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Preliminary results on field trials to control *Xylella fastidiosa* on olive trees in Puglia

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During early 2015, a total of 110 adult olive (*Olea europaea*) trees (cvs. Cellina di Nardò and Ogliarola salentina) grown in the province of Lecce (Puglia, Southern Italy) in three different counties, namely Galatina, Galatone and Veglie, were chosen to test the field efficacy of a CE fertilizer, patented in Israel and employable also in organic agriculture, containing zinc (4% w/w) and copper (2% w/w) complexed to citric acid, to possibly control *Xylella fastidiosa*, currently found associated with the "olive quick decline syndrome" in the Salento peninsula. The olive orchards were trained according to the common traditional way of Salento (i.e. not regular pruning, minimum soil tillage and pest control measures). The compound was preliminarily tested for verifying its capability to systemically move within the tree both upon trunk endotherapy and foliar spray application. Blocks of trees were chosen as experimental design. In the orchards, the presence of the pathogen was ascertained by means of real-time PCR (Harper *et al*., 2010), and a molecular test was preliminary set up to precisely point out which part of the tree and leaf should be taken to reliably detect the presence of *X. fastidiosa* for the additional quantitative assessment of the pathogen within the tree. Half of trees were not treated and served as control plants. A total of six spray treatments were applied to the canopy of the trees (i.e. 5 kg/ha) from early April to October. During summer (i.e. July and August), any treatment was applied. The same spray treatment scheme was carried out both in 2015 and 2016. For each tree, the total number of new shoots that wilted during the vegetative season was counted. The ANOVA and ARM programs were applied to the data recorded in the fields to test the statistical significance of the treatment. During 2015 and 2016, the treatments significantly reduced the occurrence of new wilting shoots during the season in the three olive orchards. The reduction of wilted twigs resulted higher during spring, early summer and autumn. By contrast, the non-treated trees showed an increasing incidence of the disease (i.e. presence of new wilting shoots and branches) that progressively appeared during the season. During summer, the highest number of wilted twigs both in the treated and untreated trees was recorded. None of the treated trees resulted dead. By contrast, at the end of summer 2015, in Galatone and Galatina orchards, some non-treated trees appeared dead. In these two orchards, during early spring 2016, a severe pruning (i.e. removal of a great part of some main branches) was performed to both treated and non-treated trees to verify if such a measure could reduce the symptoms severity during the following years. During 2016-2017, in the Veglie orchard, in addition to the further recording of the incidence of the disease, the quantitative real-time PCR technique of Harper *et al.* (2010) was also applied to determine the rate of reduction of *X. fastidiosa* within the canopy of some treated trees in comparison with non-treated ones. To this aim, some trees officially ascertained by the regional phytosanitary service for the presence of the pathogen before the starting of the trial were chosen. The monitoring and quantification of *X. fastidiosa* within the canopy of such olive trees is currently under way. These preliminary data would indicate that the treatments should not be suspended during summer.

References

Harper S.J., Ward L.I., Clover G.R., 2010. Development of LAMP and real-time PCR methods for the rapid detection of *Xylella fastidiosa* for quarantine and field applications. Phytopathology 100: 1282-1288.