



# First report of strawberry bacterial blight caused by *Pantoea ananatis* in Italy

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Italy is the fourth European producer of strawberries. In September 2021, ooze production, leaf, flower, and pseudo-fruit rot occurred on the 90% of strawberry variety ANIA+ (ANIA@CIVRH612pbr) plants in a tunnel cultivation (~4,500 plants) located in Falcade (Veneto, Italy). Most of the bacterial colonies isolated from diseased strawberry plants showed a yellow, shiny and sharp edge morphology and were able to induce tobacco hypersensitivity.

The bacterial isolates Pa\_S2X, Pa\_S3X and Pa\_S4X were selected and identified by 16 S rDNA sequencing using the primer pair 9F/1512R. The analysis of the sequences (OR177983, OR723496, OR723497) revealed a relevant similarity with *Pantoea ananatis* AJ13355 (PAJ\_r0001). These results were validated by sequencing a genome region specific for *P. ananatis* (OR095703, OR731284, OR731285) using the primer pair 61F/1009R (Asselin et al. 2016).

Pathogenicity tests were carried out on three 2-months old strawberry ANIA+ plants and three ripen detached pseudo-fruits (cv. Elsanta®) by wounding the tissues and spraying a cell suspension (~1 × 10<sup>7</sup> CFU/mL) of *P. ananatis* Pa\_S2X, Pa\_S3X and Pa\_S4X. Briefly, plants were sprayed on stems, flowers and leaves and covered with transparent plastic bags to maintain 100% RH. Plants were incubated

at 28/25°C (day/night) under a 12-h/12-h photoperiod for 15 days. Pseudo-fruits were incubated in the dark at 27 °C and 90% RH for five days. Plants and pseudo-fruits sprayed with distilled water were used as the untreated controls and the assays were repeated. After the respective incubation periods, no symptoms were observed on the untreated controls. In contrast, all the pseudo-fruits and plants inoculated with *P. ananatis* Pa\_S2X, Pa\_S3X and Pa\_S4X showed the same symptoms observed on the original diseased plants.

In both the assays, no colonies showing the same morphology of Pa-S2X, Pa\_S3X and Pa\_S4X were isolated from the untreated controls. In contrast, bacterial colonies with the same morphology of Pa-S2X, Pa\_S3X and Pa\_S4X were isolated from plants and pseudo-fruits inoculated with the bacterial strains. Using the primer pairs reported above, these bacterial isolates were identified as *P. ananatis*, fulfilling the Koch's postulates. Moreover, these results confirmed the involvement of *P. ananatis* in a disease affecting strawberry plants already reported in other countries (Abdel-Gaied et al. 2022; Zhang et al. 2023).

To our knowledge, this is the first report of strawberry bacterial blight caused by *P. ananatis* in Italy and it might provide the basis for improving the management of this plant pathogenic bacterium.

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