Factors driving insect vector presence, abundance and pathogen transmission: Case study of *P. spumarius* and *N. campestris*

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Illustration: Aitor López Mercadal

1. INTRODUCTION

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ELSEVIER

Occupancy and detection of agricultural threats: The case of *Philaenus spumarius*, European vector of *Xylella fastidiosa*

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Journal of Pest Science
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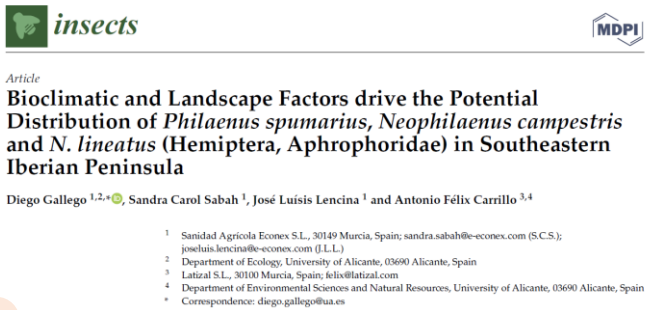
ORIGINAL PAPER

Landscape composition predicts the distribution of *Philaenus spumarius*, vector of *Xylella fastidiosa*, in olive groves

Giacomo Santoiemma[1] · Giovanni Tamburini[2] · Francesco Sanna[1] · Nicola Mori[1] · Lorenzo Marini[1]

Received: 13 August 2018 / Revised: 28 January 2019 / Accepted: 18 February 2019



insects

MDPI

Article

Bioclimatic and Landscape Factors drive the Potential Distribution of *Philaenus spumarius*, *Neophilaenus campestris* and *N. lineatus* (Hemiptera, Aphrophoridae) in Southeastern Iberian Peninsula

Diego Gallego [1,2,*], Sandra Carol Sabah [1], José Luisis Lencina [1] and Antonio Félix Carrillo [3,4]

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Climatic factors (e.g., precipitation, humidity, evapotranspiration)

Type of crop (e.g., vineyard or olive)

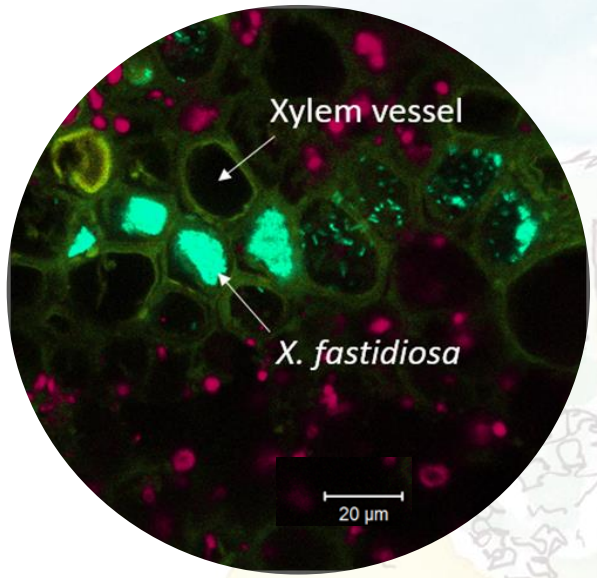
Presence of plant cover vegetation

Presence of forest

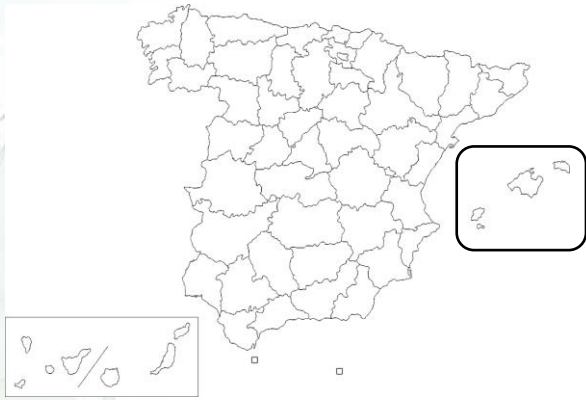
Sunlight hours

Illustration: Aitor López Mercadal

1. INTRODUCTION



2016



Confirmed vectors:

