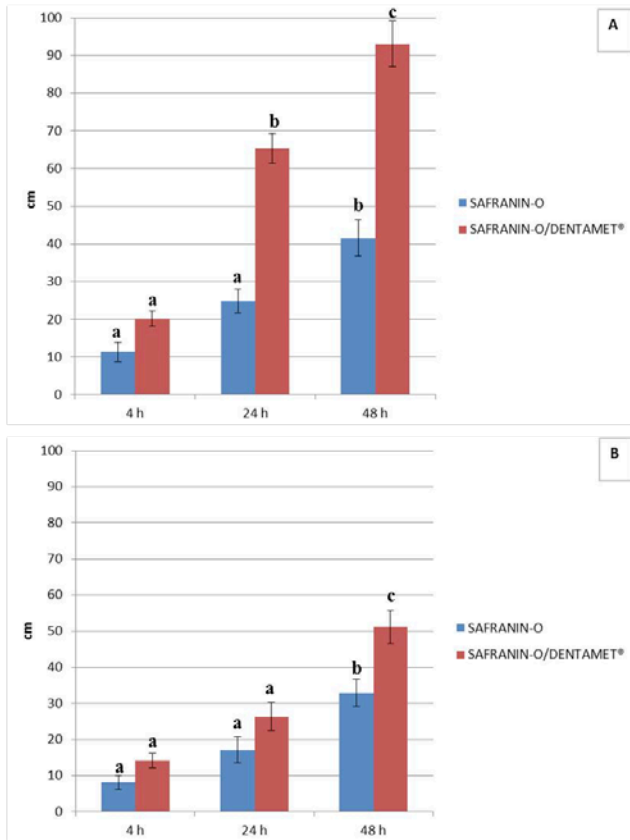


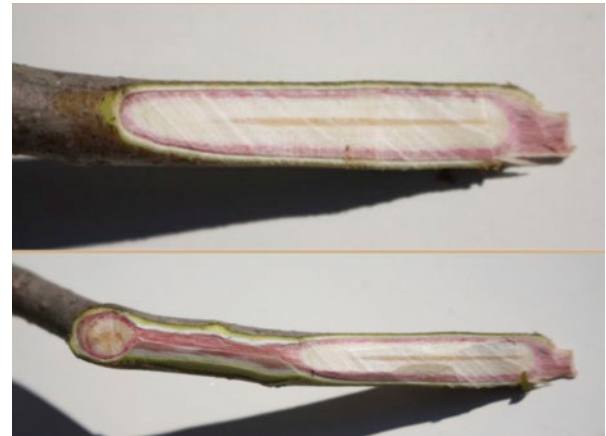
Supplementary Figure 1. Almond leaves showing clear symptoms of “almond leaf scorch” caused by *Xylella fastidiosa* (isolated in California, USA), which were used for the *in planta* assays to measure bactericidal activity of Dentamet® towards the bacterium.



