



One Health
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FIRST REPORT OF FUSARIUM SOLANI AND FUSARIUM EQUISETI IN AN ORGANIC KIWIFRUIT ORCHARD FROM ROMANIA

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December 3-5, 2025, Bucharest

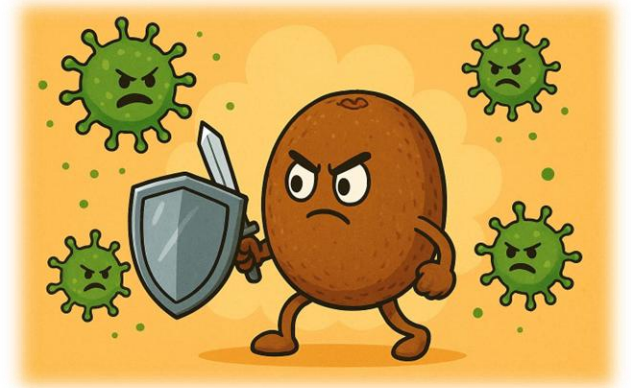
Objectives

The general objective was to study the behavior of Actinidia genotypes from an organic culture in the south-eastern part of Dobrogea towards biotic stress factors (pathogens, pests) and their control.

Specific objectives:

Fusarium attack in kiwifruit crop

Nematodes attack in kiwifruit crop



Material and method

The biological material was represented by the following species and genotypes:

Actinidia arguta - Vip Green, Vip Red, Rosa



Actinidia deliciosa - Hayward, Tomuri, R3P9, Bruno, Kisweet, Kiball, Kigiant, Kiflor, Z1, R2P1, R1P8



Actinidia chinensis - R0P9, R0P10, A20, Rosso, Quimi



Material and method

Detection and identification of *Fusarium* species associated with kiwi plant wilt

Biological samples were collected from the roots of kiwi plants that showed generalized wilting, possibly as a result of infection with *Fusarium spp.*, as well as from the soil collected around the roots in several places within the plantation. The samples were stored in paper bags and refrigerated (4°C) for two days. The plant material subjected to analysis was taken during the years 2023-2025 from the kiwi plantation in southeastern Dobrogea.

For the detection and identification of *Fusarium* species from the roots of affected plants, the method of incubating roots fragments on PDA (Potato-Dextrose-Agar, Scharlau) culture medium was used.



Variant	Root segment
V1	Thick roots sectioned
V2	Thin roots section (round)
V3	Dead roots (browned- round)
V4	Detached bark
V5	Root central cylinder (detached bark)

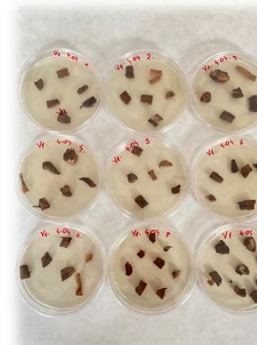
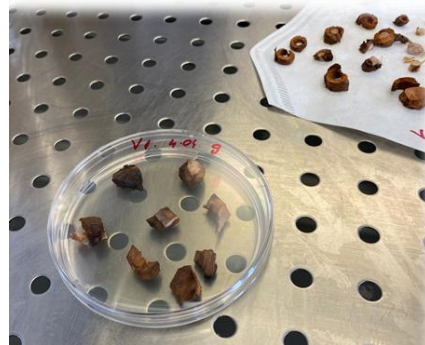
Material and method

Detection and identification of *Fusarium* species associated with kiwi plant wilt

Preparation of root samples

- washing under running water to remove traces of soil
- superficial disinfection with 70% ethanol for 5 minutes, followed by successive rinses in sterile water
- incubation on PDA in Petri dishes at 22-24°C.

