Effect of treatment with some Bio-Stimulants on the anatomical Indicators of the fruits of two cultivars of Jujube trees (*Zizphus mauritiana* Lam.)

Jamal Abdul Redha AL-Rabea'a

Department of Horticulture and Landscape, College of Agriculture, University of Basrah, Basrah, Iraq

jamal.abdulredha@uobasrah.edu.iq

Corresponding author: Jamal Abdul Redha AL-Rabea'a

E-mail:jamal.abdulredha@uobasrah.edu.iq

Abstract

The research conducted in a private orchard in Basrah Governorate In the Abu Al-Khasib area, selecting 36 jujube trees age 8years old It is irrigated using drip irrigation,five fruits were taken for each experimental unit. from the two cultivars, Tofahe and Zytone, for the agricultural season 2024-2025.The study included two factors: the first is cultivar factor,as the Tofahe and the Zytone were selected. The second factor was bio-stimulant first one BioHealth at two levels (0 and 5 mg L^{-1}) and Soli Organic at two levels (0 and 5 mg L^{-1}).aqueous solutions of bio-stimulants were sprayed three times before the flowering period, with intervals of three weeks between one spraying and the next. The results of the study demonstrated how the jujube tree cultivar significantly affected the anatomical indicators; the Tofahe cultivar was superior to the Zytone cultivar in the thickness of the epidermis, sub-epidermis, and mesocarp layer thickness (31.66, 153.67, and 586.89 µm), respectively, and that the use of bio-stimulants improved the anatomical indicators of the jujube tree fruits. The Soli Organic treatment 5 mg L^{-1} was significantly superior to the BioHealth treatment and the comparison treatment, in the highest rate of epidermis thickness,sub-epidermis, and mesocarp layer thickness (31.15, 153.85, and 547.45 µm), respectively. The interaction between the Tofahe cultivar and the bio-stimulant Soli Organic 5 mg L^{-1} also gave the highest rates of thickness of the epidermis and sub-epidermis layer, and epidermis and mesocarp layer thickness.

Keywords: bio-stimulants - anatomical Indicators - jujube fruits-Tofahe- Zytone

Introduction

The jujube plant, *Zizphus mauritiana* Lam. belongs to the Rhamnaceae family that includes three genera,the most important of which is the genus. *Zizphus*, which includes 170 species of evergreen trees and shrubs. Its cultivation is widespread in tropical and subtropical regions, where the two species *Z. mauritiana* and *Z. jujuba* are considered the most important from an economic standpoint (17). The cultivation of species belonging to the genus *Ziziphus* is increasing in Iraq, where the climate is warm, due to their importance in all aspects, especially medical ones, including that the aqueous and alcoholic extracts contain all the bioactive compounds that have been detected, except for the resinous compounds and furocoumarins in the aqueous extract and the resins in the alcoholic extract (13). It is believed that the original homeland of jujube is Southern Europe, the Himalayas, and Northern China, and its cultivation is widespread in North Africa, Sudan, the Arabian Peninsula, Iraq, and the Emirates (12).