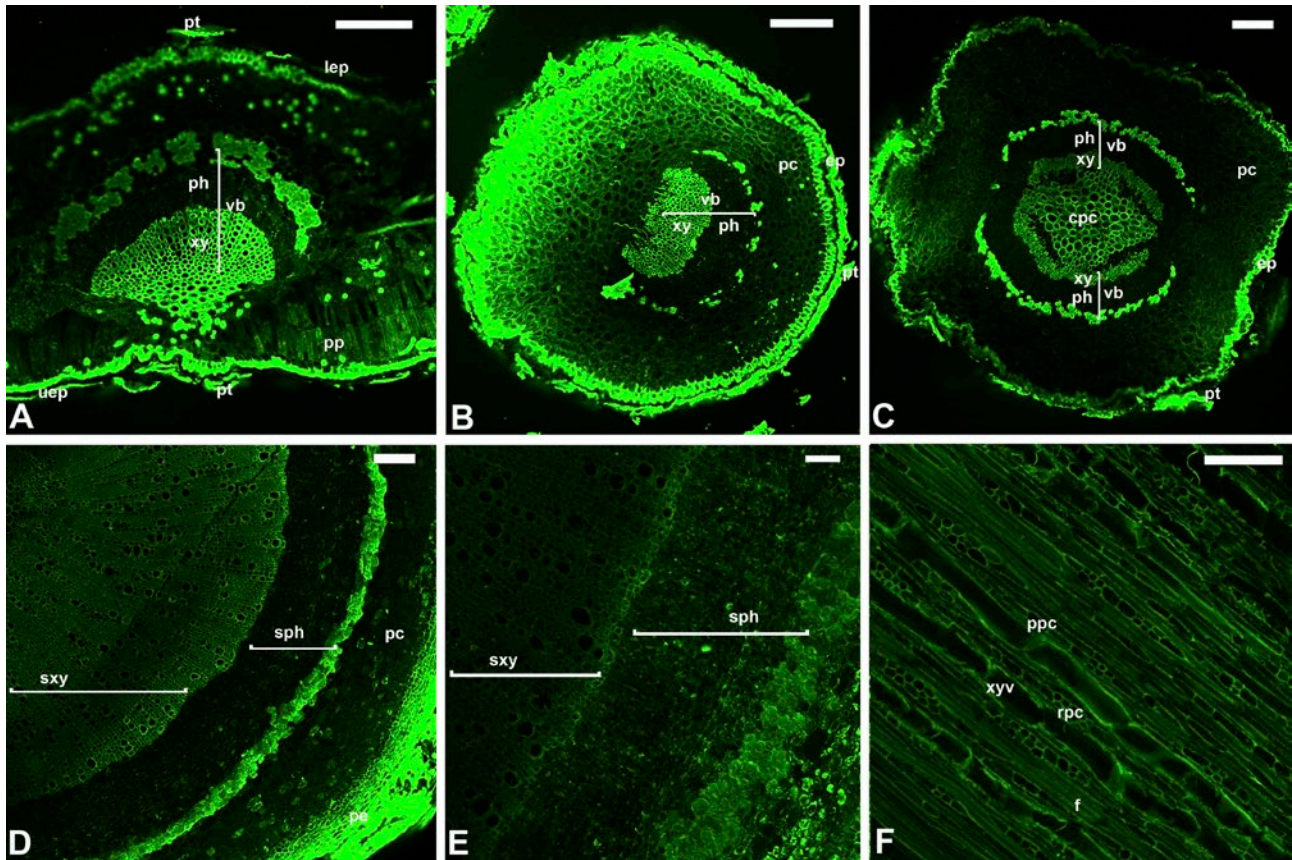
Supplementary Figure 2. Trunk injection performed on April 2017 using four plastic syringes fitted to the bases of olive trees cv. Ogliarola salentina severely affected by *Xylella fastidiosa*. Five mL of absolute Dentamet® were injected using the syringe. Subsequently, the dose was reduced.



