

# Comparative efficacy of four entomopathogenic nematode isolates against the tomato leafminer *Tuta absoluta* in laboratory leaf bioassay

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The efficacy of four entomopathogenic nematode isolates against the tomato leafminer *Tuta absoluta* (Lepidoptera: Gelechiidae) were investigated in laboratory bioassays. The four nematode isolates were *Steinernema carpocapsae* (Weiser) [BA2 isolate], *S. abbasi* Elawad, Ahmad & Reid, *S. feltiae* (Filipjev), and *Steinernema* sp. [J7 isolate] and originate from different regions (Egypt, The Sultanate of Oman, Germany, and Germany, respectively). The nematodes face some challenges because of the special habitat of *T. absoluta* larvae which feed and develop inside galleries they made in leaves. These challenges for nematodes are to find the mines and to penetrate the mines and infect the host inside. Based on these particularities, a leaf bioassay was developed to evaluate the efficacy in a comparable manner.

The different nematode isolates were applied in different concentrations (15, 30, 60, 125, 250, 500, and 1000 IJs/ml) against the 4<sup>th</sup> instar larvae in tomato leaflets. The results were used to calculate median lethal concentrations causing 50, 90, and 95% larval mortality (LC50, LC90, and LC95) and their confidential limits for the four isolates. The values of LC50, LC90, and LC95 were 44, 306, and 592 IJs/ml for *S. carpocapsae* BA2, 87, 751, and 1565 IJs/ml for *S. abbasi*, 113, 1179, and 2621 IJs/ml for *S. feltiae*, and 103, 3599, and 12055 IJs/ml for *Steinernema* sp. J7, respectively. Based on these values *S. carpocapsae* BA2 was clearly the most virulent isolate in this study. As a next step, semi-field studies considering efficacy of this isolate under more natural conditions and also focusing on best formulation and application techniques are underway.