QuantiPest

Characterisation of main pests on olive tree

Method/protocol submitted by:

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Objectives of the method/protocol:

Quantifying 1 disease (olive scab) and 4 sorts of animal pests (olive fruit fly, black olive scale, *Euzophera pinguis* moth, olive moth) on olive tree, at the field scale.

Brief description of the method/protocol:

This protocol presents a visual non destructive quantification method based on abundance classes to quantify diseases and animal pests on olive tree.

Possible uses of this method/protocol:

Characterisation of pest pressure in a region.
The protocol is currently used by technical advisers in the Tuscany region in Italy. The data collected (on 10-15 farms) is aimed at editing weekly phytosanitary and phenological reports for farmers.

Method/protocol:

- Observation unit:

The observation unit is the field.

- Abundance classes:

Each field is assigned to a qualitative abundance class for each of the animal pests or diseases studied.

The observations are carried out each week. The diseases and animal pests observed depend on the moment of the year.

The date and sort of the last treatment in each field are noted, as well as the phonological stage of the tree at the moment of the observation.

The abundance classes for the different pests are presented in the tables below:

- o Olive fruit fly *(Dacus oleae)*

3 sorts of measures are realised:

- Olive fruit fly infestation: 100 olives will be sampled from 100 trees (1 olive/tree), trying to cover the whole field and picking the fruits from different exposures. The sampled fruits are analysed using a stereo microscope and the different life stages of the insect and the kinds of attacks are determined. The following classes are assigned to the fruits:
  - "Sterile" stings
  - Eggs
  - First instar larvae (dead or alive)
  - Second instar larvae (dead or alive)

- Third instar larvae (dead or alive)
- Pupae
- Fruit with exit holes.

- Average number of olive fruit flies trapped:
  Average number of adult males trapped weekly in the traps installed in the the monitored field (usually three pheromon traps per hectare. Yellow traps cal also be used; in this case male and female insects will be distinguished)
- Fruit resistance: estimation of sensitivity of olive to olive fruit fly infestation. The resistance depends on size, fruit water content and phenological phase.

- o Black olive scale *(Saissetia oleae)*
  Visual observation of the leaves and branches allows the experimenter to assign the field to one of the following classes, depending on the infestation level:

Level	Description
Absence	no black olive scale present
Low	a few trees in the field show low-level symptoms (2-5% of attacked leaves/branches with)
Medium	all the trees shows symptoms on more than 5% of the leaves/branches
High	the majority of the trees shows symptoms on more than 30% of the leaves/branches

- o Olive pyralid moth *(Euzophera pinguis)*

  Visual observation of the apical shoots allows the experimenter to assign the field to one of the following classes, depending on the infestation level:

Level	Description
Absence	no olive pyralid moth present
Low	1-5% of the apical shoots infested
Medium	5-15% of the apical shoots infested
High	More than 15% of the apical shoots infested

- o Olive moth *(Prays oleae)*

  Visual observation of the fruits allows the experimenter to assign the field to one of the following classes, depending on the infestation level:

	Anthophagous generation	Carpophagous generation
Absence	no injury	no egg-laying
Low	1-20% of attacked inflorescences	1-10% of fruits with eggs
Medium	20-40% of attacked inflorescences	10-20% of fruits with eggs
High	more than 40% of attacked inflorescences	more than 20% of fruits with eggs

o <u>Olive scab</u> *(Spilocaea oleagina)*

Visual observation of the field allows the experimenter to assign it to one of the following classes, depending on the infestation level:

Level	Description
Absence	no symptoms
Low	a few trees show low-level symptoms (5-10% of attacked leaves)
Medium	all the trees show low-level symptoms (5-10% of attacked leaves) or some trees show high-level symptoms (more than 30% of attacked leaves)
High	the majority of the trees show high-level symptoms (more than 30-40% of attacked leaves and defoliation)

Advantages / Disadvantages of the method/protocol:

The visit of one field takes approximately 20-30 minutes and it is performed by one advisor . The fruit infestation characterisation has to be performed in a lab using stereo microscope and for each field the analysis of the 100 olive takes about 20-40 minutes.
The observation obtained concerns a wide range of diseases and animal pests.
Good identification skills are required.

References or examples of studies carried out by using this method/protocol:

Web-site of Agroambiente: http://agroambiente.info.arsia.toscana.it/arsia/arsia?