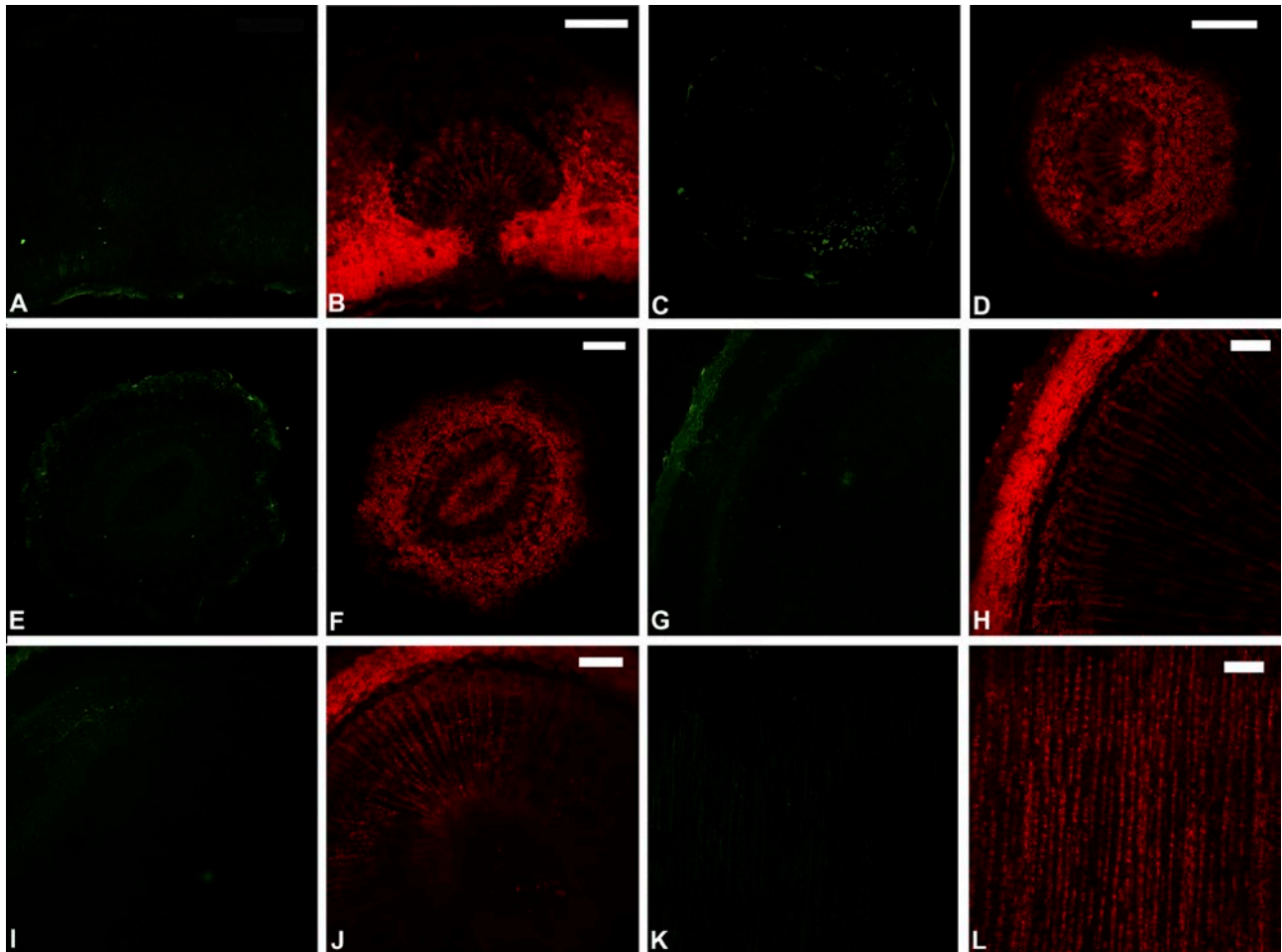
Supplementary Figure 3. A) Mean migration (cm) of safranin-O dye and a mixture of safranin-O/ Dentamet® in olive cv. Ogljarola salentina woody tissue, recorded 4h, 24h or 48h after endotherapy. Bars represent standard deviations. B) Mean migration (cm) of safranin-O dye and a mixture of safranin-O/Dentamet® in olive cv. Ogljarola salentina woody tissue, recorded 4h, 24h or 48h after trunk injection with plastic syringes. Bars represent standard deviations. Different letters indicate different means ($P < 0.05$).



