5th EPPO Workshop for Heads of Plant Pest Diagnostic Laboratories
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Proficiency test: our experience from the laboratory to the field

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CeRSAA

Centro di Sperimentazione e Assistenza Agricola

CAMERA DI COMMERCIO
RIVIERE DI LIGURIA
IMPERIA LA SPEZIA SAVONA

CeRSAA

CENTRO DI SPERIMENTAZIONE E ASSISTENZA AGRICOLA

Plant disease laboratory and Center for pesticide evaluation (GEP and GLP)

Surfaces:

500 sqm of Laboratory

20.000 sqm of open field for experimental trials

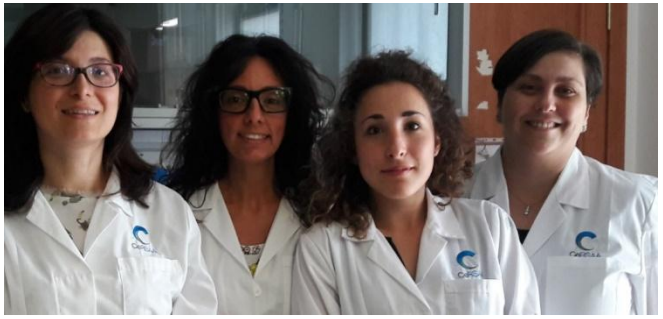
10.000 sqm of greenhouses and tunnels

72 sqm of climatic chambers

80 sqm of offices

Personnel:

7 (technicians and researchers) involved in the laboratory activities



4 technicians involved in experimental activities (in addition to the laboratory personnel)

6 employees involved in the preparation and submission proposal of European projects and in the Certification quality system

4 employees in the administrative office

Plant disease Laboratory

Microbiological diagnostic unit
-optical microscopy and stereomicroscopy,
-pure isolations on selective and semi-selective substrates for fungi and bacteria,
-reinoculation tests in compliance with Koch's postulates

Immunodiagnostic unit
-analysis with ELISA, DAS-ELISA systems for the determination of: bacteria, viruses, allergens, toxins, etc

Molecular biology unit
-analysis with PCR systems and its variants (rt-PCR, nested-PCR, multiplex PCR, analysis of restriction profiles - RFLP, Real-time PCR, for the identification and quantification of: fungi, bacteria, viruses, viroids, phytoplasmas, sequencing etc.)

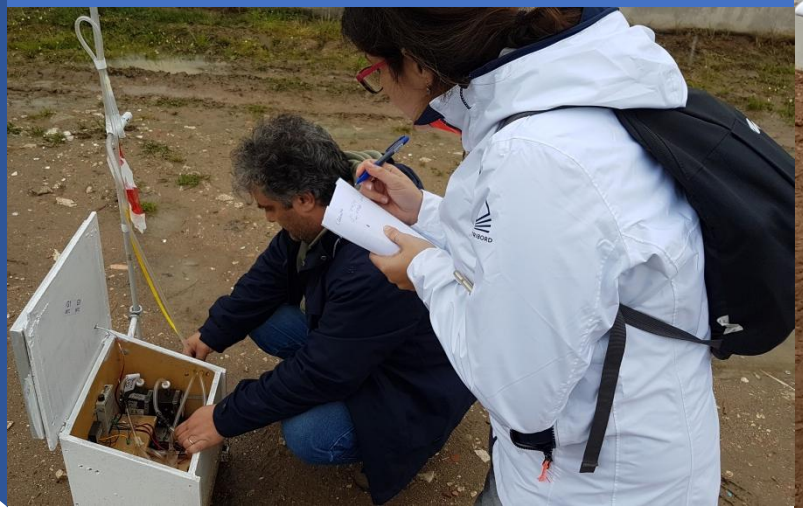
Where are we from?

- Field Growers/Rural enterprises: more than 2000

- Agro industrial companies: more than 50

Our background (2022)

- Applied research compliant to GLP (6 studies)
- Applied research compliant to GEP (45 studies)
- Other applied research (34 studies)
- Professional production and formulation of artificial inocula (165 batches)



Our activities in the diagnostic sector

1526 diagnosis reports (+25% compared to 2021; +49% compared to 2020; + 49% compared to 2019),
More than 7600 single analysis.

Plant's doctor: **50 % diagnosis reports, more than 20% of the single analyses carried out**

Check on not symptomatic plants: **50 % diagnosis reports, more than 70% of the single analyses carried out (*Clavibacter michiganensis subsp. michiganensis, Tomato Brown Rugose Fruit virus, Tomato spotted wilt virus and Geminivirus* on tomato, *Acidovorax citrulli* on cucurbit)**

Diagnosis: is a pest and disease control tool?

