

Investigations on Belgian flora and on xylem-feeding insects to evaluate the risk of introduction, establishment and spread of *Xylella fastidiosa* in Belgium

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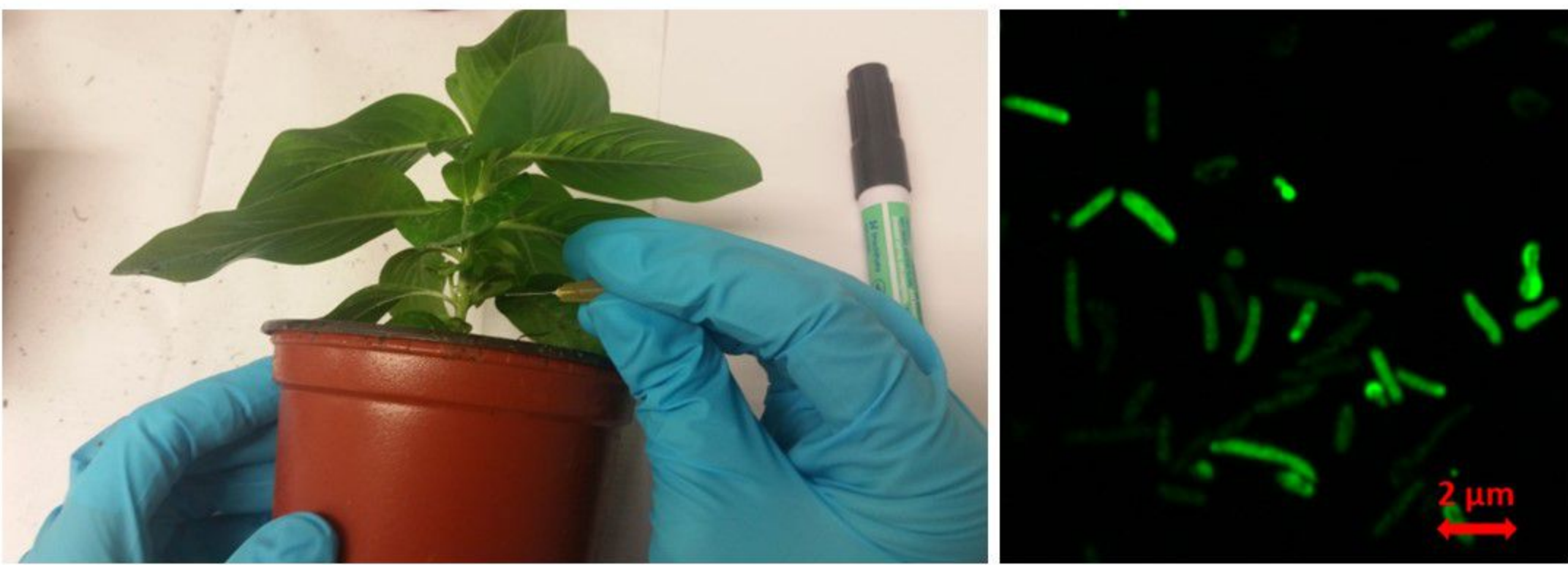


Objective 1 : Study of the susceptibility of selected Belgian potential host plant species : *Prunus domestica* cv. Opal, *Quercus petraea* and *Salix alba*

A. Mechanical inoculation in controlled conditions (G2Q)

Materials & Methods

- Strain : KLN59.3 Kan^r GFP⁺ (Newman *et al.*, 2003) → ST1
- Control plant : *Catharanthus roseus*.
- Pinprick inoculation method (Hill & Purcell, 1995; Almeida *et al.*, 2001).
- Conditions : 10⁸ UFC/ml, at 28°C.
- 3 months after inoculation : detection in stem with confocal microscopy, PCR (Minsavage *et al.*, 1994) and isolation on BCYE for Koch's Postulates.



