)

By

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B.Sc. (Chemistry and Zoology), Ain Shams University, 2003

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استنباط دلائل جزيئية مرتبطة بتحسين بعض صفات الجودة فى قصب السكر

رسالة مقدمة من

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للحصول على

درجة الماجستيرفي العلوم الزراعية

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ABSTRACT

Shereen Khaled Mohamed Khaled: Development of Molecular Markers Associated With Enhancement of Some Quality Traits in Sugarcane (*Saccharum* spp.). Unpublished M.Sc. Thesis, Department of Genetics, Faculty of Agriculture, Ain Shams University, 2010.

The aim of this study was to detect some molecular markers associated with sugar content in sugarcane using DNA-based PCR techniques. To assist selection of high sugar content promising lines at a very early stage of the sugarcane breeding program; RAPD, SSRs, ISSRs and R-ISSRs techniques were used for detecting markers associated with sugar content trait. The performances of twenty two sugarcane clones revealed that RAPD, SSRs, ISSRs and R-ISSRs techniques are useful as marker assisted **s**election for sugar content trait in these clones. Twenty two positive and ten negative markers were obtained using RAPD-PCR analysis. Eight positive and five negative markers were obtained using ISSRs-PCR analysis while using R-ISSRs PCR analysis produced 28 positive markers and 17 negative markers which could use as marker assisted selection for sugar content. Using sorghum SSR primers revealed six positive and seven negative markers. The study confirmed that R-ISSRs technique was more effective analysis and a higher resolution results.

Keywords: Sugarcane, *Saccharum spp.*, SSRs-PCR, RAPD-PCR, ISSRs-PCR, R-ISSRs PCR, yield-related traits, MAS

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