

Un'eziologia complessa: possibili cause e patogeni associati alla moria

Chiara Bernardini

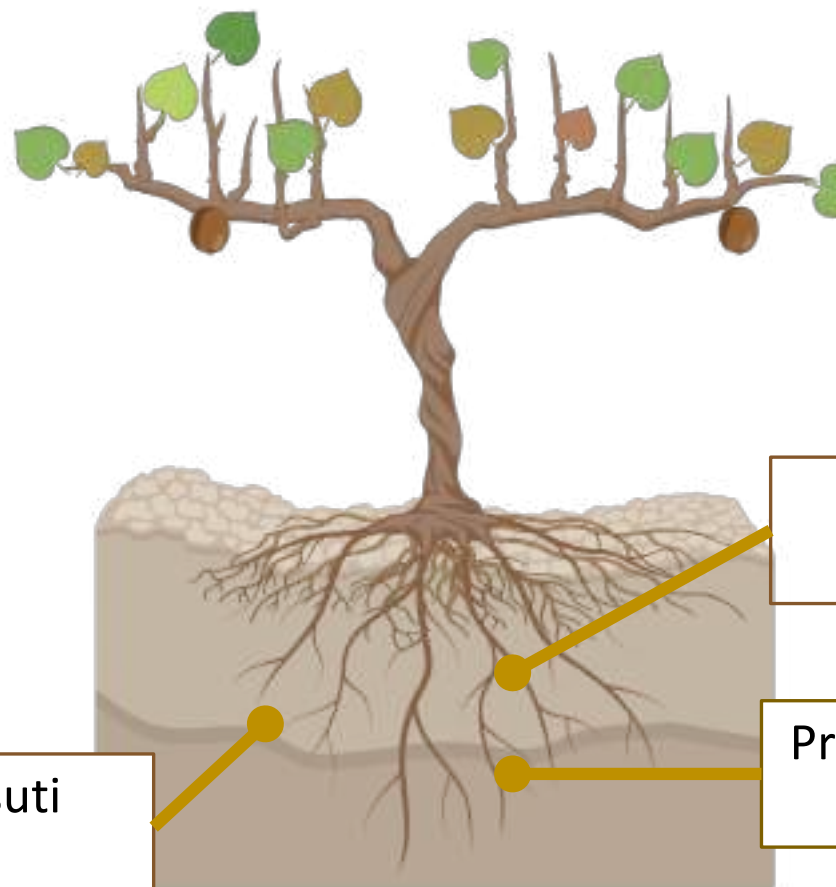


**SOS
KIWI**



FONDAZIONI IN RETE
PER LA RICERCA
AGROALIMENTARE

Sintomi

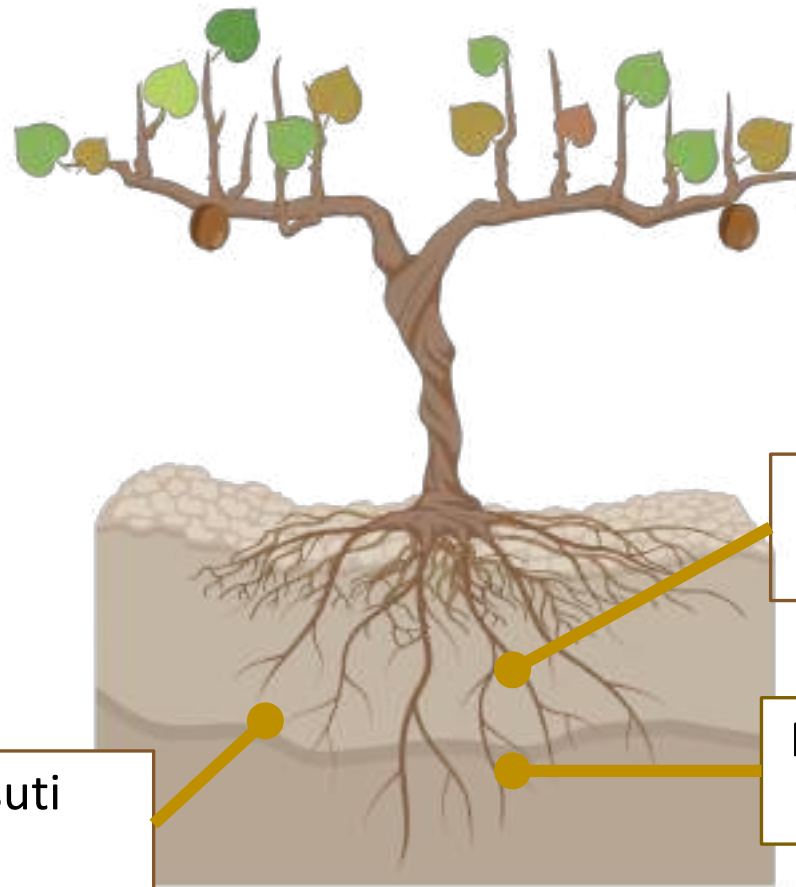


Sfaldamento dei tessuti
corticali

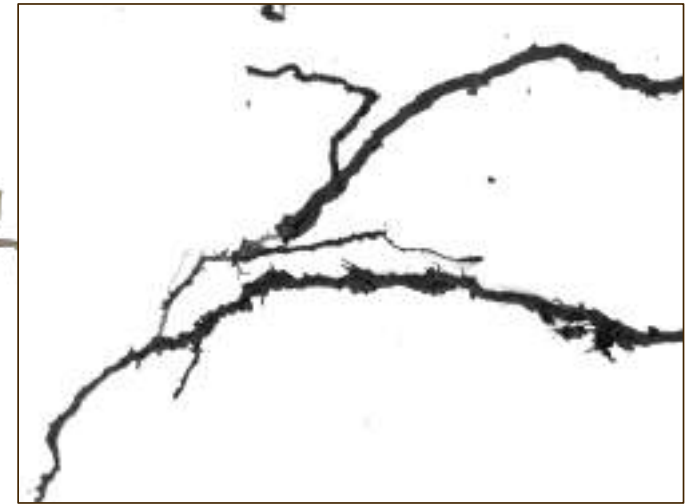
Scarsità o assenza di radici
assorbenti

Presenza di cordoni radicali più
grossi necrotizzati

Sintomi



Sfaldamento dei tessuti
corticali



Scarsità o assenza di radici
assorbenti

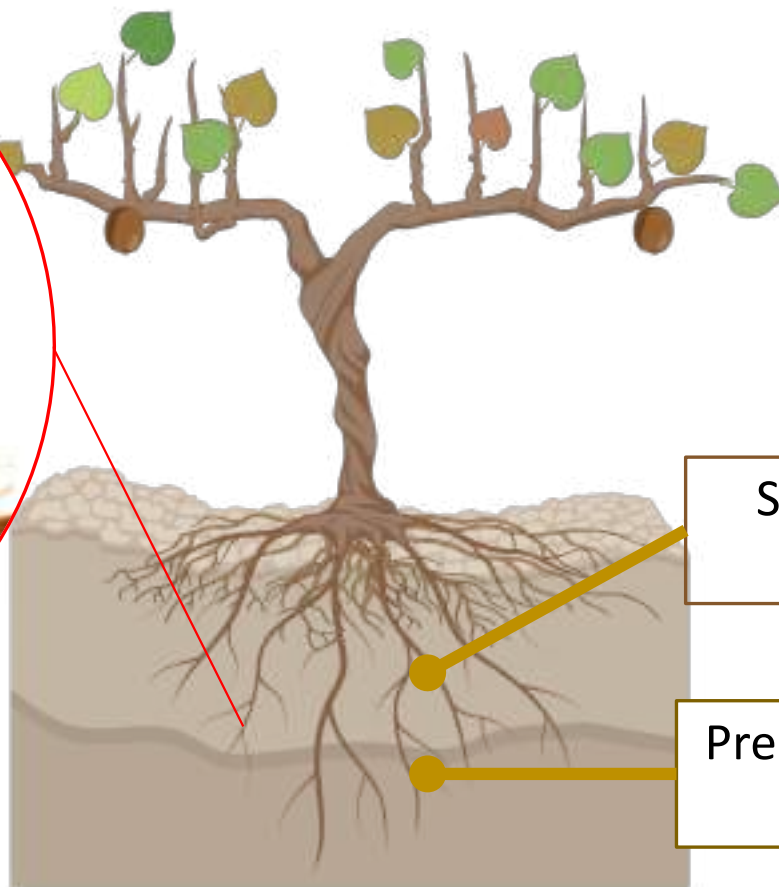
Presenza di cordoni radicali più
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Sintomi

