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Abstract Title: How increase the tomato crop using ozone water disinfection method.

Abstract: Plant-parasitic nematodes represent 14% of annual losses in high-value crops worldwide. Currently Meloidogyne enterolobii has increased its importance due to its high aggressiveness, increasing geographical distribution and host range. Root-knot nematodes inhabit the rhizosphere soil around tomato plant roots. However, they can come into contact with irrigation water. Thus, plant-parasitic nematodes can be transported by water, as eggs or juveniles. Due to their high resistance, common water disinfection methods are not effective for inactivating these parasites. Ozone is the most effective disinfectant for microbial inactivation. The objective of this study is to demonstrate that ozone treatment is an alternative method control in irrigation water of the tomato root-knot nematode M. enterolobii. It has been shown that ozonation is an effective treatment for the inactivation of protozoan cysts and oocysts (Giardia and Cryptosporidium) and for other species of the genus Meloidogyne (M. incognita), but not for the enterolobii specie. In this study, the strain of M. enterolobii was isolated from tomatoes roots. For the tests, eggs were used and were inoculated in water with similar characteristics of irrigation water. Subsequently, the disinfection process was carried out in an ozonation unit. The performance of the treatments was evaluated through the egg's viability by assessing its structure by optical microscopy. As a result of exposure to ozone, the viability of the nematode eggs was reduced practically in its entirety; with dissolved ozone levels in water close to the standard concentration (equal to 0.4 mgO3/L) but with high contact times (greater than 4 min): 0.2 mgO3/L for 15 minutes or 0.55 mgO3/L for 10 minutes. Additionally, the effect of temperature, alkalinity and organic matter of the water was evaluated. Ozonation is effective and a promising alternative for the inactivation of nematodes in irrigation water, which could contribute to diminish the agricultural losses caused by these organisms.