One Health
Student Conference
USAMV București

Evaluating the impact of *Maerua angolensis* extract application timing on the suppression of mixed nematode population in field-grown tomato crops

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December 4-6 , 2024, Bucureşti

Introduction

- Tomato (*Solanum lycopersicon* L.).

- Tomato production is negatively impacted by many pests, including Root-knot nematodes (Khosa, Dube, De Waele and Daneel, 2020).

- *Meloidogyne* species causes root galls.

- Friendly management strategies have been recommended to control these pests (Wiratno *et al*., 2009) .

- Plant extracts are amongst the recommended but they come with inconsistencies due to certain factors: Application time, originality, stability, etc.

- The objective of the research was to determine the correct application time of *Maerua angolensis* in managing mixed nematode population.

Materials and methods

- Plant Extracts and Inoculum Preparation
- The study was conducted at the University of Mpumalanga farm, Nelspruit, South Africa (SA).
- Plant extracts were prepared form *M. angolensis* and *T. elegans* leaves.
- Nematode inoculum were obtained from Agricultural Research Council (ARC)-Tropical and Subtropical Crops Institute, Nelspruit, SA

Materials and methods

- Treatment and Experimental Design
- Tomato cultivar used “star 9009” .
- The soil was inoculated with 5000 mixed ( ) nematode population
- The field experiment for each treatment comprised of 15 rows of 3 meters long, 50 cm wide with 50 cm gap between rows.
- Six weeks old tomato seedling were transplanted, with 5 plants per row.

Materials and methods

- Treatment and Experimental Design
- Five (5) gram of plant extract, *Maerua angolensis* was applied per plant.
- Plants treated with Crop guard nematicide were regarded as positive control
- Randomised complete block design

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Data analysis

- Data collection and analysis
- After 56 days, Plant and nematode variables were collected.
- Extraction of nematodes in root and soil was done using method described by Fourie *et al.*, (2017).
- Shapiro-Wilk normality test was used to determine normality of variance.
- Statistix 10 software was used to perform an analysis of variance (ANOVA) on plant growth and nematode variables data.
- Non- distributed data was transformed using log10(x+1) (Gomez and Gomez, 1984).

Results and discussion

Table 1. The effect of application interval on nematode variables

Weeks	Eggs in root	Juveniles in soil	Total number of nematodes in root	Total number of nematodes in pot
Weekly	2.584(433.3)^{c}	2.724(606.7)^{d}	2.927(913.3)^{cd}	3.146(1520.0)^{d}
Every second week	2.739(646.7)^{b}	3.014(1440.0)^{c}	3.047(1213.3)^{c}	3.385(2653.3)^{c}
Every third week	3.005(1160.0)^{a}	3.288(2286.7)^{b}	3.212(1826.7)^{b}	3.558(4113.3)^{b}
Every fourth week	3.136(1460.0)^{a}	3.510(4086.7)^{a}	3.350(2373.3)^{a}	3.761(6460.7)^{a}
Crop guard	2.565(386.7)^{c}	2.640(480.0)^{d}	2.908(866.7)^{d}	3.117(1346.7)^{d}
P Value	0.000**	0.000**	0.000**	0.000**
$LSD_{0.05}$	6.88	7.31	5.55	4.43
F-Value	26.17	41.31	18.35	49.88

****highly significant difference(P≤0.05). From week 1- 4 (Application of *Maerua angolensis*). Week 5- Positive control (Crop Guard).**

Conclusions and recommendations

- Plant extracts applied on a weekly basis showed a positive, promising control strategy in nematode management. Further studies are required to assess the toxicity of the plant extracts applied weekly and the possible active ingredients.

References

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Thank you for your attention!

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