

Project Deliverables



Credit: Alberto Fereres

Identification of natural hosts associated with the Lso bacterium in Europe

- In the POnTE project, various countries in Europe implemented extensive surveys concerning the **Lso** bacterium for the first time. In the EU territory Lso affects mainly carrots and celery, disrupting the marketing of these products.
- Researchers investigated the possible spread of the disease in cultivated and wild plants in Europe and Mediterranean countries in particular.

***Lso* (abbreviation of CaLsol)**

Lso is an abbreviation of the acronym CaLsol, that stands for *Candidatus Liberibacter solanacearum*. In North America and New Zealand this plant bacterium infects tomatoes and potatoes (Solanaceae), causing significant economic damages. In Europe, the infection produces vegetative disorders in plants of the Apiaceae family only, especially carrot and celery.



Credit: ANSES



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- Thanks to extensive surveys and molecular biology methods adopted in the **POnTE project**, the researchers found Lso in cultivated *Apiaceae* not known to be hosts (parsley, fennel, chervil, and parsnip) and wild plants for the first time. Most of the wild samples were from the *Apiaceae* family. That was the case in Finland, where Lso was found in cow parsley (*Anthriscus sylvestris*), a perennial wild plant closely related to carrot and very common in the country. Similarly, in Israel a symptomatic wild carrot and an asymptomatic wild fennel were found to be positive to Lso.



Credit: Anne Nissinen

POnTE Project

The EU Horizon 2020 financed POnTE project started in 2015 and concluded in 2019. POnTE gathered 25 organizations and 120 researchers from 10 EU and three non-EU countries to foster and share knowledge for the prevention, detection, control, and management of a group of plant pests threatening crops, biodiversity, and the economy in Europe.

- Also, the tests enabled scientists to detect Lso in wild plants which are not from the *Apiaceae* or *Solanaceae* families. The samples originated from the edge of fields infected with the bacterium. However, the findings on other wild plants seem to represent new haplotypes and therefore scientists hypothesize that they do not play an epidemiological role on crop plants.

New findings, new questions

- The results of the research suggest that wild *Apiaceae* plants might be Lso 'natural reservoirs' in the margins of highly contaminated fields. The wild hosts could provide a permanent supply of infected sap for the **psyllids**, even when the crops are not cultivated. The interaction among these newly discovered hosts, the pest and the vectors in Europe and the Mediterranean region should be better investigated.

Psyllids

The spread of Lso is strongly related to its vectors, the psyllids, or jumping plant lice, able to transmit the disease from infected to healthy plants. As of today, the management of the psyllids' population is the most effective tool to prevent the spread of the Lso associated symptoms.



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- The scientific advances of the project are of value for the future implementation of management and prevention of the disease. Still, additional researches are needed to better understand the biological and epidemiological significance of the new hosts.
- As far as non-*Apiaceae* and *Solanaceae* wild plants are concerned, more research is needed on Lso strains. It is relevant to define if the bacteria detected in wild plants are of the same strains of those identified in cultivated plants. Moreover, plants belonging to different families may have different psyllid species feeding on them.