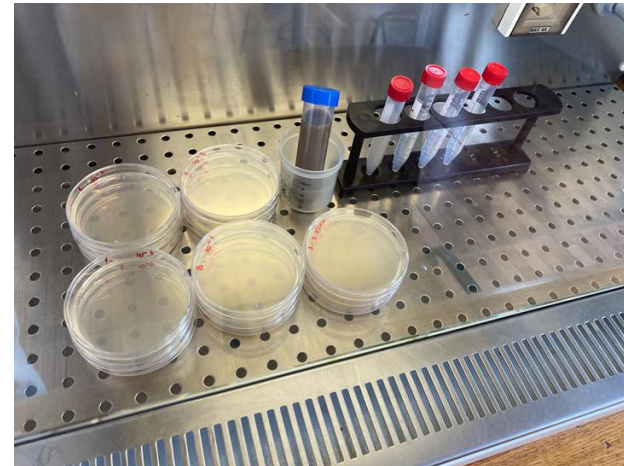
Observations: detection and identification of *Fusarium* spp. based on morphological characteristics of colonies developed around the incubated fragments (appearance, color) followed by microscopic examination (morphology of the fruiting bodies - presence of micro and macro conidia).



Material and method

Detection and identification of *Fusarium* species associated with kiwi plant wilt

- Soil analysis was performed using the serial dilution method.
- One ml of four serial dilutions and the undiluted soil solution were incubated on PDA. *Fusarium* specific colonies have been detected and identified based on morphological criteria.
- The test was repeated 3 times.



Material and method

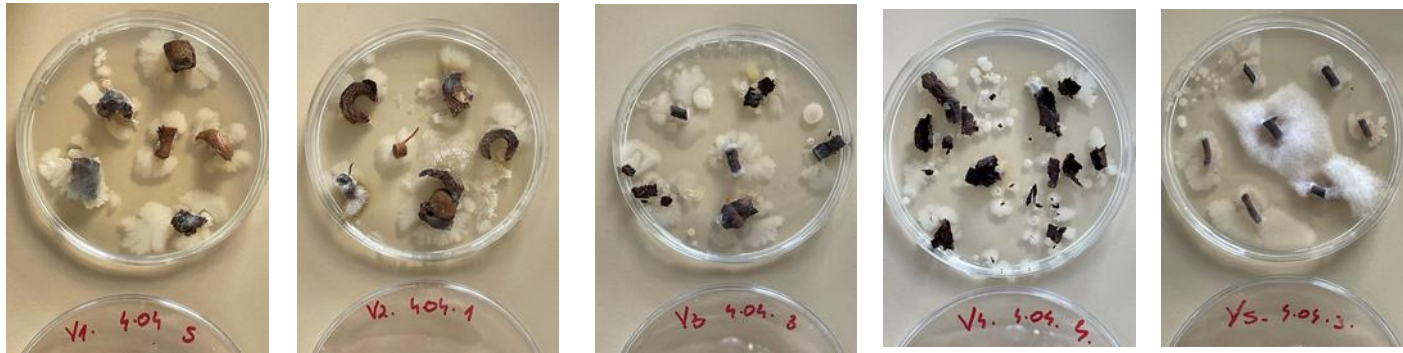
Detection and identification of nematodes attack on kiwi crop

- Biological samples were collected from the roots of kiwi plants that showed wilting symptoms, possibly as a result of nematode attack, as well as from the soil collected around the roots. Sampling was done according to the ANF (National Phytosanitary Authority) protocols (Nematology laboratory).
- The test was repeated 2 times (2024-2025)

