University of Zabol

Graduate school

Faculty of Agriculture

Department of Agricultural Economics

Sc .The Thesis Submitted for the Degree of M

In the field of Agricultural Economics

Title:

phylogenetic analysis of some luffa cultivars using ribosomal and chloroplast DNA markers

Supervisors:

Dr. M.keykhah saber

Dr.L. fahmideh

Advisers:

Dr. V.A.ghasemi

By:

H.arbabi

Summer 2020

Abstract

Luffa is a plant of the Cucurbitaceous family with the scientific name of *Luffa cylindrica* that is mostly cultivated in tropical and subtropical regions, as well as in Iran. In this study, the genetic diversity of nine different indigenous and non-indigenous luffa cultivars was evaluated by analyzing the sequence of *ITS*, *rbcL* and *IGS* genomic regions. For this purpose, leaf samples of the plant were used for DNA extraction by Delaporta method. DNA quality and quantity was determined using agarose gel and spectrophotometer. The studied genes were then amplified using specific primers using and amplicons were sequenced. After sequencing, the quality of the sequences was evaluated using Chromas software and ClustalW method. BioEdit and MEGA7 were used for alignment of the sequences. Dendrogram of phylogenetic relationships and matrix differences and similarity sequences were determined and plotted. From 703 sites identified in this study, 179 sites for *rbcL* gene had deletions and additions (177 monomorphs and 2 polymorphs) and 524 sites did not have deletions and additions, for *ITS*, 175 sites had deletions and additions (170 monomorphs and 5 polymorphs) and 353 sites had no deletions and additions and for *IGS* gene, 227 loci had deletions and additions (222 monomorphic and 5 polymorphic) and 479 sites had no deletions and additions. Also, the mean value of the dN/dS ratio for *rbcL* was one and for *IGS* and *ITS* lower than one. Based on the results of genetic distances it seems rbcL marker was more efficient than IGS and ITS for diversity analysis of luffa genotypes. It is suggested that the diversity of these genotypes be examined by other DNA barcodes and compared with the results of the present study.

Keywords: Intraspecific genetic diversity, DNA barcoding, markers of ribosomal chloroplasty