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INFLUENCE OF A FOLIAR BIOSTIMULANT ON THE MORPHOLOGICAL GROWTH OF TOMATO SEEDLINGS

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ABSTRACT

Thestudy comparedthe morphological response of Primadona F1 and Big Beef F1 tomato seedlings to a repeated foliar biostimulant programme. In a heated greenhouse in Sâmbăta-Nouă (Tulcea, Romania), 80 seedlings were evaluated in four treatment combinations and four replicates per combination. Over D0–D21, treated seedlings showed greater mean increments in height and stem diameter. An exploratory factorial analysis identified treatment-associated differences in both indicators, without significant hybrid × treatment interaction. Findings apply to the monitored interval and do not establish yield benefits.

Introduction

- Uniform, robusttomato seedlings are essential for reliable transplant production in protected cultivation.
- Plant height and stem diameter provide complementary indicators of morphological development.
- Biostimulant responses can differ by hybrid, formulation and growing conditions. undertreatedand untreated regimes.
- Objective: compare D0–D21 growth increments in two hybrids

Material and methods

- Site: heated greenhouse, 325 m², Sâmbăta-Nouă, Tulcea County (2025).
- Hybrids: Primadona F1 and Big Beef F1; sowing 12 February
- 2025. Design: 2 hybrids × 2 treatments × 4 replicate units × 5 plants = 80 seedlings.
- Foliar dose: 0.25 mL/L water, applied at approximately 10-day intervals.
- Growth indicators: ΔH = H21 − H0 (cm); ΔØ = Ø21 − Ø0 (mm).
- Statistics: factorial ANOVA with block effect, using replicate means (n = 4 per combination).
- Limitations: D0 and D21 calendar dates and exact first-application timing were not fully documented.

EXPERIMENTAL DESIGN · 16 experimental units

Primadona F1 Control	Primadona F1 Treated	Big Beef F1 Control	Big Beef F1 Treated
4 × 5 plants	4 × 5 plants	4×5 plants	4 ×5 plants

EXPERIMENTAL PHOTOGRAPHS



PrimadonaF1
Stem diameter (mm)



Big BeefF1
Plant height (cm)



Stem measurement

Results and discussions

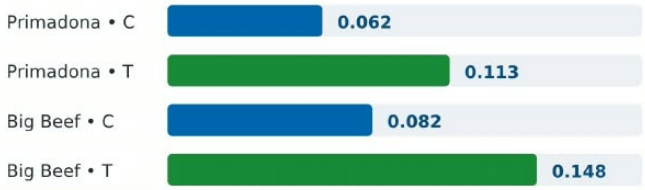
MEAN D0–D21 INCREMENTS (n = 4 replicate units)

Hybrid × regime	Height (cm)	Diameter (mm)
Primadona F1 • Control	1.192 ± 0.156	0.062 ± 0.030
Primadona F1 • Treated	1.910 ± 0.200	0.113 ± 0.021
Big Beef F1 • Control	1.405 ± 0.258	0.082 ± 0.007
Big Beef F1 • Treated	2.370 ± 0.283	0.148 ± 0.016

Height increment (cm)



Stem-diameter increment (mm)



Interpretation

- Treatment-associated ANOVA effects: height p = 0.000124; diameter p = 0.000395.
- Hybrid × treatment: not statistically significant (height p = 0.3704; diameter p = 0.4888).
- Treatment differences were measured over 21 days; effects on transplant establishment and yield were not tested.

Conclusions

- Treated Primadona F1: height 1.91 vs 1.19 cm; stem diameter 0.113 vs 0.062 mm.
- Treated Big Beef F1: height 2.37 vs 1.40 cm; stem diameter 0.148 vs 0.082 mm.
- The results justify further replicated trials, including root and post-transplant performance.

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