New Disease Reports

First report of *Pseudomonas syringae* pv. *actinidiae* on kiwifruit plants in Spain

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Bacterial canker caused by *Pseudomonas syringae* pv. *actinidiae* is the most harmful disease affecting kiwifruit (*Actinidia* spp.) cultivation worldwide reported so far. Reported in the 1980s in Asia (China, Japan, Korea), it was then described in the most important kiwifruit areas in other parts of the world (Italy, Portugal, France, New Zealand, Chile). The disease occurred on the main kiwi species (*A. deliciosa* and *A. chinensis*) and on different cultivars of kiwifruit. In 2011 the disease was observed during spring on two-year-old plants of cultivars of *A. deliciosa* (cv. Hayward) and of *A. chinensis* (cv. Jin Tao). Kiwifruit orchards with trees showing suspected symptoms were found located in Burgueira, Tomino Government, Provincia de Pontevedra - Galicia (Spain). The symptoms were similar to those recently reported in Portugal (Balestra *et al.*, 2010) and characterised by typical symptoms on leaves (brown spots surrounded by yellow haloes), red browning on canes, with red sap production (Fig. 1). The disease incidence was estimated to be as high as 70 to 90% on the basis of the proportion of trees with evident symptoms in each orchard.

Bacterial colonies were isolated from infected leaves on nutrient agar containing 5% sucrose. Four representative isolates were Gram-negative, negative for oxidase, potato soft rot, arginine dehydrolase, presence of tyrosinase and urease, nitrate and fluorescent pigment production. They were positive for levan production, presence of catalase and induction of a hypersensitive response on tobacco cv. Virginia Bright (Lelliott & Stead, 1988). Pathogenicity was confirmed by spraying a bacterial suspension calibrated at 10^7 cfu/ml on two-year-old plants of *A. deliciosa* (cv. Hayward) and *A. chinensis* (cv. JinTao). The assay was conducted on ten plants. Leaf symptoms were observed within 15 days after inoculation. No symptoms were observed on control plants. Bacteria with morphological, biochemical and molecular characteristics identical to the original isolate were re-isolated from tissue showing symptoms. The isolates (PSA 827, PSA 828, PSA 829, PSA 830) selected for molecular identification were compared to *P.s.* pv. *actinidiae* reference strains (CFBP 7285, CFBP 7286, CFBP 7287, NCPPB 3739). Identification of the strains was confirmed by PCR amplification with two pairs of *P.s.* pv. *actinidiae* specific primers (Koh & Nou, 2002; Rees-George *et al*., 2010). This is the first report of *P.s.* pv. *actinidiae* on kiwifruit cultivars (*A. deliciosa* and *A. chinensis*) in Spain.

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Figure 1

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