PHYSIO - ANATOMICAL STUDIES AND BIOCHEMICAL GENETIC IDENTIFICATION OF SOME GUAVA SEEDLING TREES

By

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ABSTRACT

This investigation was conducted during both 2018 & 2019 experimental seasons to investigate 12 selected fruitful guava seedling trees (genotypes) through the following three aspects dealing with.

1- Evaluating their most important characteristics i.e, growth habit, flowering , yield and fruits qualities.

2- Investigating their stem cuttings rootability and their possibility to be propagate vegetatively in order to perpetuate them from lost.

3- Molecular genetic and biochemical identification of these trees to assess their genetic similarity and diversity.

Obtained results dealing with both 1^{st} & 2^{nd} topics revealed that all evaluated 12 guava trees varied greatly pertaining either their (growth, productivity and fruit quality) or the response of their stem cuttings to root in relation to preplanting dipping treatments(TBA & TIBA) and the genotype itself, as well as their anatomical features. Hence, tree No 10 possessed the most desirable characteristics and ranked 1^{st} (97.5%) followed by both 8^{th} and 7^{th} ones (75.0% and 72.6, respectively) the reverse was detected with (5^{th} & 12^{th} trees) which not only came last but also failed completely to root.

As for the finger print and bio chemical identification, RAPD and ISSR based on PCR Techniques with five primers used with each had been successfully generated reproducible Polymorphic products to study the genetic variability between the twelve reelected trees (genotypes). Data obtained displayed that the total bands recorded with the RAPD – ISSR primers from the 12 guava seedling trees were 94 from which 48 bands were polymorphic with polymorphism 51.06% results from the analysis of the RAPD and ISSR combination construct

classify these twelve guava trees into two main groups 1st main group was between (9 and 12 trees), while the 2nd main group included two sub main groups. The 1st sub main group included tree No.1 alone while the 2nd sub main group included two sub sup groups, whereas the 1st sub sup group included, both (10th & 11th trees), while (8th, 7th, 6th, 2nd, 5th, 4th and 3nd ones) were the members of 2nd sub sub group.

Data of protein electrophoresis analysis revealed that the 12 guava trees showed 16 bands from which & were polymorphic with 50% polymorphism. Meanwhile, peroxidase and polyphenol oxidase analysis showed that all illustrated bunds were characterized for all 12 guava seedlings trees under study which all of them were monomorphic with differences in their banding patterns densities.

Key words: guava seedlings trees (genotypes), stem cuttings rooting, growth, cropping, fruit quality, RAPD, ISSR, molecular markers. Protein, peroxidase, polyphenol oxidase analysis.

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