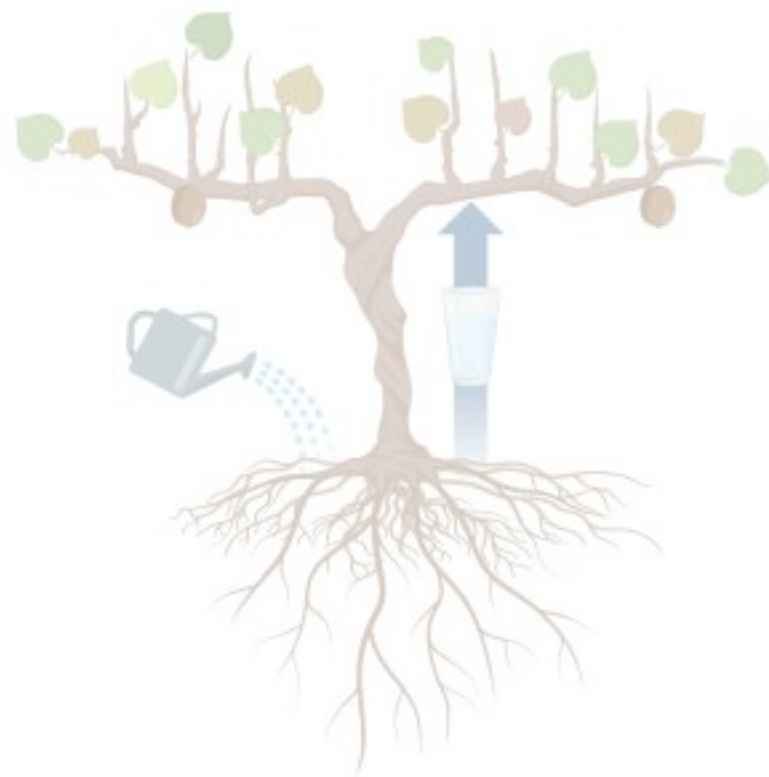
**Code di
topo**

Scarsità o assenza di radici
assorbenti

Presenza di cordoni radicali più
grossi necrotizzati



Sintomi



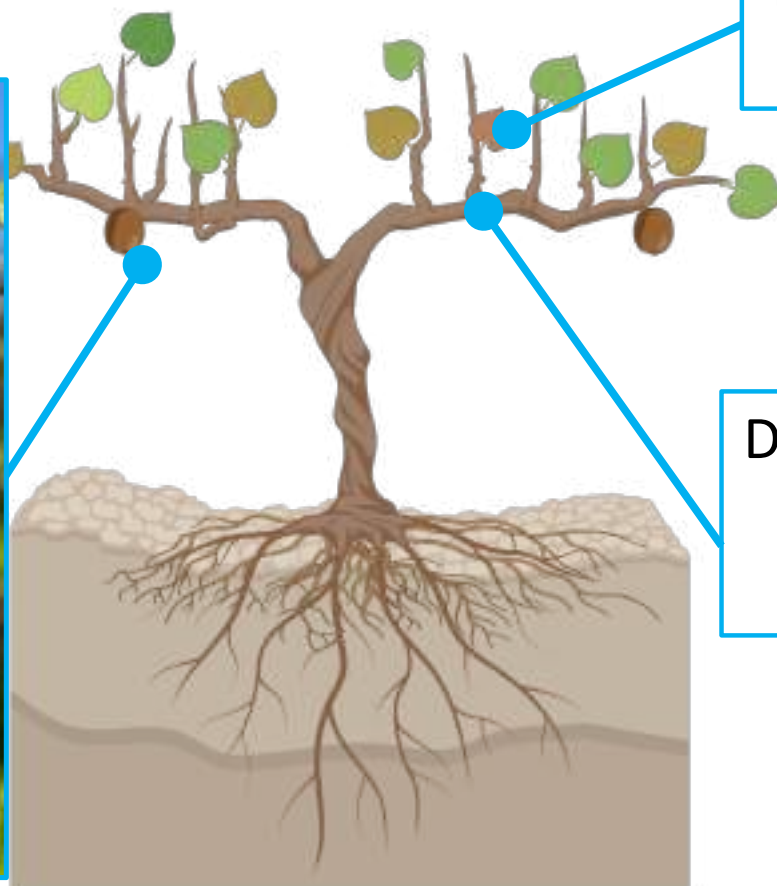
Sintomi







Sintomi



Disseccamento fogliare:
necrosi e filloptosi

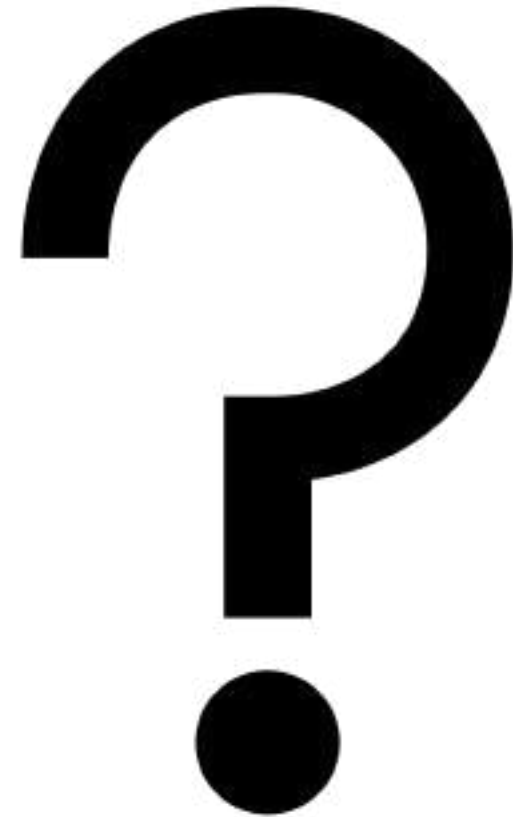
Disseccamento dei tralci e
dell'intera pianta +
DECADIMENTO

SCOPI

- **Individuare le cause** della malattia e i potenziali patogeni;
- Testarne la **patogenicità**;
- **Trovare soluzioni** utili a contrastare la malattia in campo.