Philaenus spumarius
(Hemiptera:Aphrophoridae)

Neophilaenus campestris
(Hemiptera:Aphrophoridae)

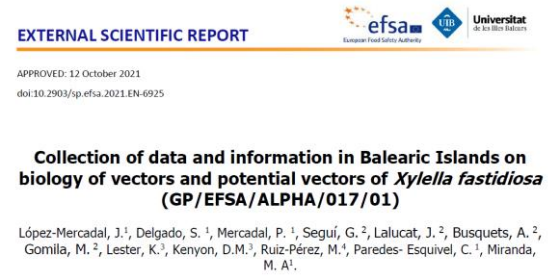
Illustration: Aitor López Mercadal

2. MATERIALS AND METHODS

Number of samples analysed = 1864

	Vector surveillance
Model type	GLMMs Zero-inflated model
Variables (covariates and factors)	Crop, species, temperatura, Et0, month, year, week, day+day^2, locality, plot, season and vegetation
Dependent variable	Spittlebug's density

Vector sampling and transmission assays methodology described in López-Mercadal et al., 2021



EXTERNAL SCIENTIFIC REPORT

APPROVED: 12 October 2021

doi:10.2903/sp.efsa.2021.EN-6925

Collection of data and information in Balearic Islands on biology of vectors and potential vectors of *Xylella fastidiosa* (GP/EFSA/ALPHA/017/01)

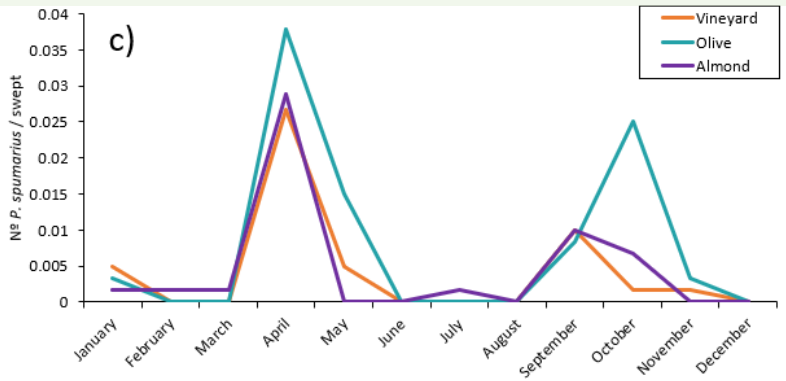
López-Mercadal, J.[1], Delgado, S. [1], Mercadal, P. [1], Seguí, G. [2], Lalucat, J. [2], Busquets, A. [2], Gomila, M. [2], Lester, K.[3], Kenyon, D.M.[3], Ruiz-Pérez, M.[4], Paredes- Esquivel, C. [1], Miranda, M. A[1].

