

Incidence and resistance of suckers from *Xylella fastidiosa*-infected olive

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INTRODUCTION & AIM

*Xylella fastidiosa* (Xf) is a Gram-negative bacterium that moves within the xylem of the plant [1] and is transmitted by insect vectors such as spittlebugs and leafhoppers [2]. It is a polyphagous bacterium with more than 550 hosts including olive, grapevine, almond and citrus trees and depending on the host, the subspecies varies in: *fastidiosa*, *pauca*, *multiplex* and *sandyi* [3,4].

In Italy, it was first reported in 2013 on olive trees in the Salento region, particularly on the Ogliarola salentina and Cellina di Nardò cultivars, causing rapid olive tree desiccation syndrome (OQDS) linked to the genetic variant Xf subsp. *pauca* strain “De Donno” (ST53) [5].

Despite many attempts, there is still no effective control strategy, but it has been observed that some suckers emerging at the base of infected trees survive longer. They could represent a resistance mechanism and this is why in our research suckers of several susceptible cultivars (Ogliarola salentina and Cellina di Nardò) and a resistant one (Leccino) were analysed in order to understand whether they activate more effective defensive strategies against Xf.

METHOD

Four suckers from at least 5 plants per cvs were collected. Samples were cut from the sucker bases using a sterilized scissors. Approximately 1 g of tissue per sample was homogenized in extraction bags (BIOREBA, Switzerland) with 5 mL of CTAB buffer using a semi-automatic homogenizer (Homex 6, BIOREBA) at a maximum speed of 60%. DNA extraction followed the EPPO Bulletin [6], employing chloroform for protein removal and ethanol for precipitation. Real-time PCR was performed following Harper et al. [7], and bacterial concentration, expressed as CFU/mL, was estimated according to D’Attoma et al. [8].



Figure 1. Ogliarola salentina



Figure 2. Cellina di Nardò



Figure 3. Leccino

RESULTS & DISCUSSION

Xf-incidence in suckers of Cellina di Nardò less than 5 years old was approximately 70%, with bacterial loads varying between 10<sup>3</sup> to 10<sup>6</sup> CFU/mL. These values slightly differed from those of the Ogliarola, in which more than two-thirds of the samples were negative in less than 5 years old suckers, while Xf-incidence reach 90% in older ones. The bacterial load in Ogliarola is also similar to Cellina, between 10<sup>3</sup> and 10<sup>7</sup> CFU/mL.

Conversely, for Leccino, the younger shoots were mainly negative, while those older than 5 years were mostly positive with a bacterial count between 10<sup>4</sup> and 10<sup>6</sup> CFU/mL.

Table 1. *Xylella fastidiosa* incidence and titer in suckers of cultivars Ogliarola salentina, Cellina di Nardò and Leccino.

SUCKERS AGE	CULTIVAR	Xf -POSITIVE SUCKERS (%)	CFU/mL
< 5 years	Ogliarola salentina	33.3	6.3·10 <sup>3</sup> - 1.0·10 <sup>7</sup>
	Leccino	0.0	
> 5 years	Cellina di Nardò	33.3	2.1·10 <sup>3</sup> - 3.0·10 <sup>6</sup>
	Ogliarola salentina	89.4	5.3·10 <sup>3</sup> – 2.2·10 <sup>6</sup>
	Leccino	100.0	6.5·10 <sup>4</sup> – 1.4·10 <sup>6</sup>

CONCLUSION

The findings highlight age-related and cultivar-dependent variability in Xf susceptibility among olive suckers. Younger suckers generally exhibited lower infection rates, suggesting a form of temporary resistance, but infection seems progress as expected in older ones.

Further research should explore additional factors, such as endophyte community, to elucidate their potential role in sucker resistance.

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