CAUSE



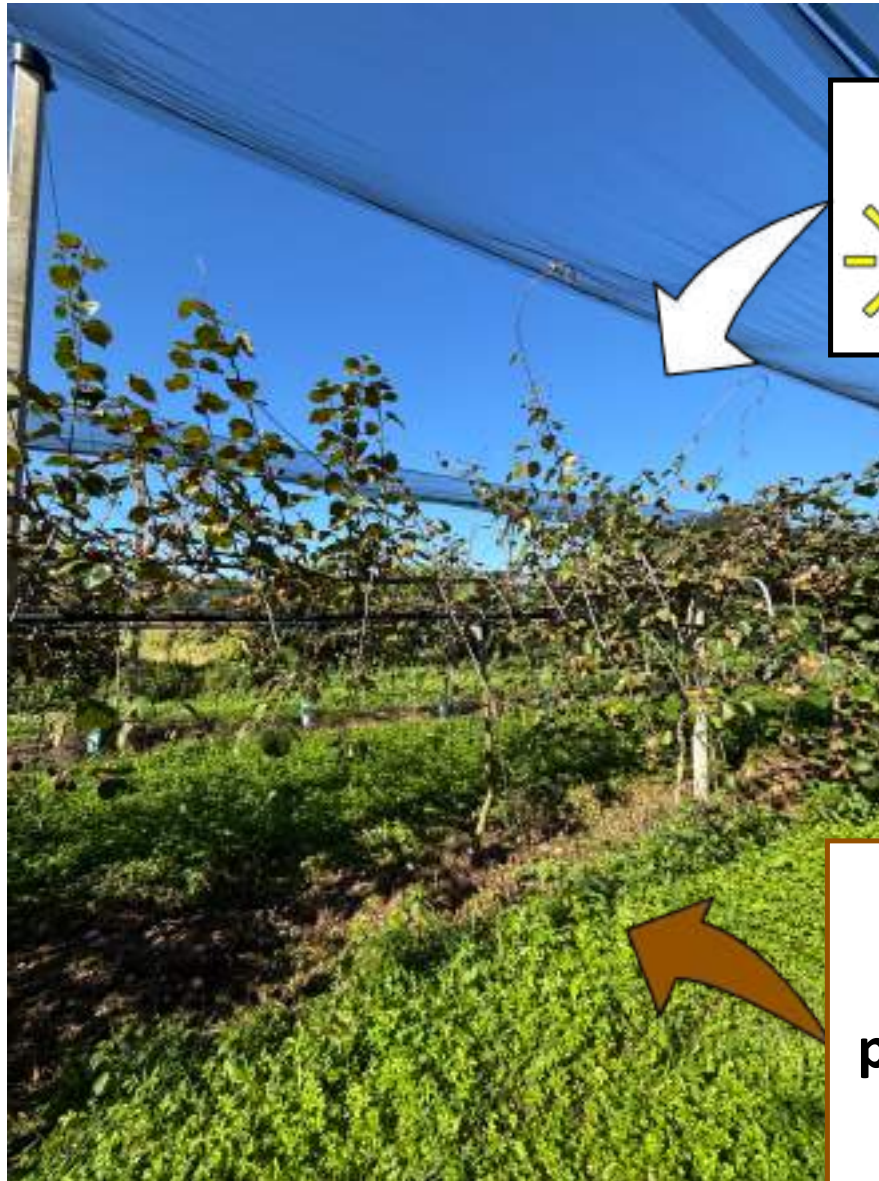
CAUSE



Fattori climatici



CAUSE



Fattori climatici

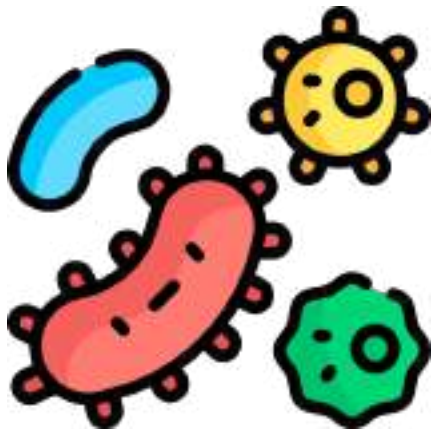


Fattori pedologici



CAUSE

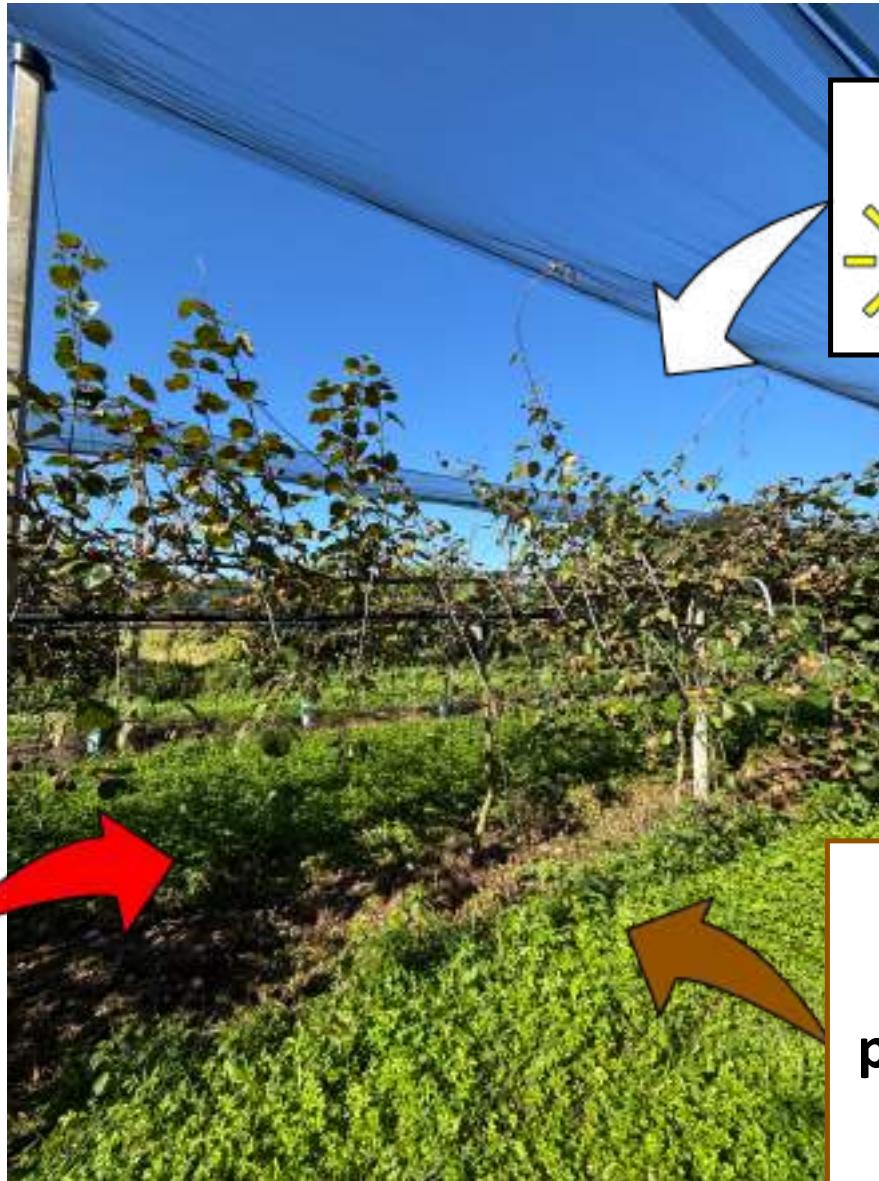
Patogeni



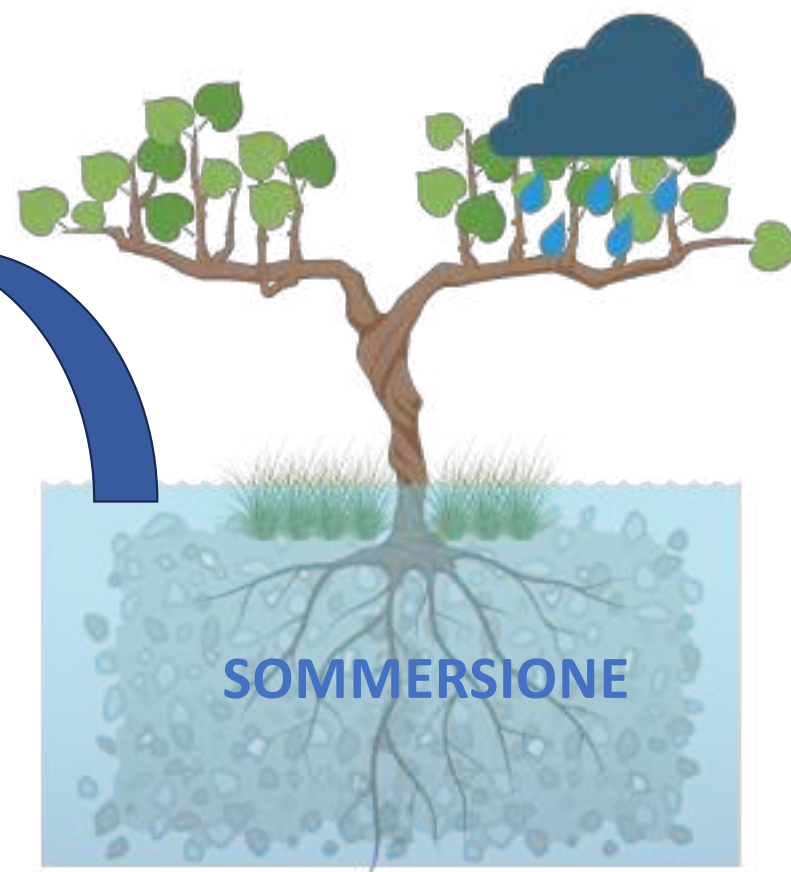
Fattori climatici