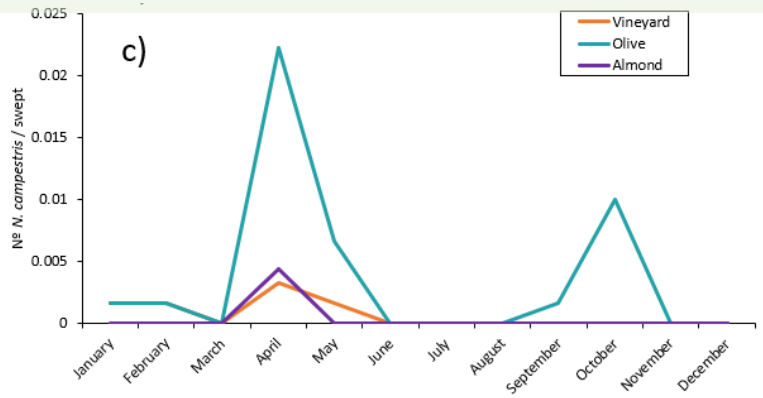
3. RESULTS

P. spumarius

N. campestris

SSU-cover





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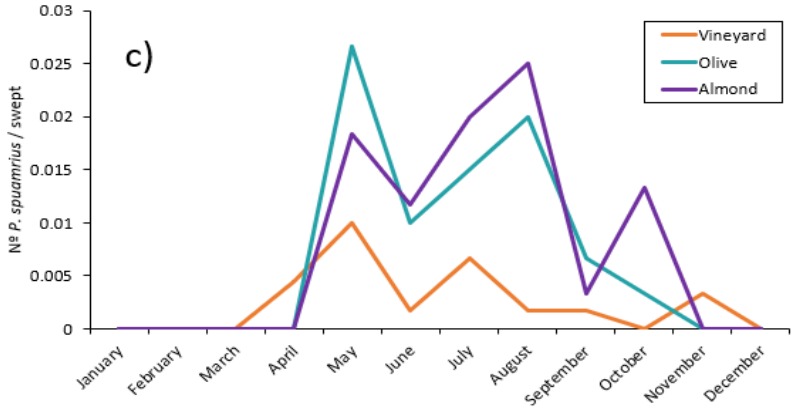

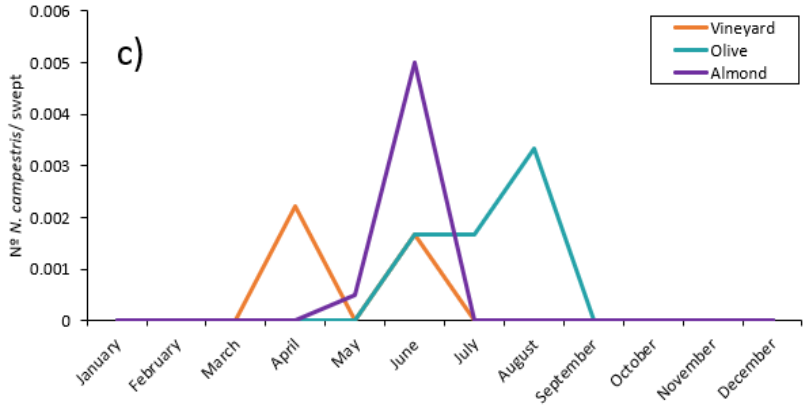

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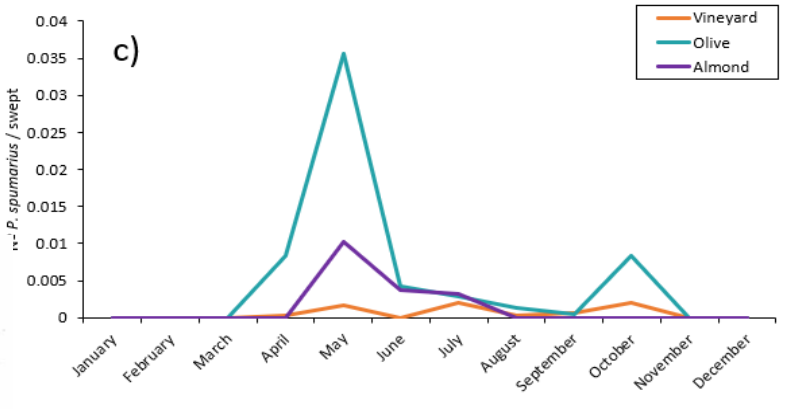


