Vectors of Xylella fastidiosa show pronounced habitat preferences in Corsican agricultural landscapes

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Vectors of *Xylella fastidiosa* show pronounced habitat preferences in Corsican agricultural landscapes

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INTRODUCTION – MATERIALS & METHODS

- Most insect vectors of *Xylella fastidiosa* (*Xf*) are generalists but tend to **aggregate on preferred host plants**[1,2].
- Such preferences may have consequences on the **relative importance of different insect species in the transmission of *Xf* to crops**.
- We assessed the **habitat preferences of spittlebugs** on and in the vicinity of **clementine** and **olive** groves in Corsica.

M&M

- **16 organically managed sites** were selected within a **climatically homogeneous region of Corsica** (Fig. 1).
- Spittlebugs were monitored inside and around the groves **three times a year** (April, June and October) during **two years** (2019, 2020).
- Spittlebugs were monitored **by sight** in the spring and by **sweep netting** in the summer and fall.
- **Four habitats** were monitored in each site (see next slide).

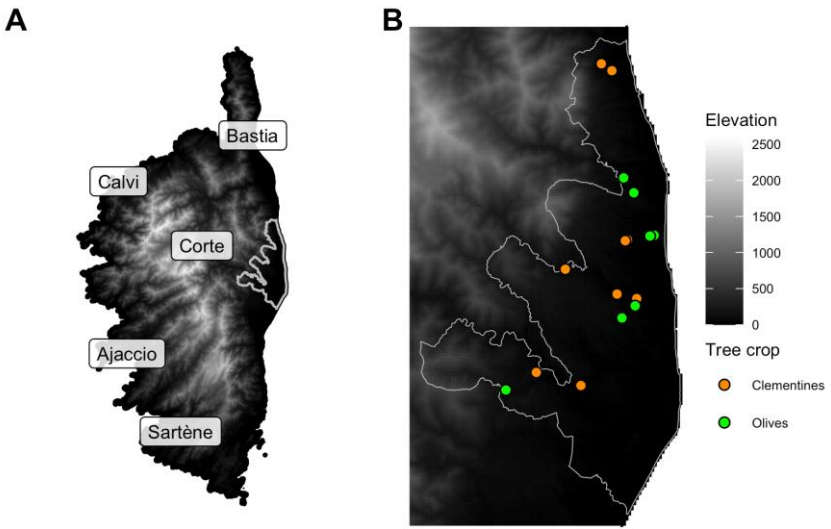


Fig.1 Sampling sites on clementine and olive groves in the eastern plain of Corsica.

TYPE OF HABITATS INCLUDED IN THE STUDY

- On each site, the four habitats were chosen in **close vicinity** (< 500 m), so that **spittlebugs were theoretically able to shift between habitats** in a short time.
- Insect densities reflect **habitat preferences at the local scale**.

***Cistus monspeliensis* border**
(expected preferred host of *Philaenus spumarius*[3,4])

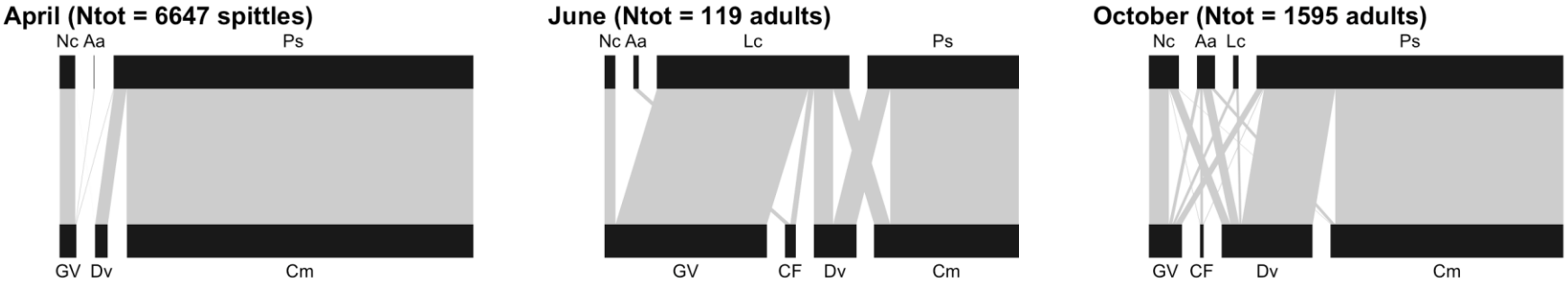
Crop foliage

Grove ground vegetation

***Dittrichia viscosa* cover**
(expected alternative host of *P. spumarius*, pers. obs.)

INTERACTION NETWORKS SHOW A PREDOMINANT *P. SPUMARIUS-C. MONSPELIENSIS* INTERACTION

Fig. 2 Seasonal interaction networks.
Nc = *Neophilaenus campestris*, Aa = *Aphrophora alni*, Lc = *Lepyronia coleoptrata*, Ps = *Philaenus spumarius*
GV = ground vegetation, CF = crop foliage, Dv = *Dittrichia viscosa*, Cm = *Cistus monspeliensis*



- **Host preferences** were **particularly strong** in April
- **No spittlebug nymph** was **found on the foliage** of either olive or clementine trees.

- Few spittlebugs were collected in June and ***P. spumarius* was not predominant**.
- Only *A. alni* and *L. coleoptrata* were found on the crop foliage.

- The **most complex interaction network** was obtained in October.
- The interaction ***P. spumarius-C. monspeliensis*** constituted half of this network.
- **All species but *L. coleoptrata*** were found on the **crop foliage**.

CONSEQUENCES FOR THE MANAGEMENT OF XF

CONCLUSION

- ***Cistus monspeliensis*** and ***D. viscosa*** were respectively confirmed as preferred and alternative host of *P. spumarius* in Corsica. This result contrasts with published works on olive groves in Spain[5] and Italy[6].
  - ➢ Host **preferences may vary** under **similar geographic and climatic contexts**.
- **No summer migration** of *P. spumarius* **to crop foliage** as reported in Italy[7] was recorded in Corsica. We found that the four spittlebug species have similar abundances **on the crop foliage**.
  - ➢ Provided that the four species have similar transmission efficiencies, **they may contribute similarly to *Xf* propagation in Corsican olive and clementine groves**.

APPLIED PERSPECTIVES

- Managing *P. spumarius* by means of soil tillage in spring would probably be **less efficient in the Corsican context than in Italy**.
- The **management of *C. monspeliensis* borders** in the close vicinity of Corsican groves may decrease density of *P. spumarius* and thus, the threat posed to the adjacent tree crop.

References:

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