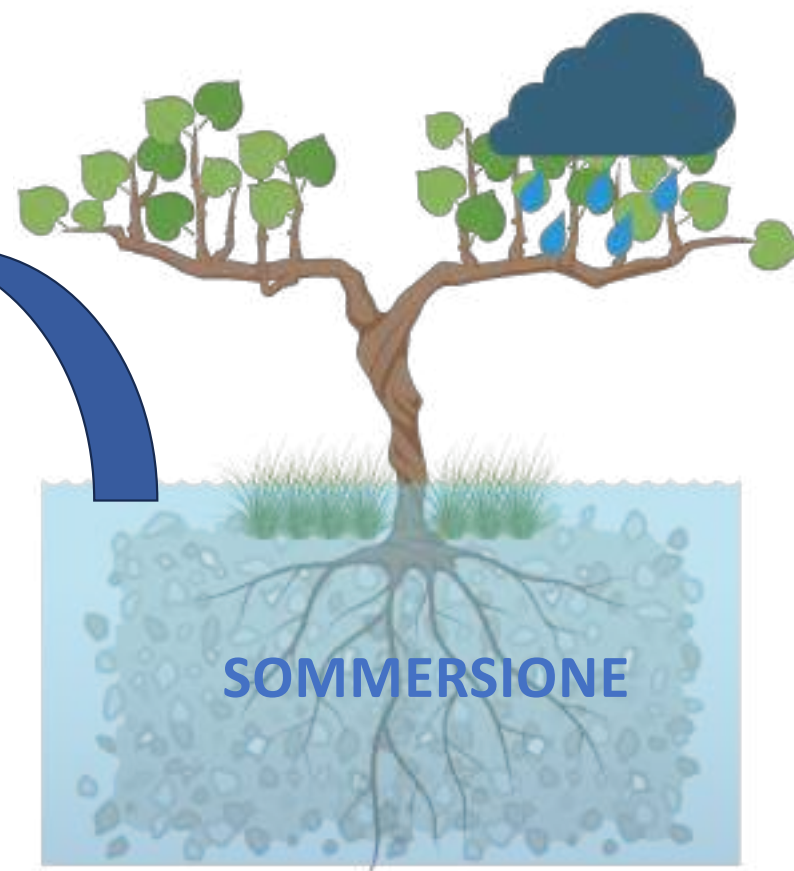
Fattori pedologici



CAUSE Fattori climatici



CAUSE Fattori climatici

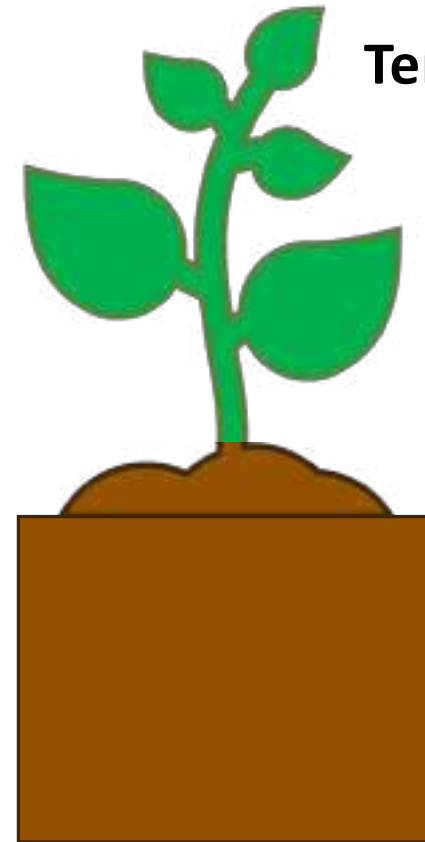


CAUSE Fattori pedologici

**Terreni ricchi di
scheletro**



Terreni limosi



CAUSE Fattori pedologici

Terreni ricchi di scheletro