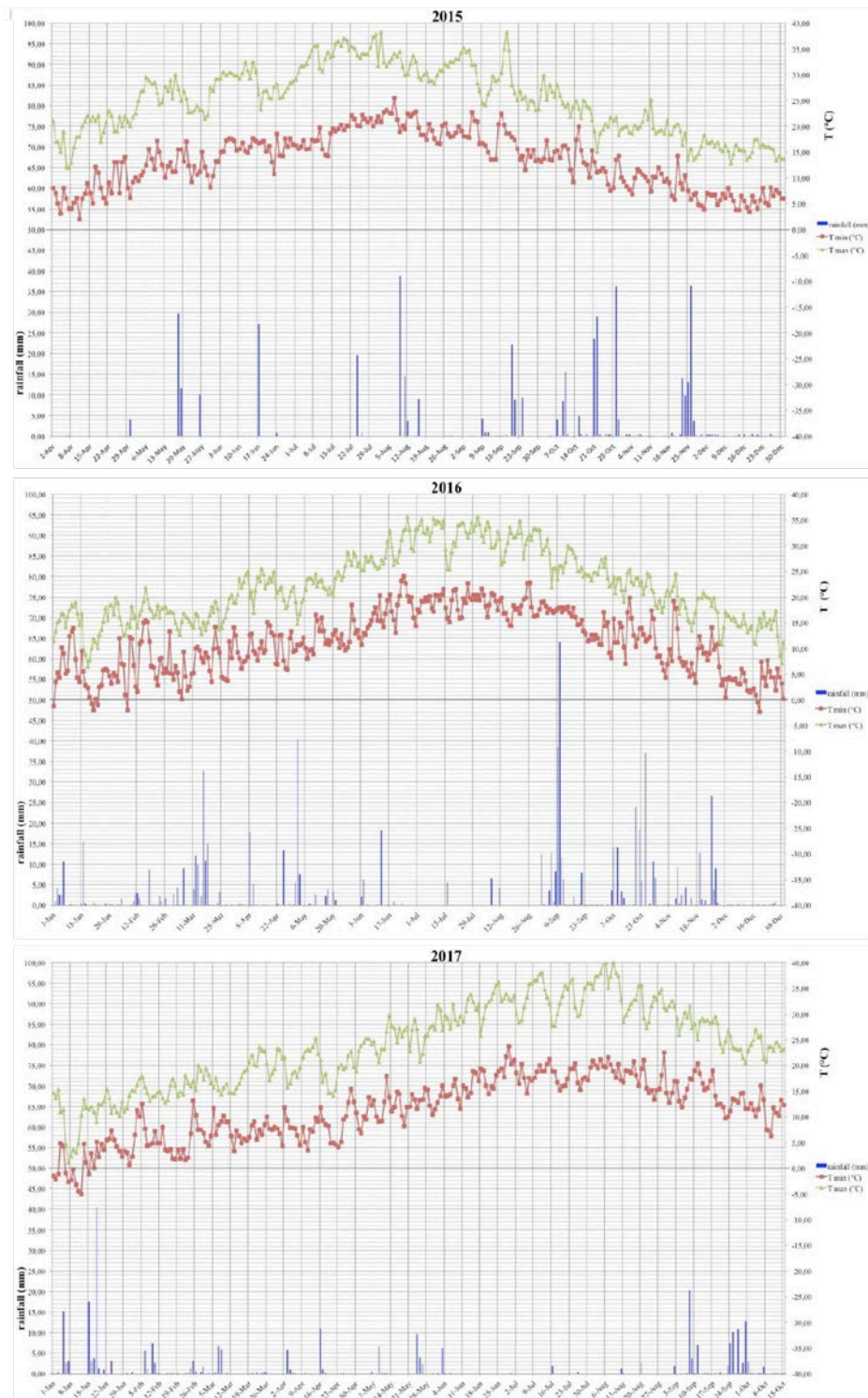
Supplementary Figure 4. Twigs of a healthy olive cv. Ogljarola salentina tree longitudinally sectioned to show the red color indicating displacement of the safranin-O/ Dentamet® mixture from the injection point of the trunk up to 2-year-old twigs.



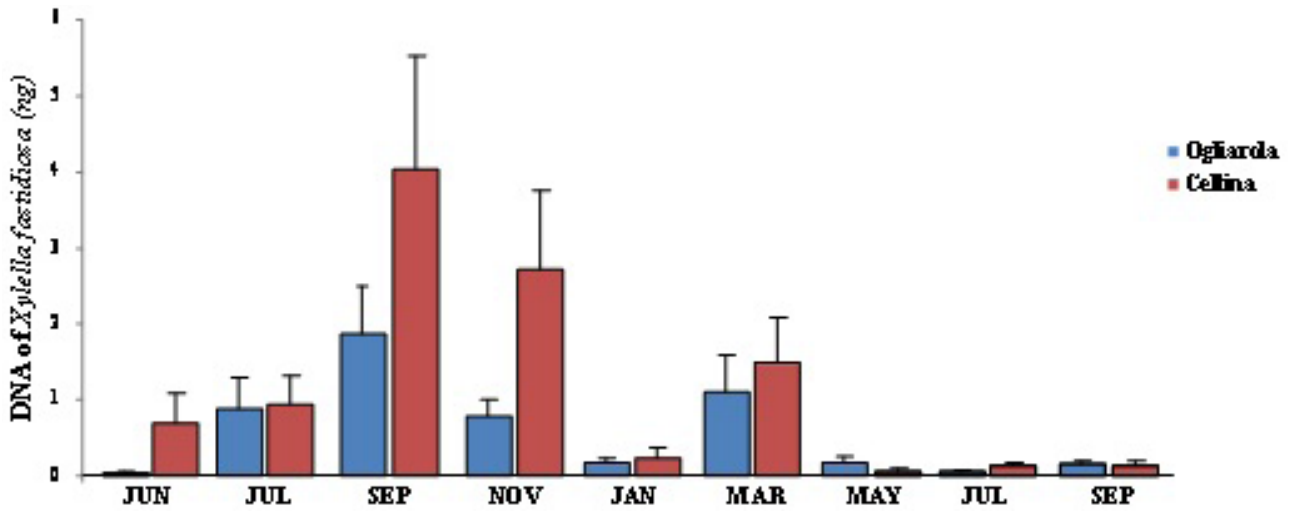
Supplementary Figure 5. Confocal microscope images of transverse sections of leaf (A), petiole (B), fruit peduncle (C), 2-year-old twig, (D) and 5-year-old twig (E) excised from a healthy olive cv. Ogliarola salentina tree sprayed with safranin-O. (F) Longitudinal tangential section of 5-year-old twig. Upper epidermis (uep), peltate trichome (pt), palisade parenchyma (pp), vascular bundle (vb) with xylem (xy) and phloem (ph), lower epidermis (lep), epidermis (ep), parenchyma cells (pc), central parenchyma cells (cpc), secondary xylem (sxy), secondary phloem (sph), periderm (pe), xylem vessel (xyv), paratracheal parenchyma cells (ppc), fibers (f), ray parenchyma cells (rpc). Scale bars = 100 μ m (A-F).