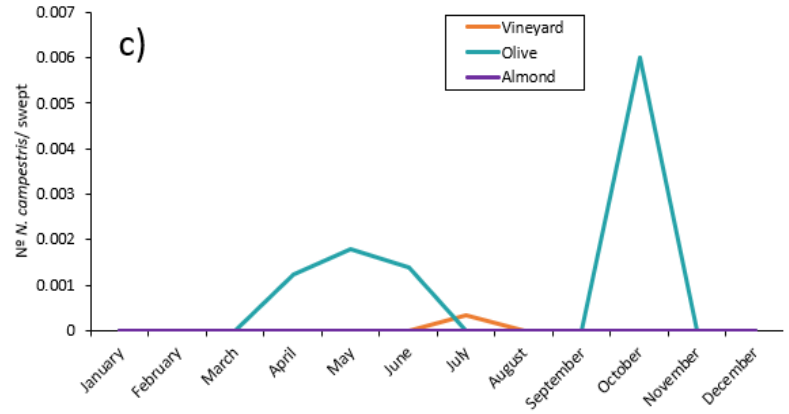


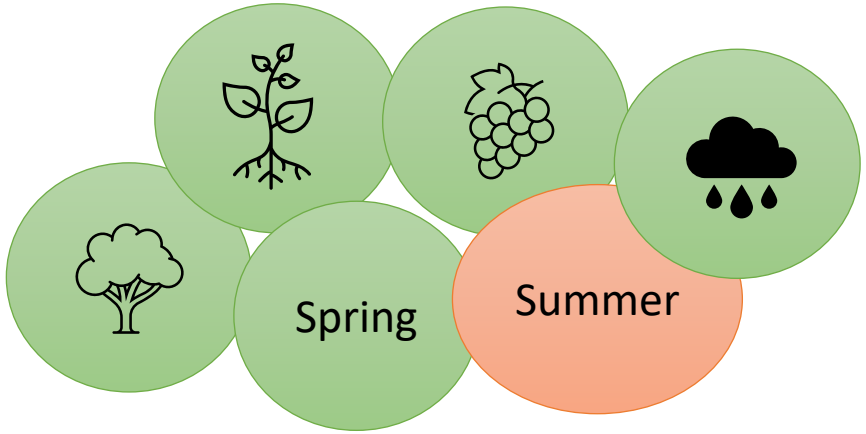
Illustration: Aitor López Mercadal

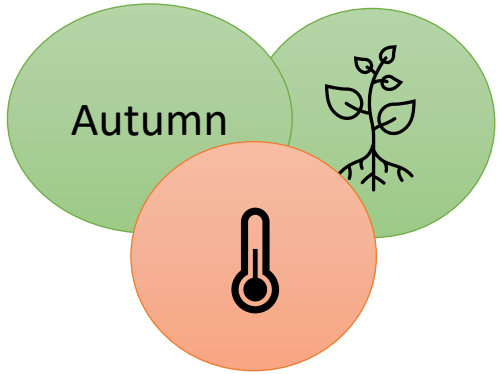
3. RESULTS

P. spumarius

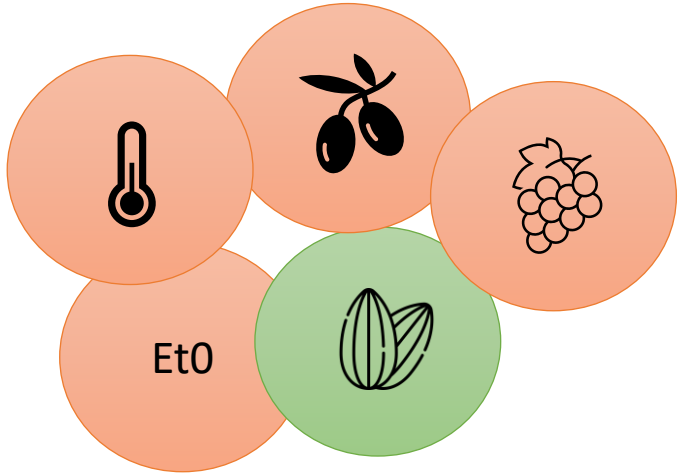
N. campestris

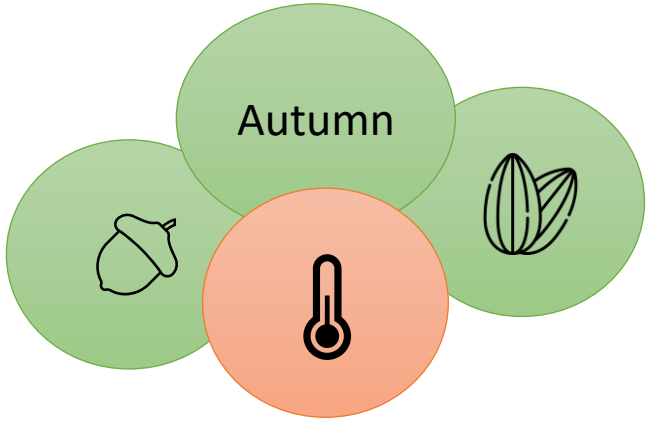
Presence





Abundance



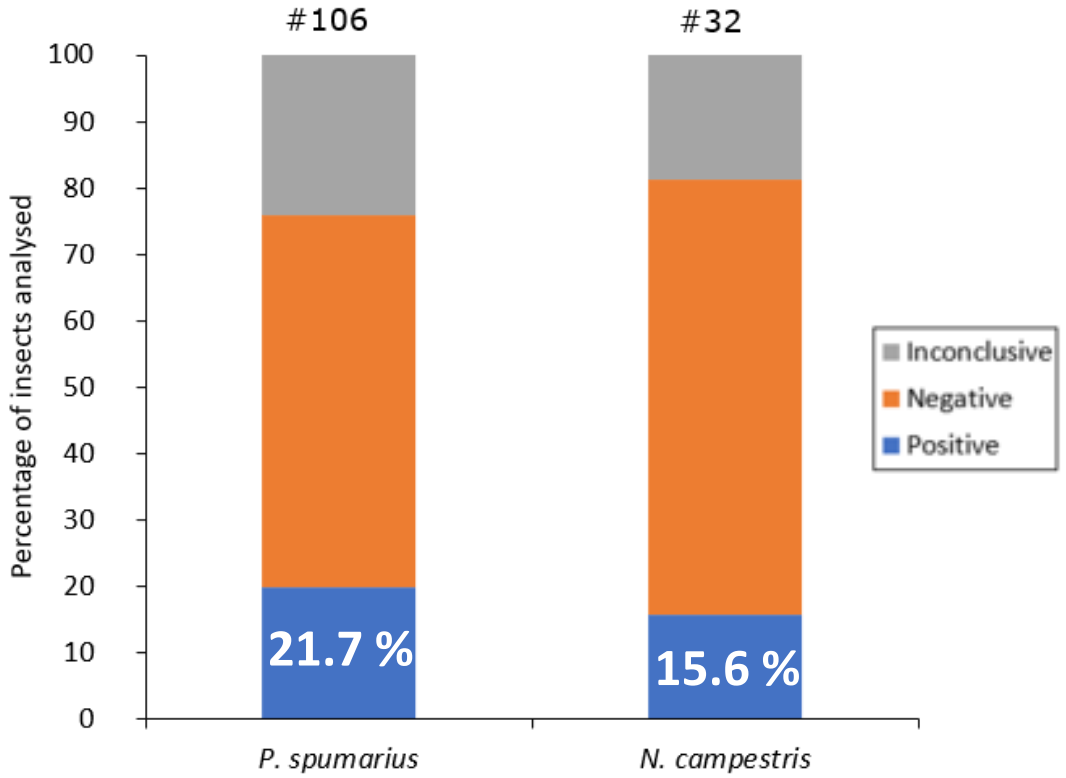


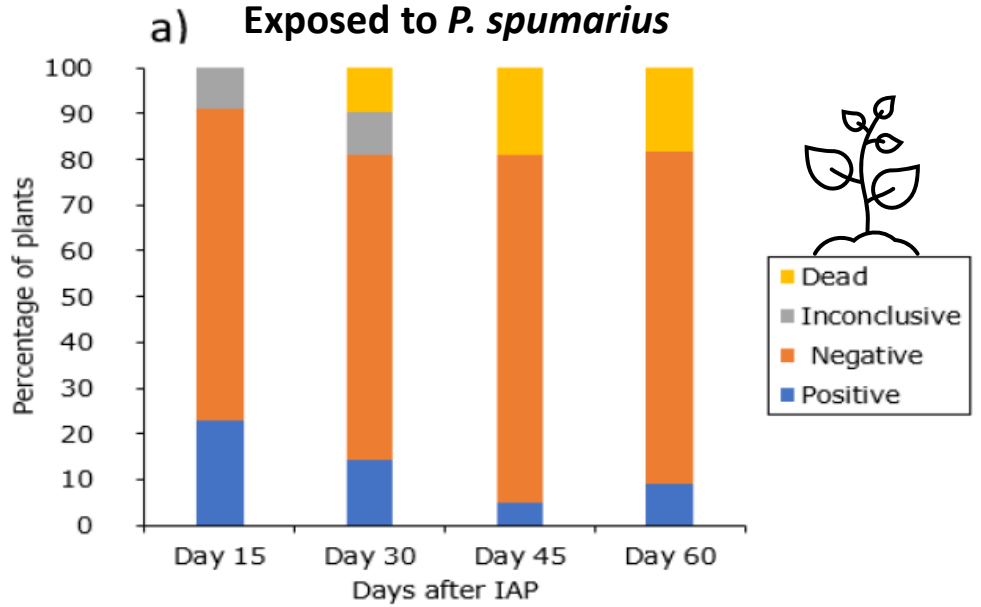
3. RESULTS

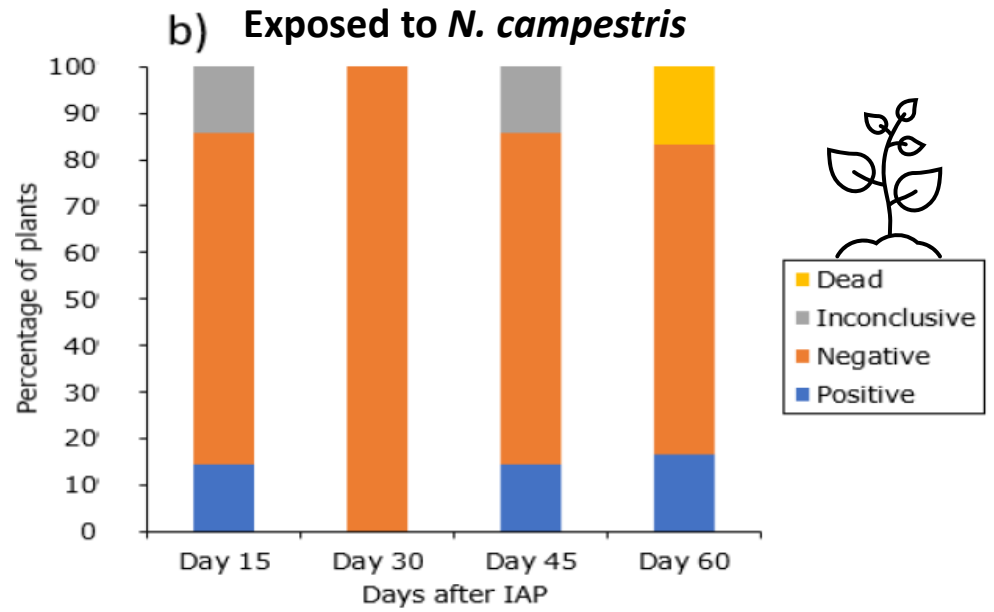
Transmission Test

2020

150 field collected insects:
116 *P. spumarius* (92.2 % survived)
34 *N. campestris* (91.4 % survived)







3. RESULTS

Prevalence in vector did not depend on:

- The **vector species** (P-value > 0.1): both spcies were infected equally.
- **Gender** (P-value > 0.1).

Prevalence in *M. sativa* after IAP did not depend on:

- The **vector species** used (P-value > 0.1).
- **How many of them were infected** (P-value > 0.05).

4. CONCLUSIONS

Temperature and evapotranspiration affect negatively to vector abundance

Precipitation favours presence of the vectors

Cover and tree canopy favour the presence of the vectors

Preference type of crop

Both *P. spumarius* and *N. campestris* have the same transmission capacity

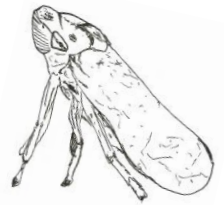
Illustration: Aitor López Mercadal

ACKNOWLEDGMENTS

Grant: GP/EFSA/ALPHA/017/01

Dr. Ewelina Czwienczek
Giuseppe Stancanelli

Thank you for your attention!



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