Terreni limosi

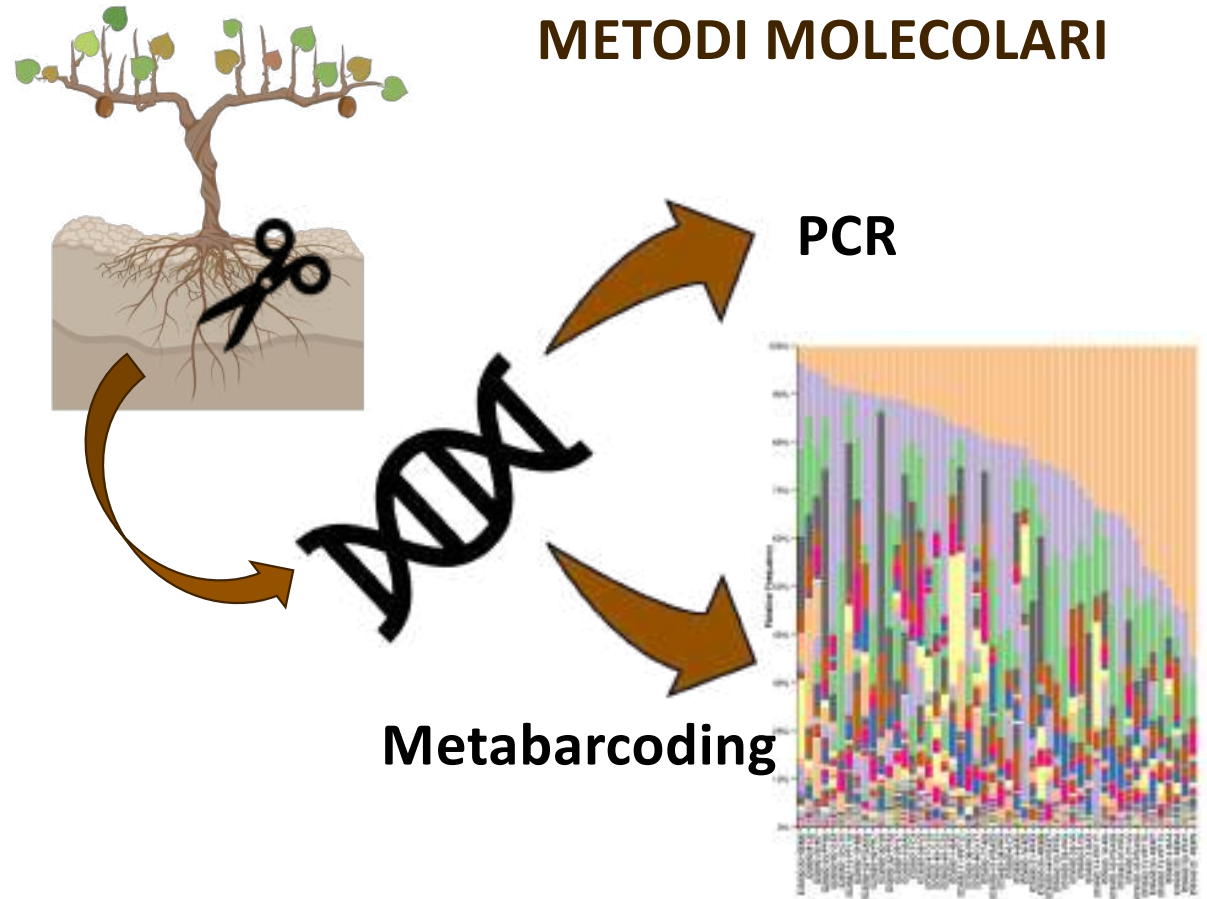


CAUSE Patogeni

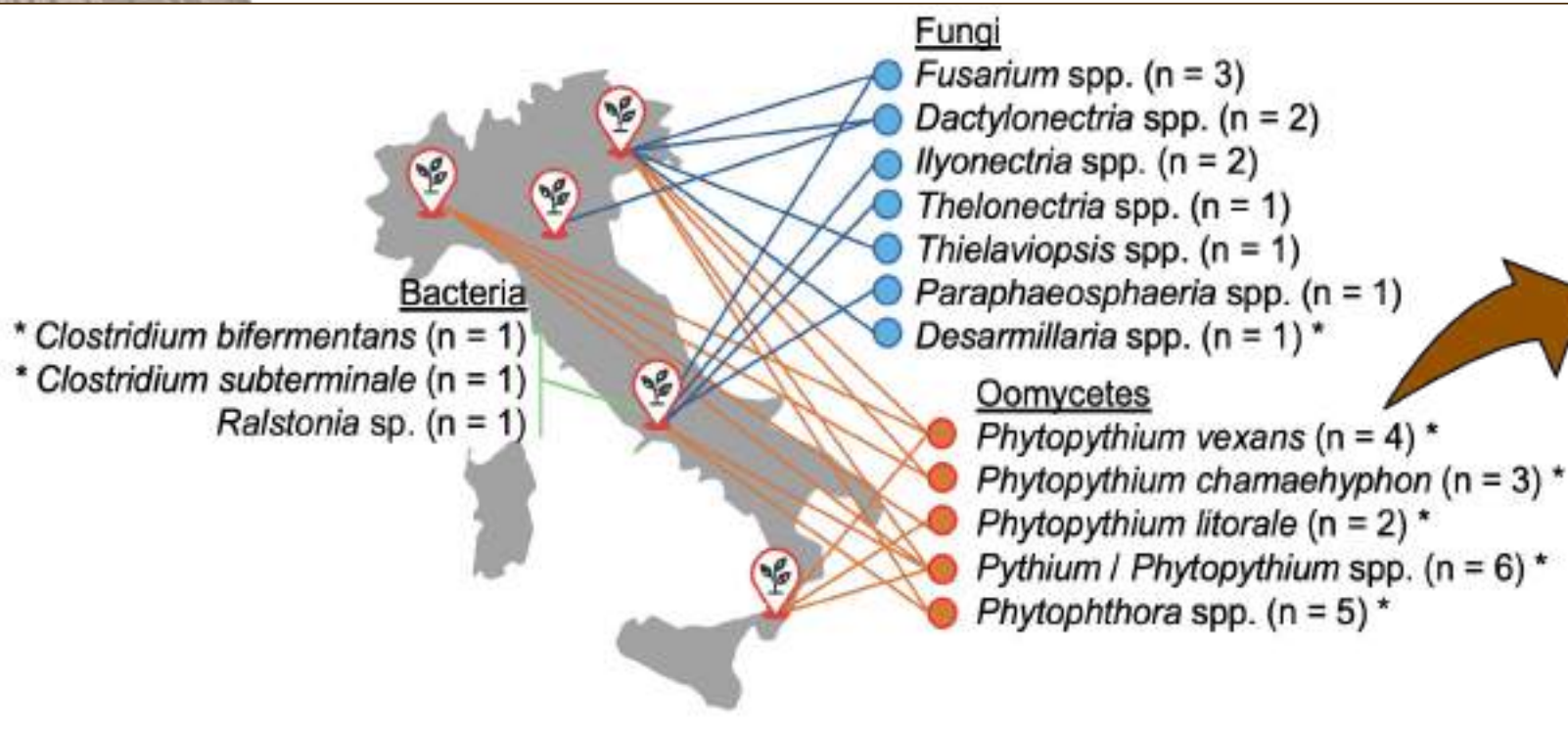
METODI DI ISOLAMENTO CLASSICI



METODI MOLECOLARI

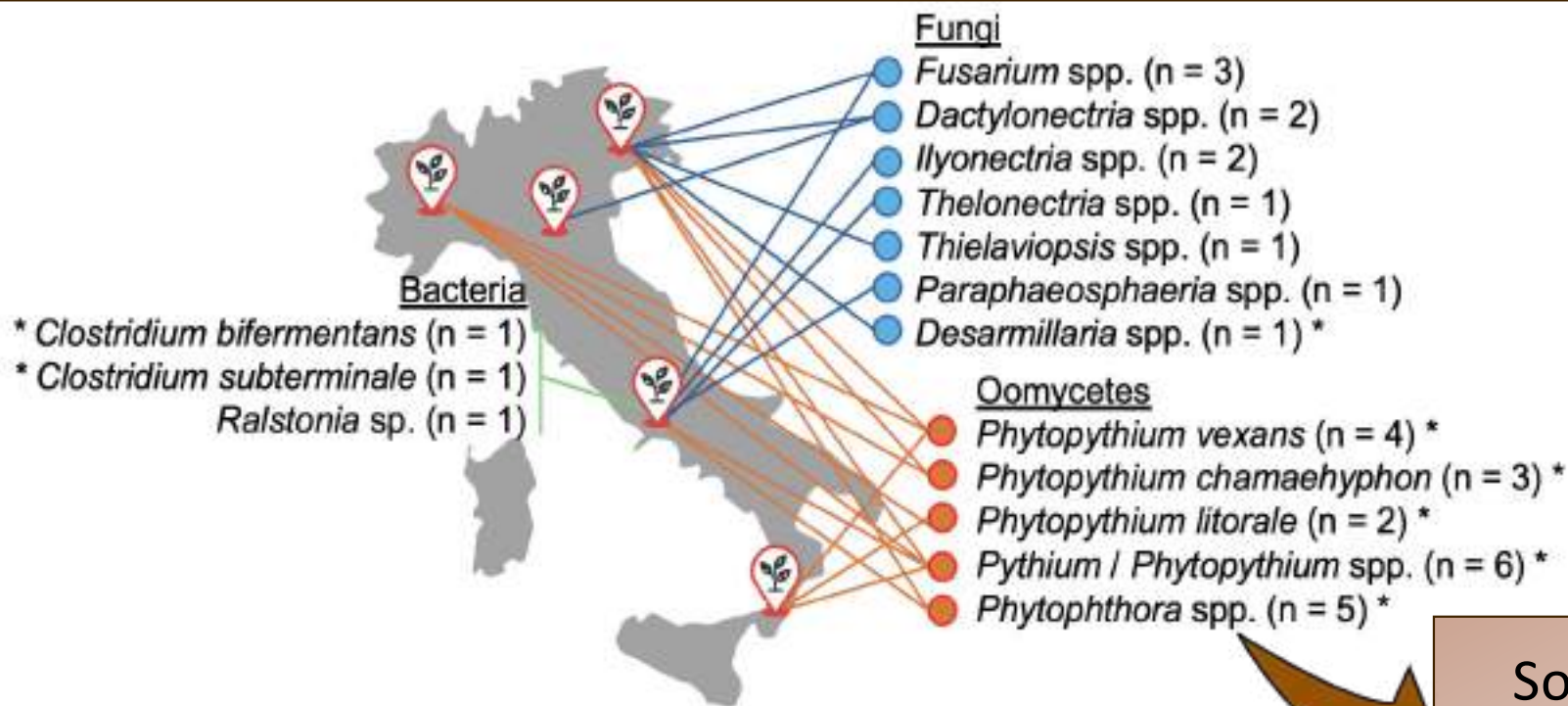


CAUSE Patogeni



*Phytophythium
vexans*

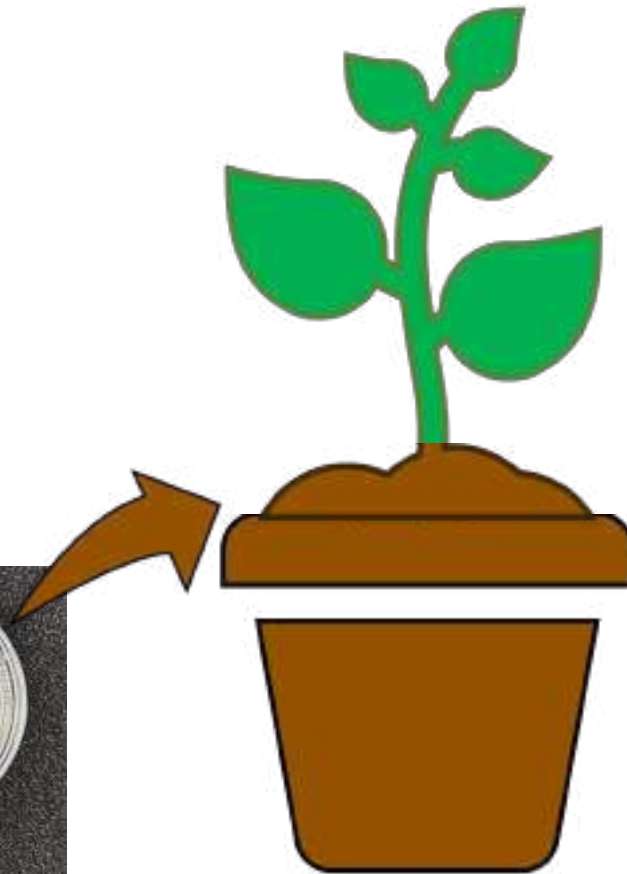
