

ARTIFICIAL INOCULATIONS SUGGEST NEW POTENTIAL HOSTS OF XYLELLA FASTIDIOSA SUBSP. PAUCA



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INTRODUCTION

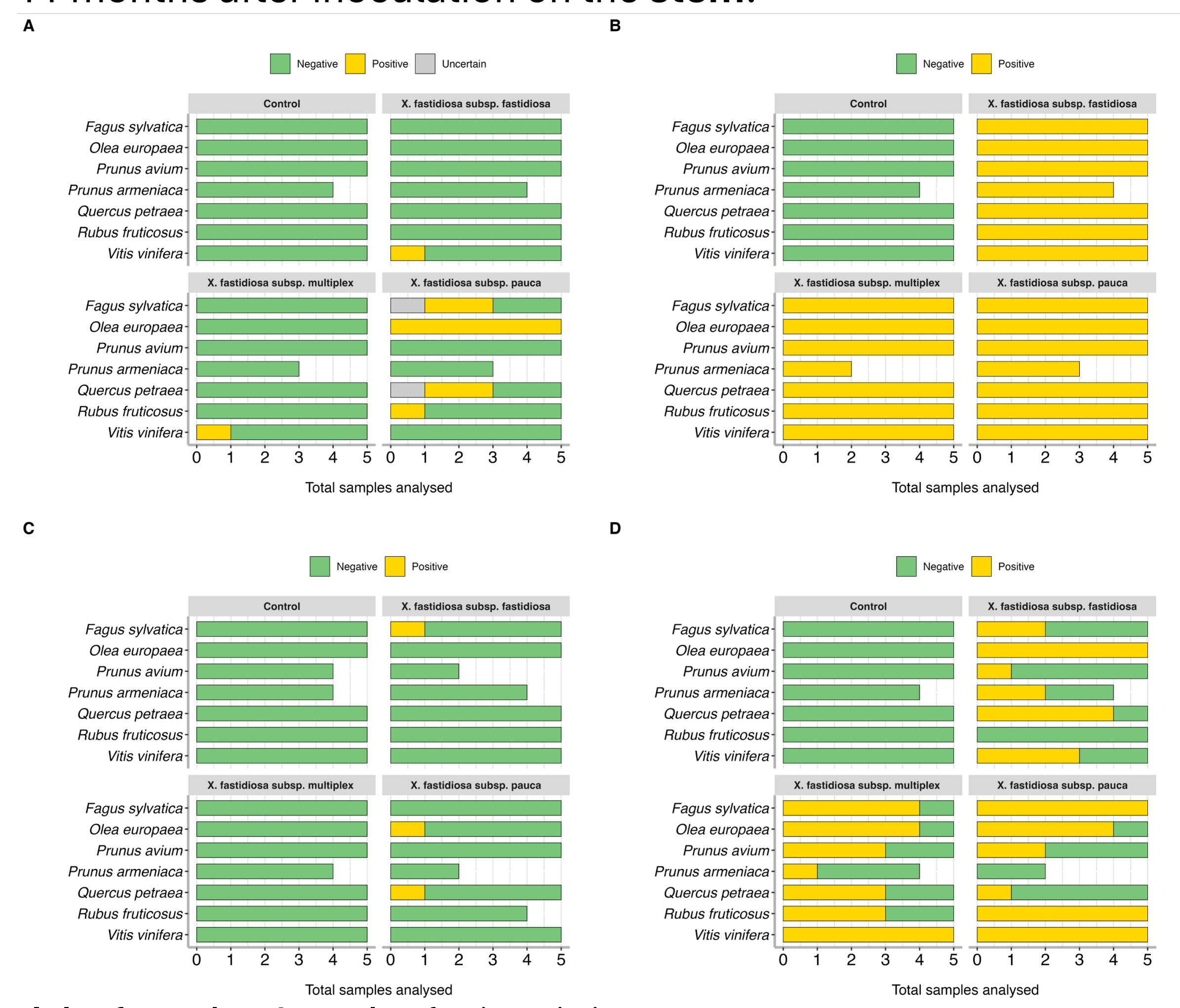
- Switzerland is currently free from *Xylella fastidiosa*
- X. fastidiosa* is classed as a priority quarantine pathogen in Switzerland
- Susceptibility to *X. fastidiosa* of forestry and agricultural plants of Switzerland is not well-known
- Collaborative project between WSL and Agroscope „**Ri-Xylella**“, funded by the Swiss Federal Office for the Environment (FOEN), 2024-2026
- Goal: test the susceptibility of woody plants relevant for Swiss forestry and agriculture with artificial infections in a quarantine facility (BSL3).

