Evaluation of the severity of rosy apple aphid infestation in spring

Method/protocol submitted by:

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Objectives of the method/protocol:

This protocol aims at characterising the severity of the infestation by the rosy apple aphid *Dysaphis plantaginea* at tree level, by the evaluation of the proportion of current-year shoots showing symptoms of infestation.

Brief description of the method/protocol:

The protocol consists in a visual and non-destructive method based on severity classes to describe the infestation by the rosy apple aphid at tree level.

Possible uses of this method/protocol:

The method may be used to evaluate the infestation during aphid multiplication phase on apple in spring (one observation), the progress in infestation (two or more scheduled observations) or the severity of the infestation at infestation peak (one observation after the infestation peak or even after the migration of the aphids).

It can be adopted, for instance, to evaluate the susceptibility of apple cultivars, or the severity of infestation according to practices, location of trees within the orchard, etc...

Method/protocol:

Each tree is assigned to one of the following severity classes, depending on the proportion of shoots with symptoms (curled leaves):

0: no shoots with symptoms
1: 1-10% of shoots with symptoms
2: 11-25% of shoots with symptoms
3: 26-50% of shoots with symptoms
4: >50% of shoots with symptoms

Advantages/disadvantages of the method/protocol:

The method is quick to carry out, which allows the user to observe an important number of trees.
The symptoms are easy to observe and to recognise.
The protocol can be used to assess infestation severity at infestation peak during a long period, even after the disappearance or the migration of the aphids (the symptoms remain and are visible for a few weeks after infestation peak).
The method is reproducible in space and time provided some short training is made prior to assessment (see below) and that trees of an experiment have similar canopy volume.

The severity classes presented in this document are used in orchards where relatively high levels of infestation occurred. However, these severity classes can be refined, taking into account the average infestation level of the observed trees.

Some short training is necessary to evaluate the classes correctly and to adjust the observations between observers: an exact count of a few differently-infested trees or branches permits to calibrate symptoms prevalence in a given tree canopy volume.

The observed shoot damages are symptoms of the highest level of infestation endured by the tree, but not necessarily of infestation at the date of the observation (the symptoms remain after migration or disappearance of the aphids).

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

Parveaud C.E., Gomez C., Libourel G., Romet L., Warlop F., Simon S., Brun L., Pouzoulet D., Delebecq A., Tournant L., Oste S., Laurens F. (2010.) Assessment of the susceptibility to pests and diseases of 36 apple cultivars in four low-input organic orchards in France. Proceedings Ecofruit 14th International Conference on Organic Fruit-Growing, Hohenheim, 22 February 2010, IFOAM EU group. Available online at: http://www.ecofruit.net/proceedings-2010.html