CAUSE Patogeni



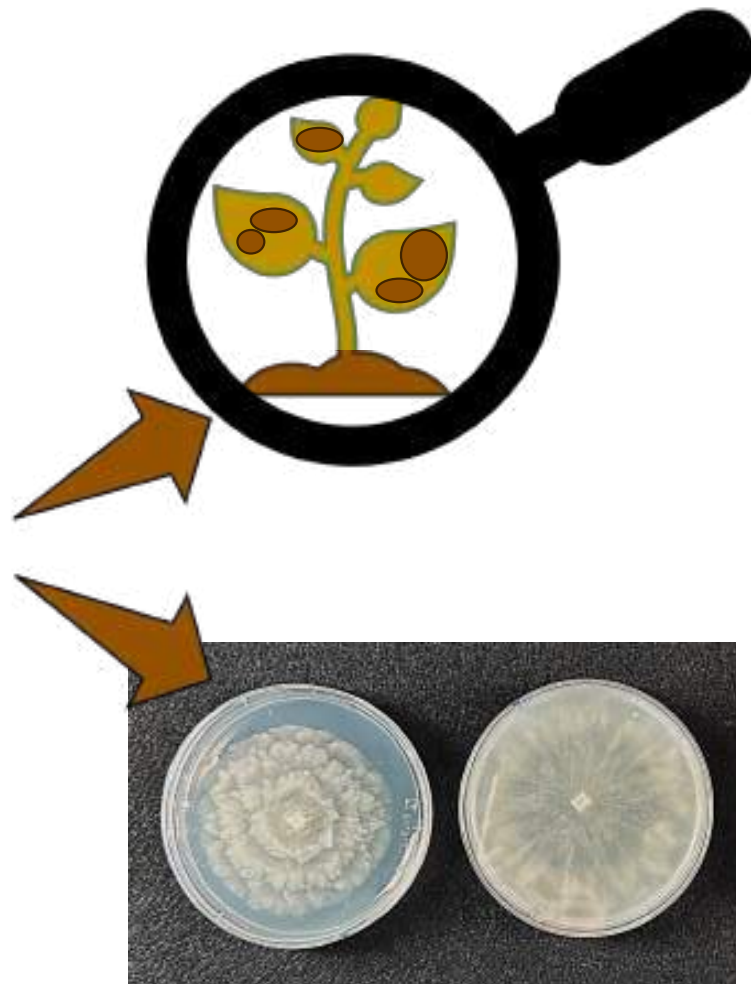
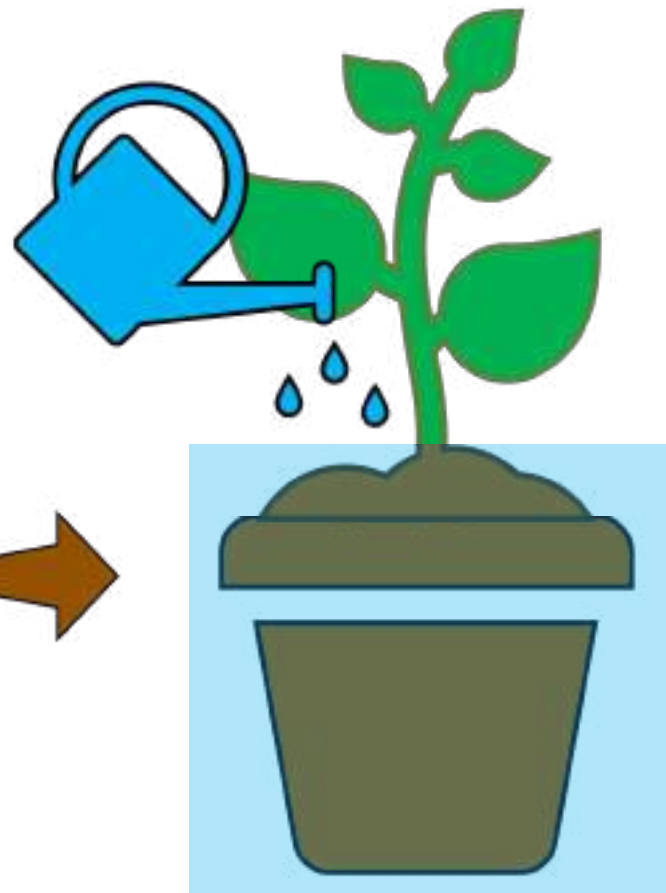
Solo in FVG trovata
una specie nuova
Phytophthora sojae-
like

PATOGENICITA'

- Attribuire una connessione tra presenza di un microrganismo e malattia;
- Prove di serra.