Results

	<i>C. roseus</i>	<i>S. alba</i>	<i>Q. petraea</i>	<i>P. domestica</i>
PCR [No. of positive samples]	26/41 (63%)	65/85 (76%)	11/29 (38%)	0/70 (0%)
Average distance [cm]	8,3 ± 3,5	12,1 ± 19	6,3 ± 3,5	0
Isolation [No. of plants]	3/3	1/3	1/3	0/3

B. Sentinel Plantation in natural conditions (Palma de Mallorca – UIB)

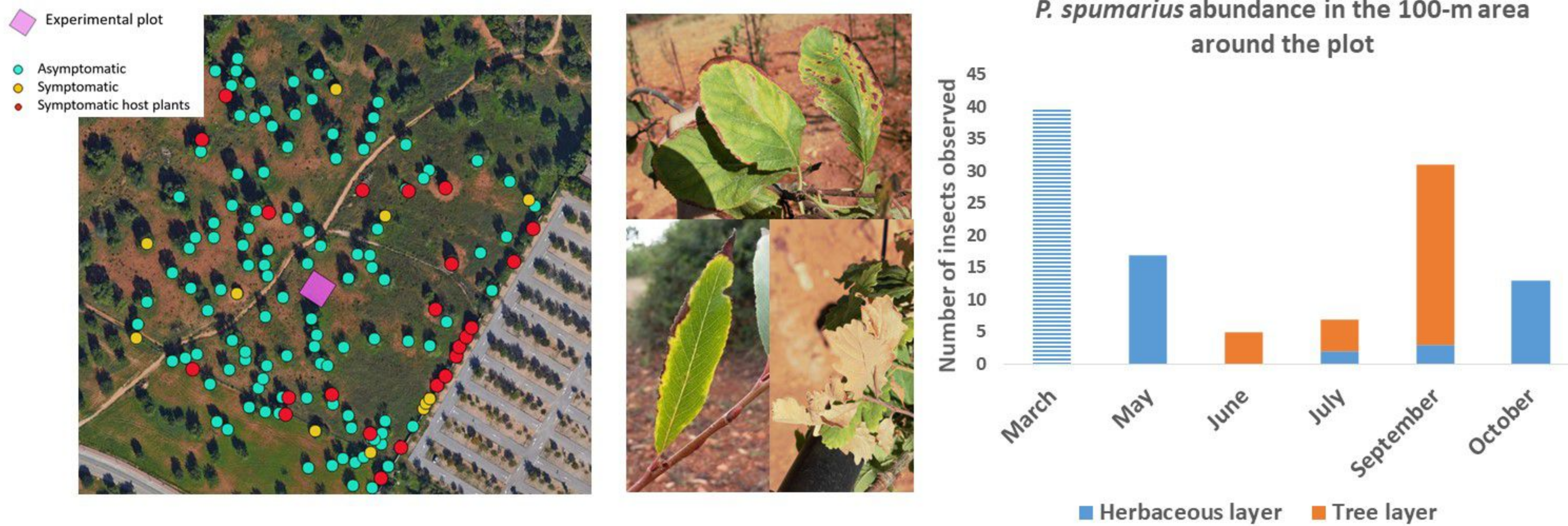
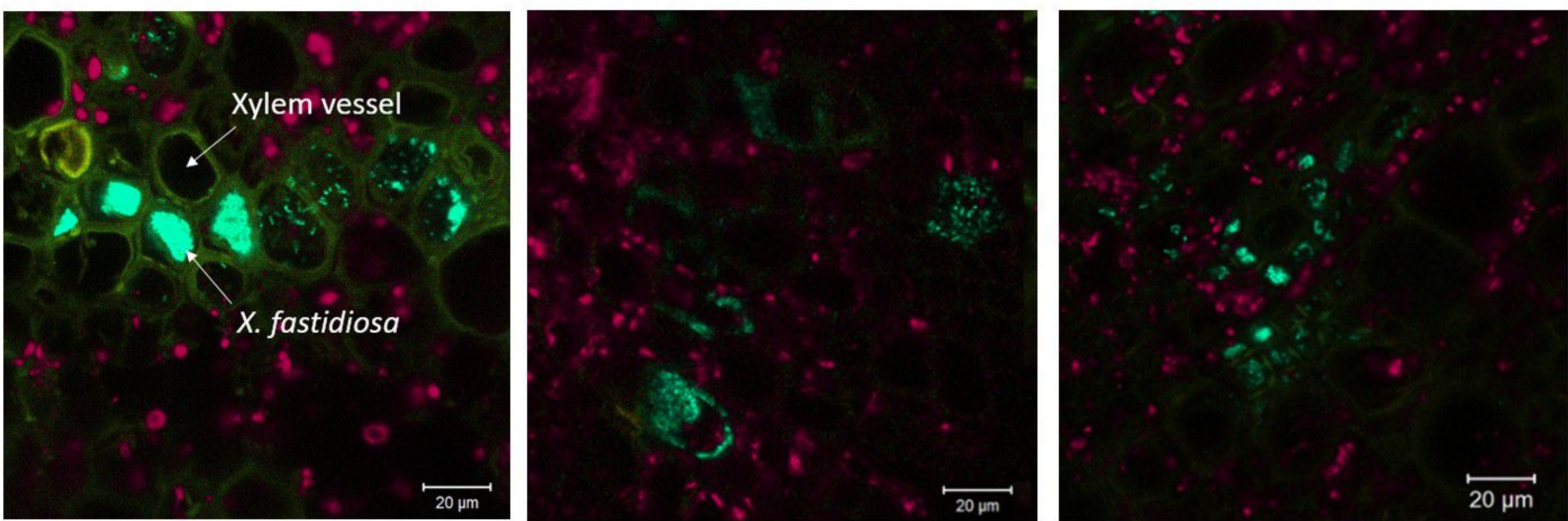
Materials & Methods