Early diagnosis is always considered a disease control tool and is requested as a IPM strategy. This can be tricky because sometimes plants respond in similar ways to different types of stresses.
But what are major limits?

- sampling efficacy and representativeness
- sample chain of custody
- crop monitoring on a routine basis
- symptom identification
- causal agent identification for a proper biotic/abiotic disease

Abiotic stress

Effect of infectious disease

Diagnosis
is the discriminant factor

.... a wrong anamnesis can generate wrong diagnoses inducing the application of wrong intervention strategies

Samples from the field: useful for defense

Asymptomatic samples of propagating material: to safeguard the production starting from the propagating material and to avoid defense interventions in the field

Why PT test?

Samples from the field:

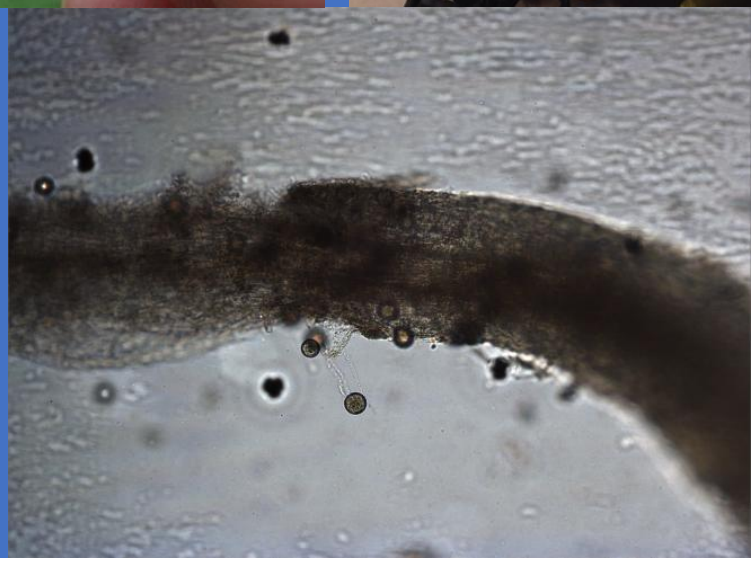
- **Moderately** because they are usually clearly symptomatic
- **Yes**, to improve the performance according to the sample infection degree

Asymptomatic samples from propagating material:

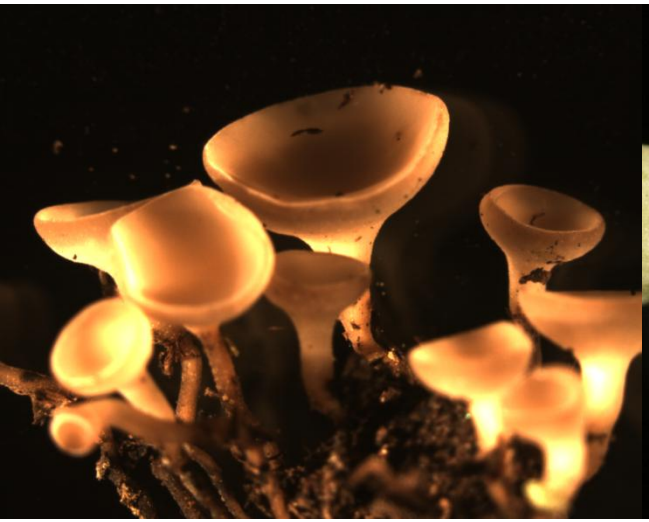
- **Yes**, because there it is not possible to rely on the symptom
- **Yes**, because it is necessary to rely only on the effectiveness of the method and the ability of the laboratory
- **Yes**, because a false positive or false negative can lead to big problems

Why PT test?

- To improve internal knowledge and skilness
- To improve experiences
- To have a 3° part check of laboratory capabilities
- To verify the analysis speed
- To anticipate possible criticisms on real samples



Participation in PT	Pest	Year
Interlaboratory comparisons GEVES-SNES	*Acidovorax valerianellae*	2017
NIB-PT-2017-01	*Phytoplasmas and Apple Proliferation group*	2017
NIB-PT-2018-01	*Ralstonia solanacearum species complex*	2018
Interlaboratory comparisons GEVES-SNES	*Acidovorax citrulli*	2019
Interlaboratory comparisons GEVES-SNES	*Clavibacter michiganensis michiganensis*	2020
Interlaboratory comparisons GEVES-SNES	*Tobamoviruses*	2020
Interlaboratory comparisons GEVES-SNES	*Tomato Brown Rugose Fruit Virus*	2021
Interlaboratory comparisons GEVES-SNES	Identification of fungus isolates	2021
Interlaboratory comparison UNICHIM	EN 17718 Determination of *Rhizobium* spp.	2022
Interlaboratory comparison UNICHIM	EN 17722 Determination of *mycorrihizzal fungi*	2022



Thanks for Your attention