List of scientific publications on Vibration Communication in Cicadellids

Mazzoni, V., Prešern, J., Lucchi, A., & Virant-Doberlet, M. (2009).
Reproductive strategy of the Nearctic leafhopper Scaphoideus titanus Ball (Hemiptera: Cicadellidae). Bulletin of entomological research, 99(04), 401-413.

Mazzoni, V., Lucchi, A., Čokl, A., Prešern, J., & Virant-Doberlet, M. (2009).
Disruption of the reproductive behaviour of Scaphoideus titanus by playback of vibrational signals. Entomologia experimentalis et applicata, 133(2), 174-185.

Eriksson, A., Anfora, G., Lucchi, A., Virant-Doberlet, M., & Mazzoni, V. (2011).
Inter-plant vibrational communication in a leafhopper insect. PLoS One, 6(5), e19692.

Eriksson, A., Anfora, G., Lucchi, A., Lanzo, F., Virant-Doberlet, M., & Mazzoni, V. (2012).
Exploitation of insect vibrational signals reveals a new method of pest management. PLoS One, 7(3), e32954.

Polajnar, J., Eriksson, A., Lucchi, A., Anfora, G., Virant-Doberlet, M., & Mazzoni, V. (2015).
Manipulating behaviour with substrate-borne vibrations–potential for insect pest control. Pest management science, 71(1), 15-23.

Polajnar, J., Eriksson, A., Virant-Doberlet, M., & Mazzoni, V. (2016).
Mating disruption of a grapevine pest using mechanical vibrations: from laboratory to the field. Journal of Pest Science, 89(4), 909-921.

Nieri, R., & Mazzoni, V. (2017).
The reproductive strategy and the vibrational duet of the leafhopper Empoasca vitis. Insect Science - DOI: 10.1111/1744-7917.12454.

Mazzoni, V., Gordon, S. D., Nieri, R., & Krugner, R. (2017).
Design of a candidate vibrational signal for mating disruption against the glassy-winged sharpshooter, Homalodisca vitripennis. Pest Management Science - DOI: 10.1002/ps.4619.

Nieri, R., Mazzoni, V., Gordon, S. D., & Krugner, R. (2017).
Mating behavior and vibrational mimicry in the glassy-winged sharpshooter, Homalodisca vitripennis. Journal of Pest Science, 90(3), 887-899.

Rodrigo Krugner, Shira D. Gordon (2018).
Mating disruption of Homalodisca vitripennis by playback of vibrational signals in vineyard trellis, SCI, DOI 10.1002/ps. 4930.

Interesting links on Vibration Mating Disruption

www.sciencemag.org www.winespectator.com www.newscientist.com www.wired.com www.corriere.it www.youtube.com

TREMOS

The Vibration Mating Disruption to control of grape leafhoppers

CBC (Europe) S.r.l.
Via Umberto I, 69
20814 Varedo (MB)
info@agroelectronics.it
www.agroelectronics.it

AGRO electronics

CBC GROUP

THE VIBRATION MATING DISRUPTION TO CONTROL OF GRAPE LEAFHOPPERS

agroelectronics.it

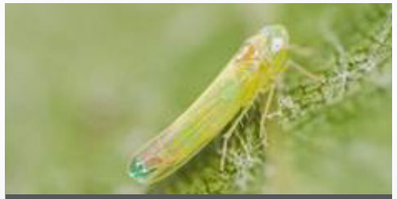
TREMOS

What is TREMOS

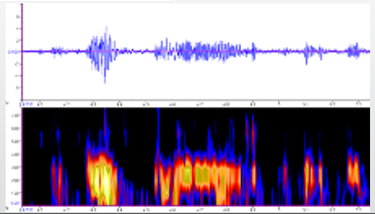
TREMOS is a system of emitters reproducing the communication language of each single target species and broadcasting it into the area, to be protected through the crop's trellis.

Leafhoppers communicate between individuals of the same species with vibrational signals that they perceive through the plants on which they live. Frequencies and vibrational sequences are specific to both sexes and species, this uniqueness allows them to recognize and locate each other, to mate and reproduce.

Scaphoideus titanus



Empoasca vitis



Oscillogram and Vibrational Spectrogram produced by leafhoppers (source Valerio Mazzoni)

How does TREMOS work

The extensive research done by entomologists of the E. Mach Foundation in

S. Michele all'Adige and others (see list of scientific publications) allowed to decode various vibrational communication languages of insects belonging to the family of Cicadellids.

This fundamental research led to identify those key portions of the language that can be effectively reproduced to disturb the most vital part of their communication: the one required to mate for the reproduction of the species.

Each TREMOS emitter plays and broadcast species-specific signals, which interfere with the communication between sexes and thus prevent or considerably delay their mating. This strategy is similar to Pheromones Mating Disruption already widely applied for Lepidoptera.

How to apply TREMOS

Each emitter is securely anchored to the poles or wires of the target vineyard and broadcast its signals through the trellis to the plants.

Currently each emitter can broadcast vibrational interference signals over a distance of approx. 50 m along the same row.

TREMOS applications in progress

San Michele all'Adige - Trentino Alto Adige - Italy

1.5 hectares
(Electrical energy & Phenological monitoring)

Dogliani - Piemonte - Italy

1 hectar
(Solar energy)

Mezzocorona - Trentino Alto Adige - Italy

1.5 hectares
(Pergola trentina)

Turckheim - Alsace - France

3 rows
(Vibrational test)