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Disease spreading and borderless scientific cooperation: the case of '*Candidatus Phytoplasma phoenicium*'

Almond witches' broom (AlmWB) is one of the most threatening phytoplasma diseases of peach and almond trees. '*Candidatus Phytoplasma phoenicium*' is the pathogen associated with the disease in Iran and Lebanon, two countries where outbreaks have been officially reported. The disease has rapidly spread and caused severe damage in peach orchards in Lebanon and killed over a hundred thousand almond trees in Iran. All Mediterranean countries are very concerned about keeping AlmWB out of their territories in which peach and other stone fruits are widely cultivated. The EPPO Pest Risk Analysis ([PRA](#)) for AlmWB underlined the need for an efficient protocol for the reliable detection and identification of the associated pathogen.



The main goal of the Euphresco project 2017-F-234 'Set-up of reliable protocols for the detection and identification of '*Candidatus Phytoplasma phoenicium*' (DIPCAPP)' was to provide knowledge to support surveillance activities in order to prevent the introduction of '*Candidatus Phytoplasma phoenicium*' into new areas, such as in Europe, where the vector(s) of the phytoplasma may occur.

Seven research partners from France, Iran, Italy (2 laboratories), Lebanon, Russia and Slovenia joined forces to validate several diagnostic tests for the detection of genetically distinct '*Candidatus Phytoplasma phoenicium*' strains through a test performance study.

Six different PCR-based tests were evaluated:

- PCR test targeting the 16S-23S rDNA genes, specific for AlmWB phytoplasma (IX-B) (Jawhari, *et al.*, 2015);
- Nested PCR test targeting the *inmp* gene, specific for AlmWB phytoplasma (IX-B) (Quaglino *et al.*, 2015);
- Nested PCR test targeting the 16S rDNA gene using generic phytoplasma primers, followed by RFLP analysis of patterns to identify the AlmWB phytoplasma (IX-B) (Molino Lova *et al.*, 2011);

