

"First assays on the response of adults of
Philaenus spumarius (Hemiptera:
Aphrophoridae) to different host plants."

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BACKGROUND

In 2017, the first case of "leaf scorch", caused by *Xylella fastidiosa*, in almond-tree appeared in the Valencian Community, in eastern Spain.

Spittlebugs are responsible for the spread of *X. fastidiosa* in several European countries.

Philaenus spumarius has been identified as the main insect species involved in the transmission of *X. fastidiosa* between plants.

Philaenus spumarius is found on a wide range of herbaceous plant species, however, in the dry and hot summer season adults migrate to woody plants searching for food and protection.

Identifying the host-plant species preference of this insect vector is fundamental to understanding the spread of the bacterium.

OBJECTIVE

To establish host-plant preference, we are studying the attraction of adult *P. spumarius* to different plants depending on emitted volatile compounds.

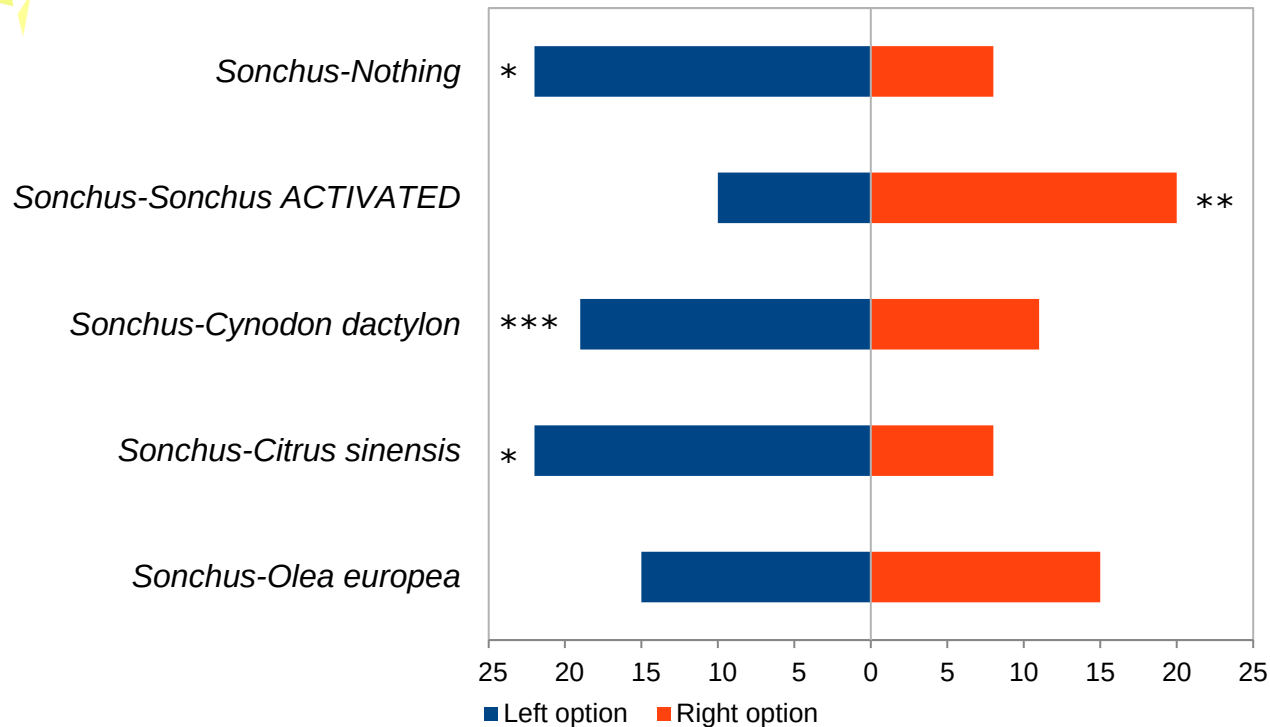


MATERIALS & METHODS

- All adults used, either field captured or reared under semi-field, were maintained exclusively on *Medicago sativa* prior to experiments.
- Y-tube olfactometer was used to identify insect preference to host plant volatiles.
- To establish preference, plant species were tested as follows:
 - Sonchus oleraceus* vs. Nothing
 - Sonchus oleraceus* vs. Activated* *Sonchus oleraceus*
 - Sonchus oleraceus* vs. *Cynodon dactylon*
 - Sonchus oleraceus* vs. *Citrus sinensis* (var. Pineapple)
 - Sonchus oleraceus* vs. *Olea europaea* (var. Arbequina)
- *Activation was achieved by offering the plants to other *P. spumarius* individuals to feed for 24 hours prior to the experiment.
- *Sonchus oleraceus* was used as the reference plant as, in the field, most individuals were caught from it.
- 30 positive responses were analyzed for each choice test.
- All results were analyzed using Pearson's chi-squared (χ^2) test to compare attractiveness between each pair of odor sources.



RESULTS



Statistical differences are marked with asterisks.

* $p\text{-value} < 0,001$

** $p\text{-value} < 0,01$

*** $p\text{-value} < 0,05$

- *Sonchus oleraceus* was the preferred source of volatiles except when compared to *O. europaea*, where there was no preference.
- Activated *S. oleraceus* was preferred to non-activated *S. oleraceus*.

CONCLUSIONS

- Preference for *S. oleraceus* (Asteraceae) over *C. dactylon* (Poaceae) could explain the observed absence of nymphs and adults from this plant family in the field.
- Preference is not determined by herbaceous or woody traits and rather it depends on the volatiles emitted by each species.
- Plants respond to insect attack by the emission different volatiles which could explain increased attraction to adult *P. spumarius*.
- We are continuing this study by testing more plant species of interest as well as investigating differential attraction between sexes. We will also investigate plant-host preferences in another vector: *Neophilaenus campestris*.



This work is being funded by the project E-RTA 2017-00004-C06-01 FEDER INIA-AEI, Ministry of Science, Innovation and Universities, and Organización Interprofesional del Aceite de Oliva Español.

Acknowledgement to M. Montoro for his contribution to the maintenance of *P. spumarius* rearing.