

Nanocellulose based materials for the plant protection against *Xylella fastidiosa*

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The uncontrolled spread of pathogens is causing damage to production yields, a reduction of between 20% and 40% per year. Crop protection must be in line with the productivity required by the sector and with respect for the environment. The chemical fight is not always practicable, due to the inevitable health and ecological problems connected with its implementation. Furthermore, plants develop resistance mechanisms to pesticides. Therefore, if the use of pesticides on the one hand improves the quantity of agricultural production, on the other it involves problems for human health and the environment. If we add to this situation that pathogens develop resistance to pesticides over time, it is immediately understandable that it is necessary to investigate alternative forms of treatment. Among the different pathogens spread in Italy in recent years we find the *Xylella fastidiosa* of olive trees. *X.fastidiosa* has found particular diffusion in Puglia due to the type of host organism in which it is nested and developed and threaten the whole Euro-Mediterranean area.

The project NanotEcnologie chiMiche green per la protEzione Sostenibile delle piante NEMESI aims to create a product and a process that can lead to the production and use of new or innovative nanocellulose bio-based products / biomaterials from dedicated forest or agricultural biomasses and from by-products and waste from their production. The production of micro and / or nano-particles of Nanocellulose will be characterized and safety for humans will be assessed by in vitro monitoring of the effect of the Nanocelluloses containing the pesticide on the gastro-intestinal barrier.