- Strains in Mallorca : ST81, ST7, ST6, ST1
- 81 Belgian plants brought from Belgium to the UIB campus.
- Monitoring of the presence of the bacterium in a 100-m area around the plot :
 - Floristic inventory
 - Plantation of 32 « Spy plants » *Rosmarinus officinalis*
 - Insect vector sampling
- Symptoms observations and bacterial detection in insects and plants : PCR of Minsavage *et al.* (1994), quantitative PCR of Harper *et al.* (2010), nested PCR of Cruaud *et al.* (2018).



Results

- Presence of insect vectors and symptomatic host plants.
- No bacterial detection in the plot due to detection threshold of the methods or a low infection pressure in that area.

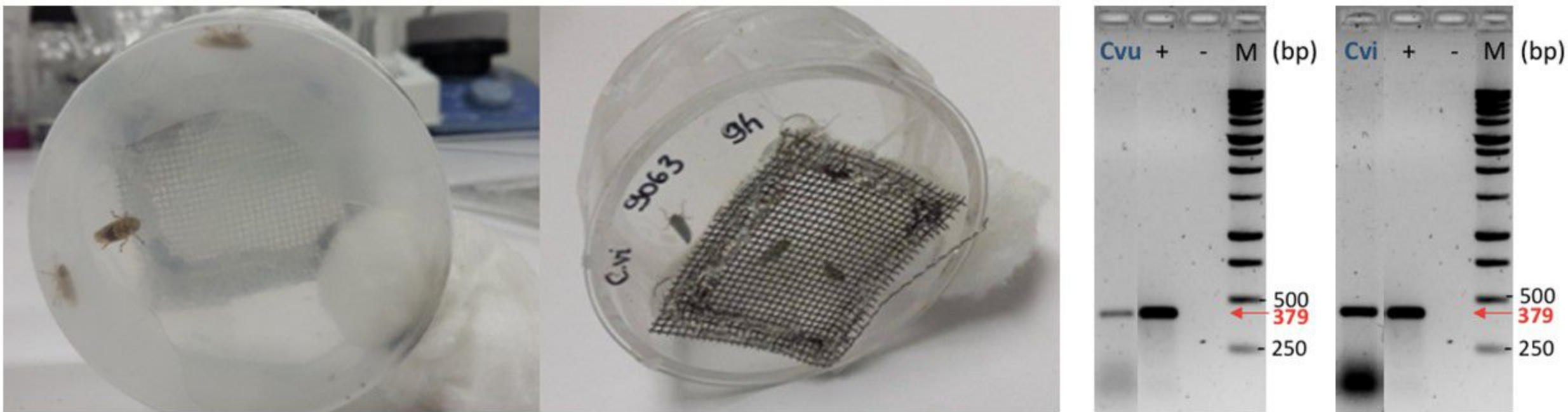


Objective 2 : Study of the transmission capacity of potential insect vectors for Belgium : *Philaenus spumarius*, *Cicadella viridis*, *Aphrophora alni*, *Aphrophora salicina*, *Cercopis vulnerata*

A. Transmission tests

Acquisition on artificial diet from Killiny & Almeida (2009)

- Acquisition access period of 6 hours.
- *C. vulnerata* and *C. viridis* acquired the bacterium (PCR used : Vancheva, 2017 and Harper *et al.*, 2010).
- Inoculation access period of 4 days on *C. roseus*, *P. domestica*, *Q. petraea* and *S. alba* : no transmitted bacterium detected.