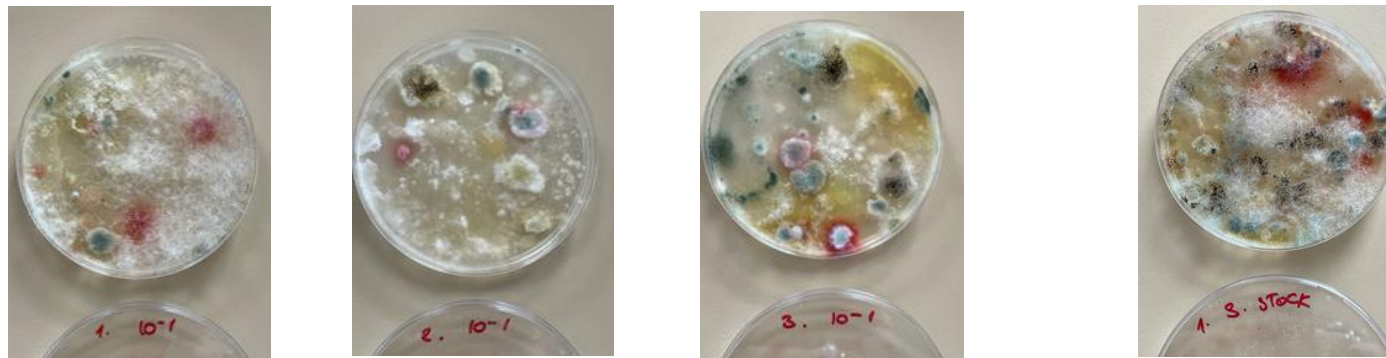


Results and discussion

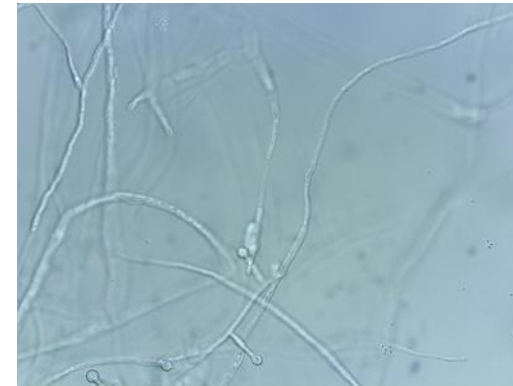
Results on the detection and identification of *Fusarium* species associated with kiwi plant wilt



Detection and identification of *Fusarium* species on plant roots



Detection and identification of *Fusarium* spp. in soil



Results and discussion

Results on the detection and identification of *Fusarium* species associated with kiwi plant wilt

The detected species were confirmed as *Fusarium solani* and *Fusarium equiseti* by ANF (National Phytosanitary Authority) through morphologically characteristics and Uniplex PCR.

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Localitatea: CONSTANTA
CONSTANTA

Buletin de analiza
Nr. 3073 / 19.12.2024

Denumirea probei: FUSARIUM SP.:

Origine: ROMANIA, Judet CONSTANTA
Natura probei: CULTURA PURA;
Data receptiei in laborator: 27.11.2024
Tipul cererii: BENEFCIAR
Proba prelevata de: client Numar cerere:

Cod prelevare probe - Cod proba laborator	Solicitare client	Metoda de analiza utilizata	Data intrari Data iesiri	Rezultate (Depozitat/Indepozitat)
FUSK / FN38BK 34-00037	ANALIZA MICROLOGICA	IDENTIFICARE MORFOLOGICĂ, CHIMICĂ FITOPATOGENE PCR UNIPLEX	27.12.2024 02.01.2025	Depozitat
			05.12.2024 19.12.2024	Depozitat

Mentii:
S-a identificat *Fusarium solani* si *Fusarium equiseti* prin secventierea produsilor PCR si compararea secventelor cu baza de date NCBI.

Sef serviciu,
ing. Aurelian-Marian Coman

Responsabil tehnic,
ing. Aurelian-Marian Coman
ing. Mariana Gavrilescu

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Reproducerea acestui document este permisa numai in forma sa integrala.

Pagina 1 din 1
Cod FI PSI-06
Versiunea 2/Rev.0
Data aplic. 09.2023

Results and discussion

Results regarding the nematode attack on kiwi crop

- Nematology laboratory of the ANF (National Phytosanitary Authority) confirmed the presence of nematodes.
- Nematodes from the Haplolaimidae family
- *Xiphinema pachtaicum*
- *Pratylenchus* sp except *Pratylenchus penetrans* and *P. vulnus*



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Localitatea: CONSTANTA
CONSTANTA

Buletin de analiza
Nr. 1025 / 28.05.2025

Demnitatea probei: SOL;

Origine: ROMANIA, Judet CONSTANTA
Natura probei: SOL;
Data receptiei in laborator: 21.05.2025
Tipul centrului: BENEFICIAR
Proba prelevata de client: Numar cerere: 7/19.05.2025