Supplementary Figure 6. Confocal microscope images of transverse sections of leaf (A, B), petiole (C, D), fruit peduncle (E, F), 2-year-old twigs (G, H), 5-year-old twigs (I, J) and longitudinal tangential section of 5-year-old twig (K, L), all excised from a healthy olive cv. Ogliarola salentina tree. No fluorescence was detected in the safranin-O channel (A, B, C, E, G, I, K), while the autofluorescence of plant material is visible (B, D, F, H, J, L). Scale bars = 100 μ m (B, D, F, H, J, L).



Supplementary Figure 7. Rainfall (mm) and minimum and maximum temperatures recorded at Salice salentino (Lecce province) from 1 April 2015 to 15 October 2017, obtained from the Rete Agrometeorologica Regionale of Apulia Region- Assodipuglia. The station is located near Veglie.



Supplementary Figure 8. Means *Xylella fastidiosa* subsp. *pauca* DNA concentrations detected at each sampling and expressed as mean ng per tree, using the methods of Modesti *et al.* (2017), obtained from June 2016 to September 2017 in the olive orchard at Veglie (Lecce province) planted with cv. Ogliarola salentina and Cellina di Nardò and treated with Den-tamet® during 2015-2017. Despite the different DNA concentrations found in the two trees, the trend of DNA concentration through the 13 months of assessment was similar. Bars represent standard errors of means.

Supplementary Table 1. Physical and chemical soil characteristics of Veglie (Lecce province) olive orchard performed according to the Italian Decreto Ministeriale September 13, 1999 “Metodi ufficiali di analisi chimica del suolo”.

Soil characteristics		Value
Texture	Sand (%)	54.0
	Silt (%)	18.0
	Clay	28.0
	Presence of rock and gravel	yes
Organic matter (%)	2.05	
pH (1:2,5):	8.10	
Electrical conductivity (1:2,5) (mS)	0.234	
Limestone (%)	4.30	
Hydrated lime (%)	2.50	
Organic carbon (%)	1.36	
Total nitrogen (%)	0.126	
Phosphorous (ppm)	14.0	
Exchangeable cations	Calcium (ppm)	3,800.0
	Magnesium (ppm)	131.0
	Potassium (ppm)	132.0
	Sodium (ppm)	66.0
Bioavailable trace elements	Boron (ppm)	0.20
	Iron (ppm)	5.20
	Manganese (ppm)	7.80
	Copper (ppm)	11.4
	Zinc (ppm)	0.50
Total Exchange Capacity	TEC (meq)	20.73
	Calcium (meq)	19.00
	Magnesium (meq)	1,10
	Sodium (meq)	0.29
	Potassium (meq)	0.34
	Ratio Mg/K	3.20

Supplementary Table 2. Day of the Dentamet® spray treatment on experimental olive orchard of Veglie (Lecce province, Apulia region) during the three years of efficacy assessment.

Month	2015	2016	2017
April	2nd	2nd	4th
April	22th	24th	26th
May	14th	12th	14th
June	4th	3rd	5th
September	2nd	4th	5th
October	22th	20th	18th

Supplementary Table 3. Zinc and copper content in olive drupes collected at the end of October 2017 from treated and untreated Ogliarola salentina and Cellina di Nardò trees grown in Veglie (Lecce province) orchard. Data are indicated in mg/Kg±standard deviation. The values are not statistically different (t-Student test at P<0.05).

Cultivar	Zinc	Copper
Cellina di Nardò (treated)	2.64±0.13	1.84±0.09
Cellina di Nardò (untreated)	2.79±0.14	1.76±0.09
Ogliarola salentina (treated)	2.85±0.14	1.68±0.08
Ogliarola salentina (untreated)	2.71±0.14	1.90±0.10