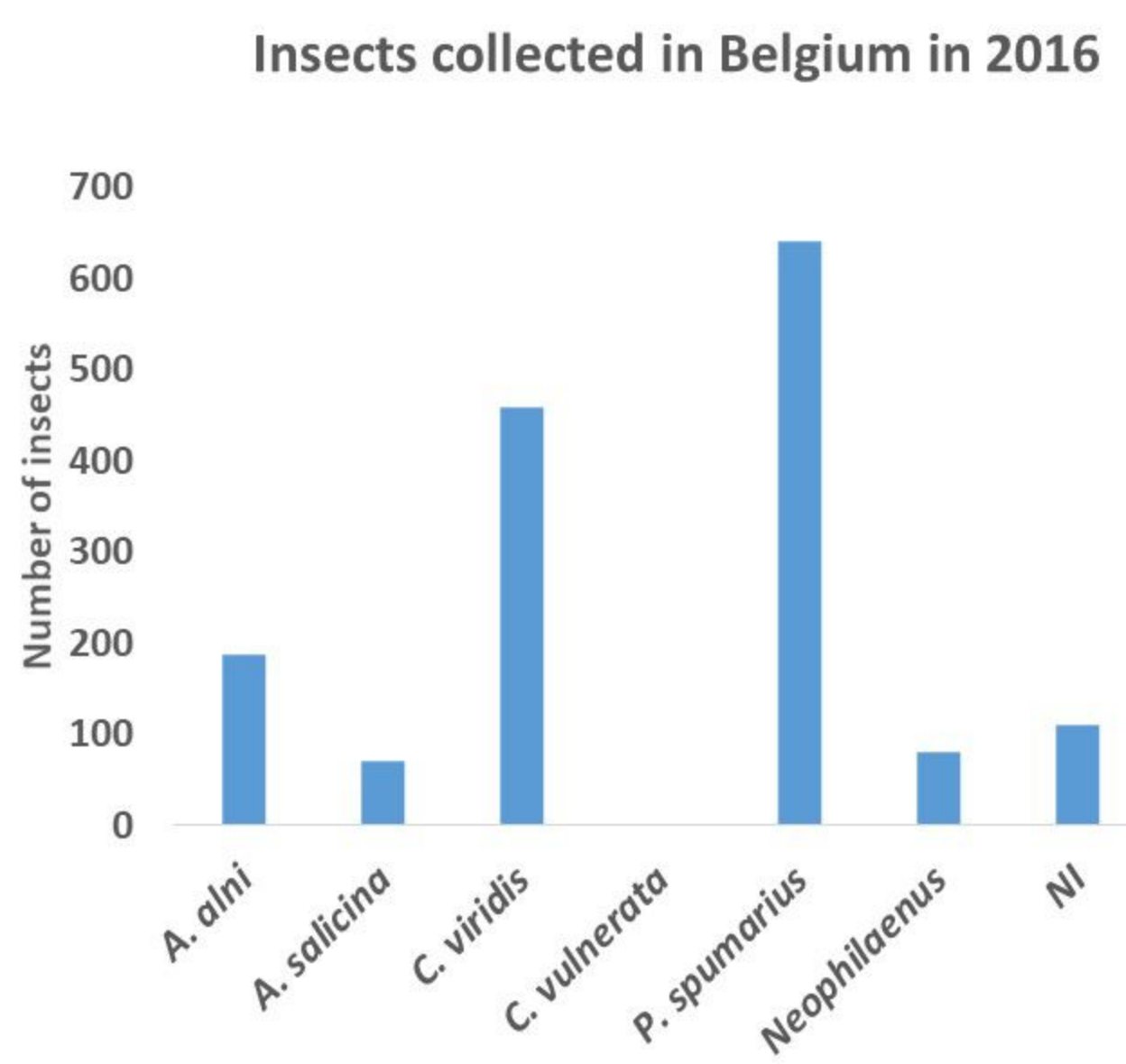
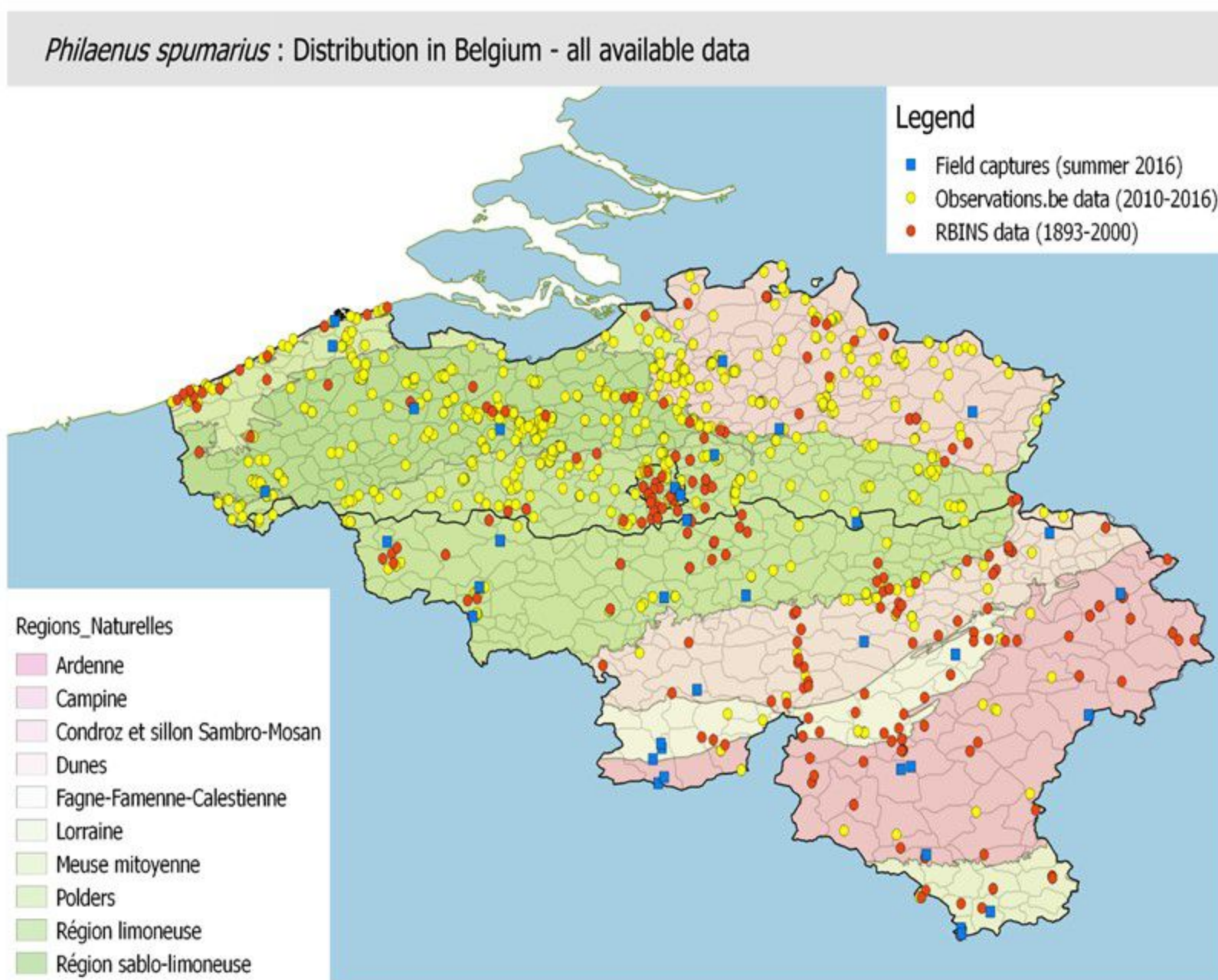
Acquisition on inoculated plants

- Acquisition access period of 4 days.
 - Inoculation access period on “healthy” plants of 4 days.
- Ongoing experiments.



B. Spy insects strategy

- Early detection of the bacterium presence in the country before symptoms on plants occur.
- 5 insect species collected, selected by EFSA (2015).
- Capture sites extending to all the Belgian area and to all natural regions.
- Detection by PCR : Minsavage *et al.* (1994) and Harper *et al.* (2010).



Acknowledgement

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