PATOGENICITA'



PATOGENICITA' Esempio



Trattamento	Peso (g)		isolamento (%)	Radici sintomatiche (%)
	chioma	radici		
Controllo sano (a)	78,02	16,86	0	0-10
<i>P. nicotianae</i> (b)	63,23	14,05	67	25-50
<i>P. citrophthora</i> (c)	57,35	14,57	67	25-50
<i>P. plurivora</i> (d)	63,44	12,45	78	50-75
<i>Phy. chamaehyphon</i>	58,74	11,13	67	50-75
<i>Phy. vexans</i> (e)	54,36	12,06	67	50-75
<i>P. acerina</i> (f)	43,35	10,92	78	75-100
<i>P. cinnamomi</i> (g)	29,35	7,77	90	75-100
Suolo infetto (i)	40,65	8,72	56	75-100
Mix di patogeni (j)	24,28	6,36	89	75-100

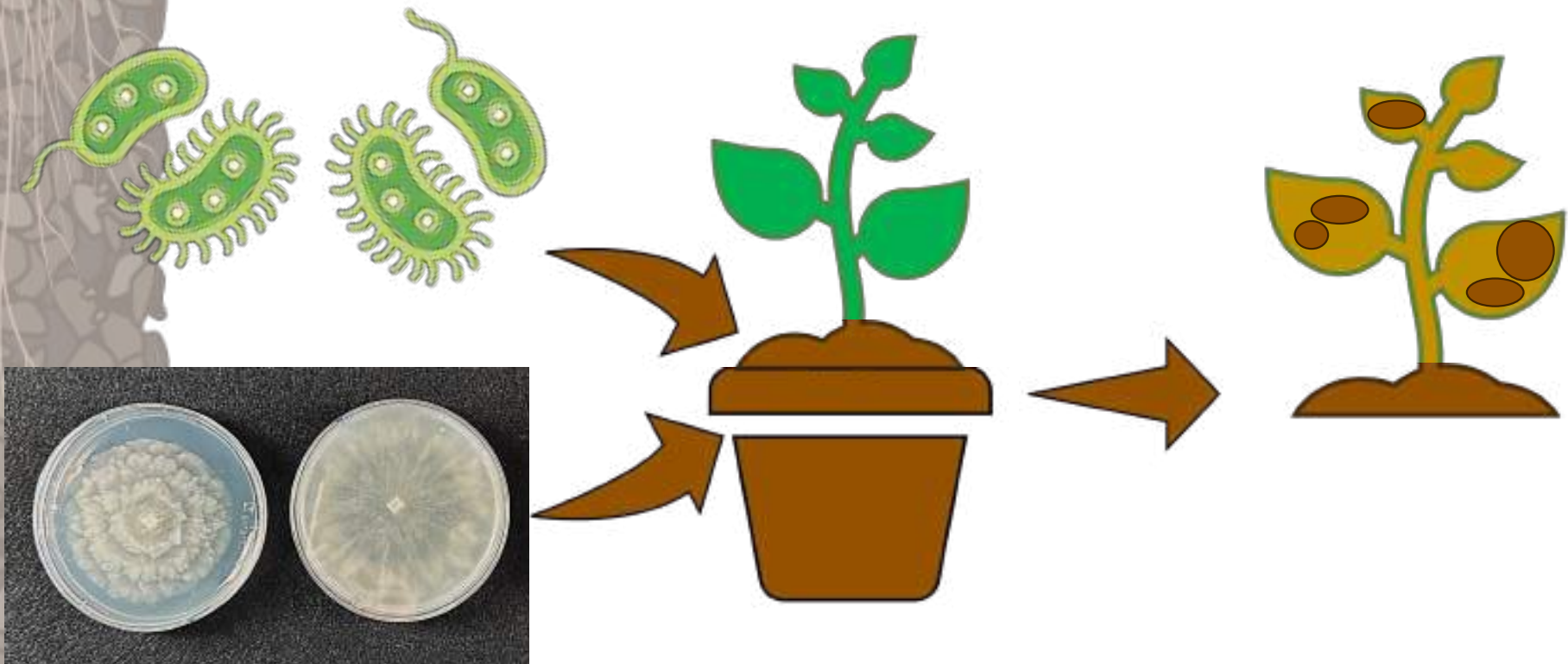
TROVARE SOLUZIONI

- Tecniche agronomiche volte a migliorare l'aerazione del terreno;
- Metodi chimici?
- Utilizzo di biocompetitori;
- Varietà resistenti

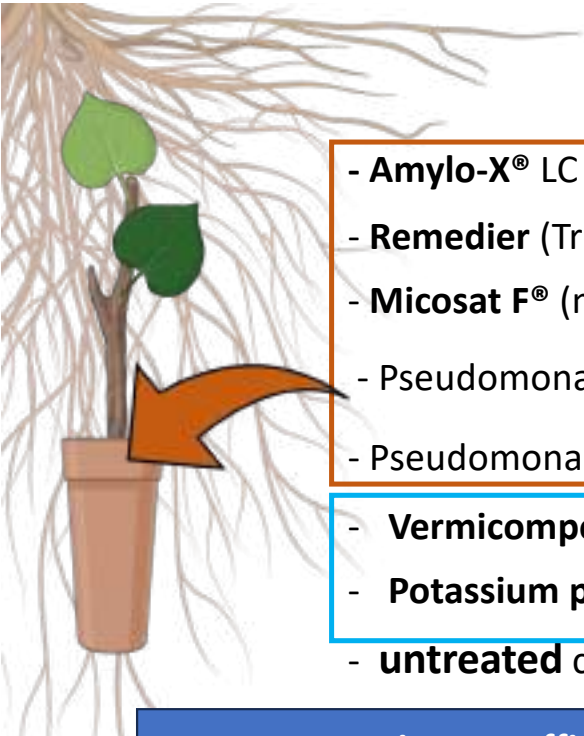


TROVARE SOLUZIONI

- Sperimentazione in corso sull'utilizzo di biocompetitori



biocompetitori

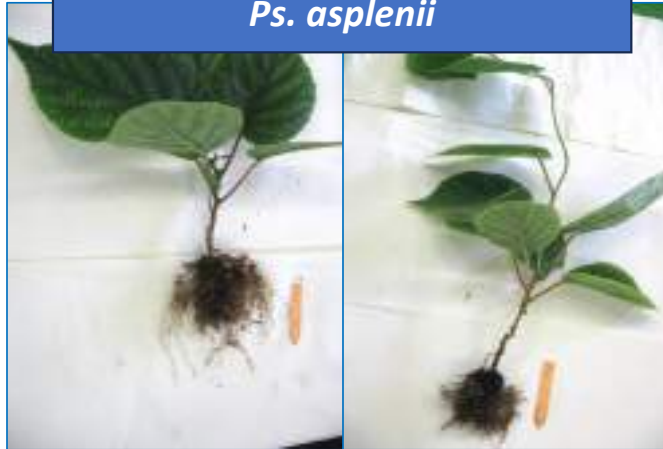
- 
- **Amylo-X[®] LC** (*Bacillus amyloliquefaciens* strain D747),
 - **Remedier** (*Trichoderma gamsii* ICC 080 and *T. harzianum* ICC 012),
 - **Micosat F[®]** (microbiological consortium)
 - *Pseudomonas asplenii* strain **4A7**, collezione Università di Udine
 - *Pseudomonas protegens* strains **4** and **11** collezione Università di Udine
- 
- **Vermicompost** soil amendment
 - **Potassium phosphite** (foliar applications)
 - **untreated** control plants

