

Effect of carbon nanotubes on tomato seedlings.

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Introduction

Advances in nanotechnology have provided new materials with various applications, proof of this are the so-called carbon nanomaterials (CNMs) that have been used in various areas including agriculture [1]. These CNMs have the characteristic that they can be easily absorbed by plant cells causing positive impacts on plant growth and development [2]. In addition to its economic relevance, the tomato has been identified as a food of great interest due to its high content of bioactive compounds. This, like all crop plants, are subjected to various types of stress, both biotic and abiotic [3]. Therefore, the application of nanomaterials as biostimulants is interesting as an alternative to increase the yield, quality, productivity and defense of plants.

Materials and methods

An experiment was established at the Antonio Narro Autonomous Agrarian University, using tomato seedlings of the "Pony" variety of Saladette type and determined growth. Doses of 0, 10, 50, 100, 250, 500 and 1000 mg L⁻¹ of carboxylated carbon nanotubes (CNTCOOH) were applied foliarly. The field experiment was carried out under a completely randomized design with six experimental units per treatment. The analysis of variance (one way) and DUNCAN mean test ($p \leq 0.05$) were performed in the Infostat software version 2018.

Results

The analysis of variance applied to the agronomic variables showed significant differences in the stem diameter DT, number of NH leaves, fresh weight root PFR, aerial dry weight PSA and root dry weight PSR. There was no significant difference in the variables AP plant height and PFA fresh air weight. The application of CNT COOH 10 had an increase of

45.4% and 50% in the fresh and dry weight of the root, on the contrary, the CNT COOH 500 treatment decreased 13% in the fresh weight of the root with respect to the absolute control

Conclusion

The foliar application of carboxylated carbon nanotubes positively affected the growth of tomato seedlings, as well as the content of compounds.

References

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