METODOLOGY

- Plant species: ***Prunus armeniaca*** var. “Luizet”; ***Prunus avium*** var. “Kordia”; ***Vitis vinifera*** var. “Chardonnay”; ***Rubus fruticosus*** var. “Scotty Loch-Tay”; ***Olea europaea*** (unknown variety, sold as ornamental); ***Quercus petraea*** (local provenance, WSL forestry nursery); ***Fagus sylvatica*** (local provenance, WSL forestry nursery)
- Xylella fastidiosa* strains (obtained from the “Collection Française des Bactéries associées aux Plantes” CFBP):
 - X. fastidiosa* subsp. *fastidiosa*** CFBP7970 (Type strain, isolated from *Vitis* in USA)
 - X. fastidiosa* subsp. *multiplex*** CFBP8418 (isolated from *S. junicerum* in France)
 - X. fastidiosa* subsp. *pauca*** CFBP8495 (isolated from *Coffea* in Costa Rica, ST53)
- Artificial inoculation : pin-prick infection of the **stem**
- Visual symptom assessment at 4 and 11 months after inoculation by three project collaborators separately
- qPCR analysis of the **leaves** and **wood above inoculation point**, 4 and 11 months after inoculation (EPPO Standad PM 7/24(5), modified from Harper et al., 2013).

RESULTS

Results of qPCR analysis of **leaf** and **wood** samples collected at 4 and 11 months after inoculation on the **stem**.