Altri
trattamenti

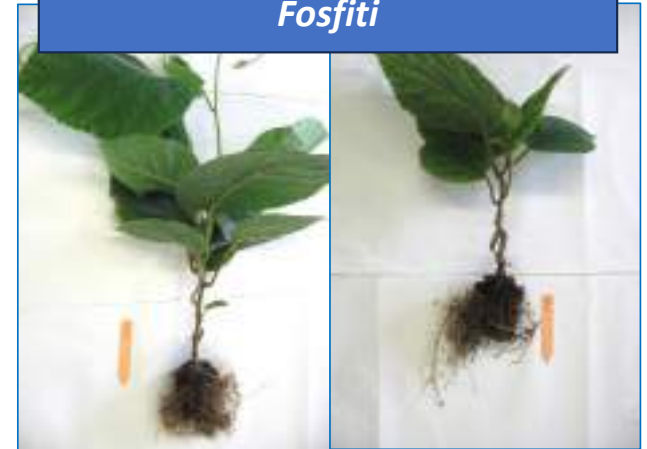
Trattamenti meno efficaci

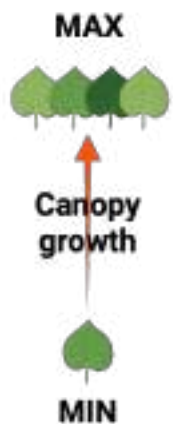
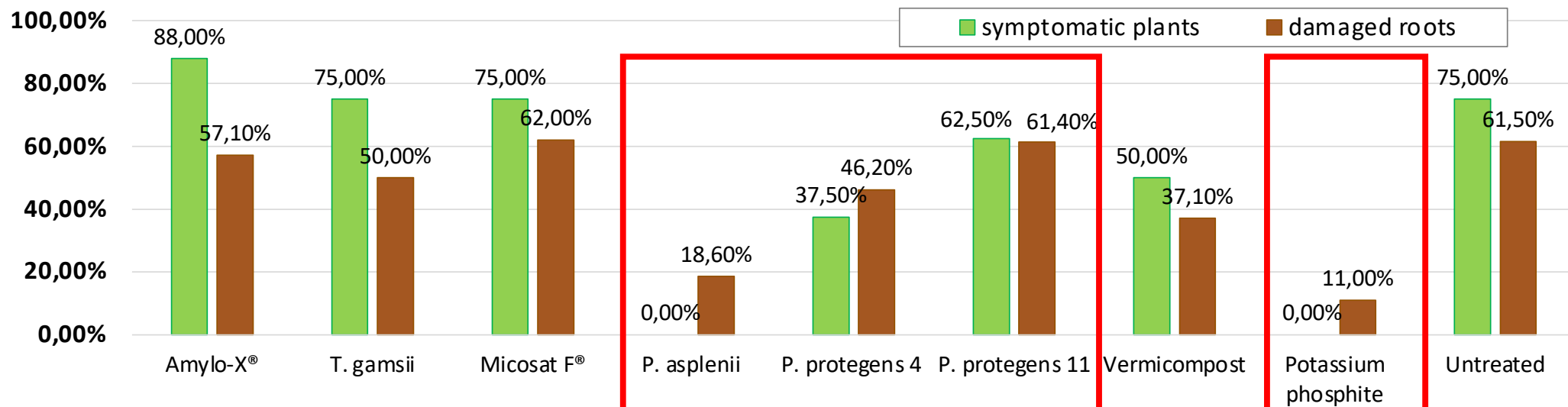


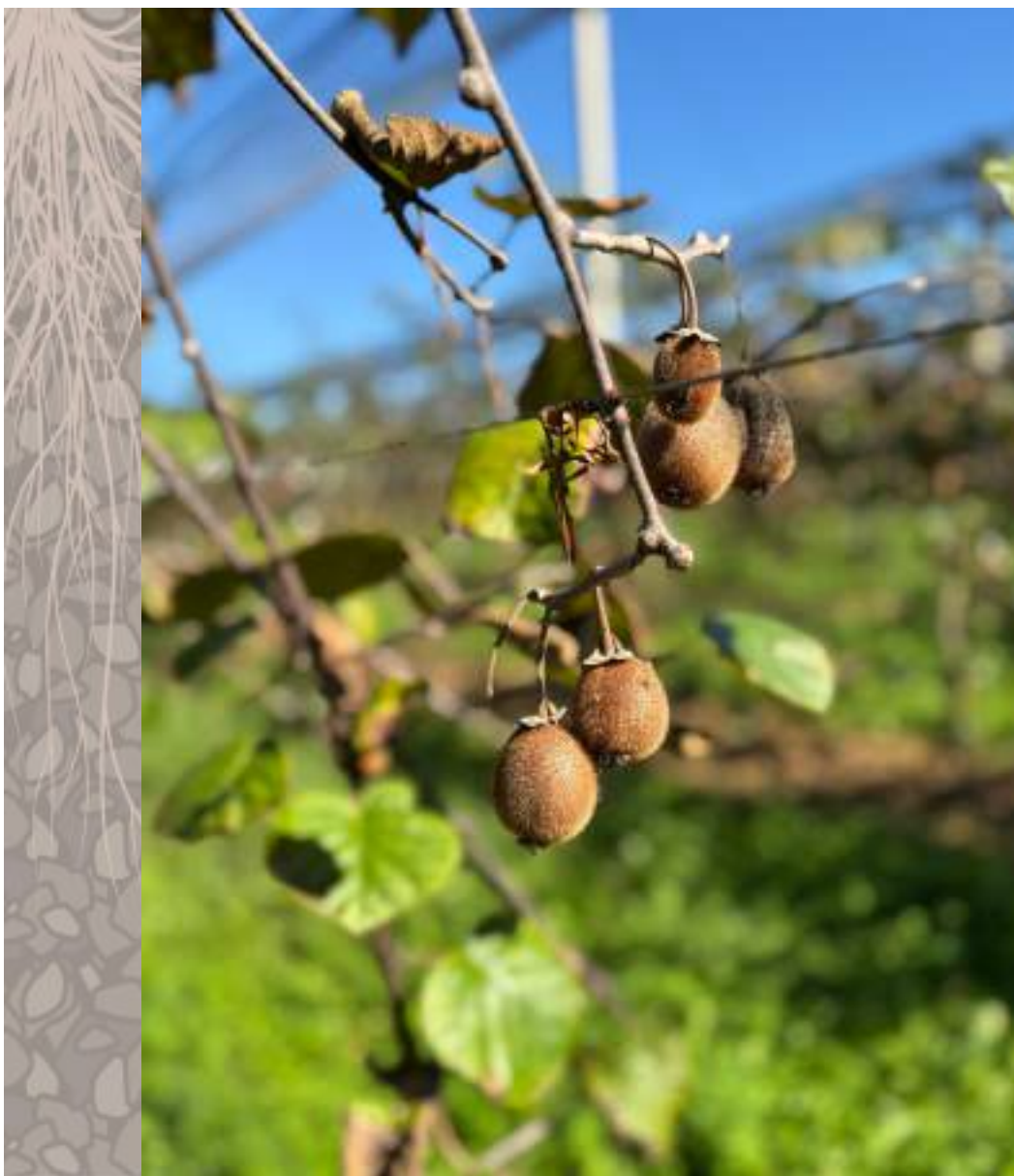
Ps. asplenii



Fosfiti







**... PER PARTIRE DA
UNA SITUAZIONE
COMPROMESSA...**



**... E TORNARE ALLA
NORMALITA'**



**... E TORNARE ALLA
NORMALITA'**

**GRAZIE PER
L'ATTENZIONE!**



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