Yuzuncu Yil University
Journal of Agricultural Sciences
(Yüzüncü Yıl Üniversitesi Tarım Bilimleri Dergisi)
https://dergipark.org.tr/en/pub/yyutbd

ISSN: 1308-7576 e-ISSN: 1308-7584

Research Article

Role of Adding Bio-Inoculation, Mushroom Farm Waste, and Nano-fertilizers on The Content of Stevia Leaves of Total Carbohydrate Active Compounds

Zahraa J. AL-BUDAIRY*[1], Luma S. AL-TAWEEL[2]

[1,2]College of Agriculture-University of Al-Qadisiyah, Iraq

[1]https://orcid.org/0000-0003-1936-0711, [2]https://orcid.org/0009-0008-9038-0348

*Corresponding author e-mail: zzaah94@gmail.com

Article Info

Received: 13.04.2025
Accepted: 16.09.2025
Online published: 15.12.2025
DOI: 10.29133/yyutbd.1675195

Keywords

Active compounds, Biofertilization, Carbohydrates, Metabolic compounds, Sugar substitute

Abstract: The experiment investigated the impact of *P. aeruginosa* bacteria, mushroom farm waste, and nano-fertilizers on carbohydrates, gibberellins, Stevioside, and Rebaudioside A. sweeteners in stevia plants. The study involved three factors: bacterial inoculation with two levels of *P. aeruginosa, three levels* of white mushroom waste, and four levels of nano-fertilizer, including options like nano-zinc and nano-boron. The research was conducted in the field using a randomized complete block design (RCBD) to ensure reliable results. GenStat statistical data analysis is performed using specialized statistical software commonly used in the fields of agriculture and biology, particularly in the analysis of field and laboratory experimental data. *P. aeruginosa* plays an essential role in bioremediation, and producing antipathyogenic compounds. White button mushroom waste helps improve soil fertility. Nanofertilizers enhance nutrient uptake. Combining these treatments can increase the accumulation of natural sweeteners in stevia plants and improve their quality. The triple combination B1Ab1N3 achieved significant superiority in most of the studied traits, which included total carbohydrates during the first and second harvests, which recorded (77.5 and 70.8)%, respectively, compared to the control treatment B0Ab0N0, which recorded (40.7 and 30.29)%, respectively. In contrast, the triple combination B1Ab2N3 achieved the highest content of gibberellins and sweeteners Stevioside and Rebaudioside A. In the leaves of the stevia plant in the First and second harvest of stevia crop in sequence, it reached (20.88 and 22.86)%, (9.925 and 10.964)%, and (7.637 and 8.386)%, respectively, compared to the comparison treatment B0Ab0N0, which recorded (8.79 and 10.13)%, (5.335 and 5.716)% and (1.534 and 1.686)%.

To Cite: Al-Budairy, Z J, Al-Taweel, L S, 2025. Role of Adding Bio-Inoculation, Mushroom Farm Waste, and Nano-fertilizers on The Content of Stevia Leaves of Total Carbohydrate Active Compounds. *Yuzuncu Yil University Journal of Agricultural Sciences*, 35(4): 707-727. DOI: https://doi.org/10.29133/yyutbd.1675195

Footnote: This research is derived from the doctoral thesis of the first author.

1. Introduction

The current importance of bioremediation stems from its alignment with the environmental and agricultural challenges facing Iraq. The country is suffering from an increasing scarcity of water resources and deteriorating soil fertility due to high salinity and chemical pollution. This underscores the need to adopt sustainable agricultural technologies that increase water use efficiency and restore soil