Rezultate analiza:		Metoda de analiza utilizata		Data intrarii in laborator	Data iesirii din laborator	Rezultate
Cod prelevare probe - Cod probe laborator	Solutiune clienti			Data intrarii	Data iesirii	Diagnostic/Recomandari
CACI 2075(01) 25-02064	NEMATODI FITOPARAZITI FILIFORMI	DEPREZARE NEMATODI FILIFORMI PRIN ELECTROZARE, CERNARE, MORGARE SI IDENTIFICARE MORFOLOGICA		26.05.2025	28.05.2025	Degajat
CACI 2075(01) 25-02062	NEMATODI FITOPARAZITI FILIFORMI	DEPREZARE NEMATODI FILIFORMI PRIN ELECTROZARE, CERNARE, MORGARE SI IDENTIFICARE MORFOLOGICA		26.05.2025	28.05.2025	Degajat

Mențiuni:
S-au depistat nematodi fam. Haplolaimidae, Xiphinema pachtaicum, Pratylenchus sp., cu excepția Pratylenchus penetrans, Pratylenchus vulnus și nematodi probei.

Sef serviciu,
dr. ing. Mihaela Cean

Responsabil tehnic,
dr. ing. Mariana Groza

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2024

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Localitatea: CONSTANTA
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Buletin de analiza
Nr. 2774 / 20.11.2024

Demnitatea probei: ACTINIDIA SP.;

Origine: ROMANIA, Judet CONSTANTA
Natura probei: SOL;
Data receptiei in laborator: 06.11.2024
Tipul centrului: BENEFICIAR
Proba prelevata de client: Numar cerere:

Rezultate analiza:		Metoda de analiza utilizata		Data intrarii in laborator	Data iesirii din laborator	Rezultate
Cod prelevare probe - Cod probe laborator	Solutiune clienti			Data intrarii	Data iesirii	Diagnostic/Recomandari
NR. 1 24-00810	ANALIZA NEMATOLOGICA	DEPREZARE NEMATODI FILIFORMI PRIN ELECTROZARE, CERNARE, MORGARE SI IDENTIFICARE MORFOLOGICA		07.11.2024	20.11.2024	Nedegajat

Mențiuni:

Sef serviciu,
dr. ing. Mihaela Cean

Responsabil tehnic,
dr. ing. Mihaela Coman

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Aplicarea acestui document este permisa numai in forma sa integrala. Data aplic. 09.2023

2025

Conclusions

Our results reports for the first time two *Fusarium* species - *Fusarium solani* and *F. equiseti* associated with *Fusarium wilt* in a kiwifruit orchard in Romania.

Also, nematode attacks from the mentioned species have not been previously reported in kiwi plantations in our country.

It is known that the presence of nematodes in the soil favored the establishment of *Fusarium* species.

The appearance of *Fusarium* spp and nematodes in the kiwi plantation required the application of several ecological methods to control them.

Conclusions

- Following the suspicion of the presence of *Fusarium spp.* in the soil, two *Terra Clean* treatments with insecticidal-fungicidal role were applied (commercial products based on *Trichoderma*, mycorrhiza, *Bacillus thuringiensis* and other bacterial organisms).
- Repopulating the soil with beneficial microorganisms is important both for the control of diseases and pests in the soil, as well as in the decomposition of plant matter, soil aeration.
- The treatment was applied by fertigation.



Conclusions

Following the suspicion of the presence of nematodes in the soil, an ecological treatment was applied (Vivema Twin).

- Vivema Twin is composed of an exclusive blend of polyphenols contained in selected tannin to stimulate active root development and help maintain fertility. The product improves soil structure and is very effective even on soils with poor organic matter.
- The properties of polyphenols in VIVEMA TWIN allow to reduce the negative effects on crops due to excess salinity and water stagnation and stimulate the development of beneficial microflora.
- VIVEMA TWIN allows to create conditions for the complete availability of nutritional elements present in the soil to plants. It acts on the mobilization of phosphorus and calcium present in the soil.
- Constant new roots allow optimal development of the plant, even in the case of abiotic pressure and in soils infested with nematodes.



Conclusions

Also, intercropping *Tagetes* spp. was chosen as another method of ecological control of nematodes.



Conclusions

- All three control measures mentioned (bacterial and fungal inoculation, nematode treatment, cultivation of *Tagetes* spp.) are currently being tested.
- The results will be published soon

Thank you for your attention!