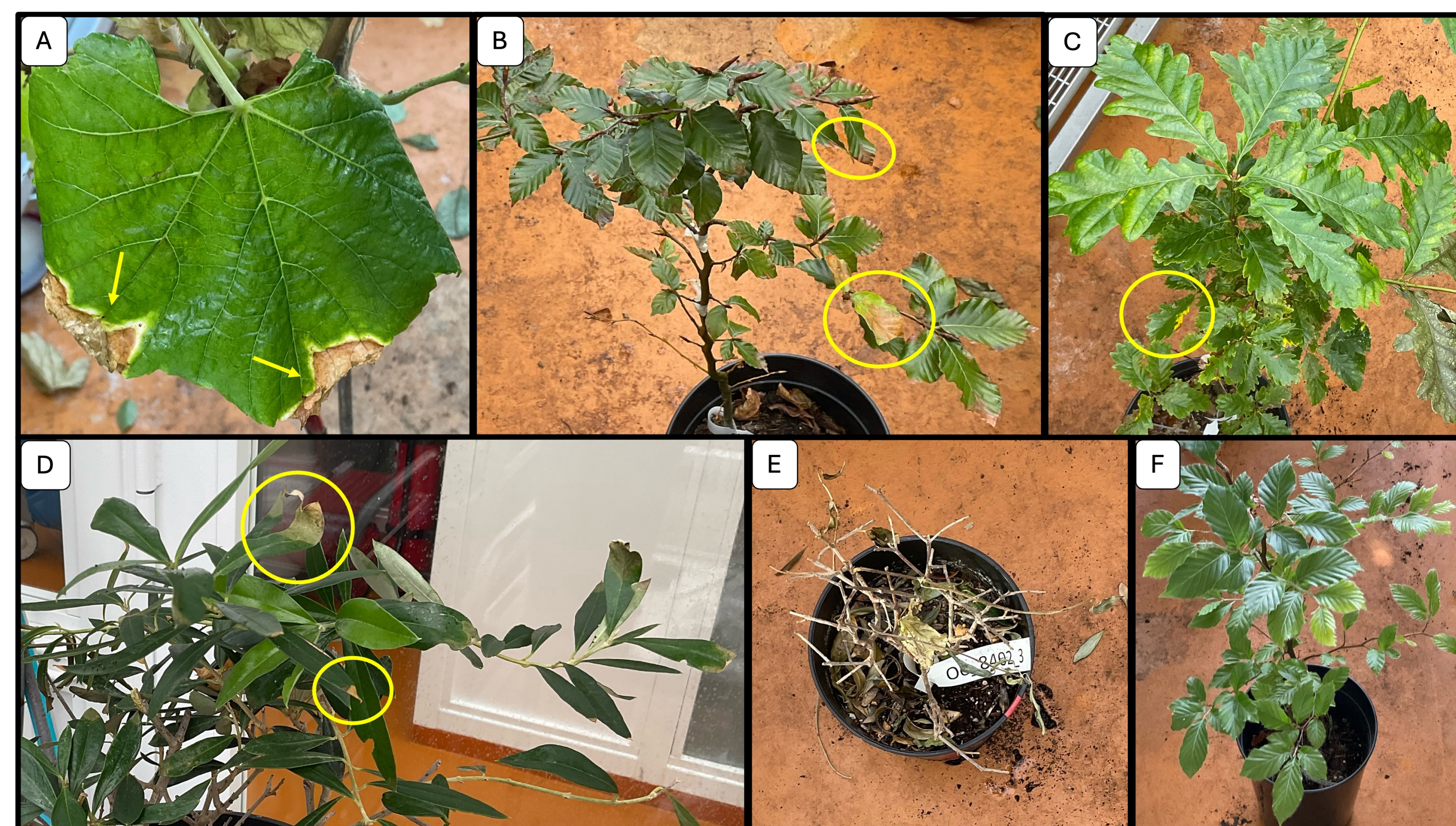
- A: Leaf samples, 4 months after inoculation**
B: Wood samples 1-2 cm above inoculation point, 4 months after inoculation
C: Leaf samples, 11 months after inoculation (after overwintering in unheated greenhouse)
D: Wood samples, 1-2 cm above inoculation point, 11 months after inoculation (after overwintering in unheated greenhouse)

CONCLUSIONS

- Stem infections of ***Fagus sylvatica*** and ***Quercus petraea*** with ***X. fastidiosa* subsp. *pauca*** led to systemic infection (*X. fastidiosa*-positive leaf samples by qPCR) 4 months after the artificial infection in 3 of 5 inoculated plants of each species.
- Leaf infection was lost in these plants after overwintering** them in an unheated quarantine greenhouse (approx. 10 °C).
- Leaf symptoms were an unreliable indicator of infection** (similar damage due to natural senescence, drought, insect damage); leaf damage in plants testing positive for *X. fastidiosa* was not significantly different from plants testing negative and control plants.



Examples of plants with *X. fastidiosa*-positive **leaf** samples (qPCR).



A: *Vitis vinifera* infected with *X.f. fastidiosa* (symptomatic), 4 months after inoculation; **B: *Fagus sylvatica*** infected with *X.f. pauca* (symptomatic), 4 months after inoculation; **C: *Quercus petraea*** inoculated with *X.f. pauca* (symptomatic), 4 months after inoculation; **D: *Olea europaea*** infected with *X.f. pauca* (symptomatic), 4 months after inoculation; **E: *Olea europaea*** infected with *X.f. pauca* (symptomatic, dead), 11 months after inoculation; **F: *Fagus sylvatica*** infected with *X.f. fastidiosa* (asymptomatic), 11 months after inoculation.