

Bacterial Wilt of Beans (*Phaseolus vulgaris*) Caused by *Curtobacterium flaccumfaciens* in Southeastern Spain

A. J. González, Laboratorio de Fitopatología, SERIDA, Carretera de Oviedo s/n, 33300 Villaviciosa, Asturias. Spain; J. C. Tello, Departamento de Producción Vegetal, Universidad de Almería, 04120, Almería, Spain; and M. R. Rodicio, Departamento de Biología Funcional (Área de Microbiología), Universidad de Oviedo, Julián Clavería 6, 33006 Oviedo, Asturias, Spain

 Open Access.

Symptoms of bacterial wilt were observed on common beans (cv. Donna) in southeastern Spain. From samples collected in four different fields (coast of Granada), a bacterium was isolated with the following characteristics: gram positive, aerobic rods with yellow colonies, strictly oxidative, oxidase negative, galactose, sucrose, erythritol, mannitol, sorbitol and m-inositol were not used as a sole carbon source, and hydrolysis of casein was positive. These results coincide with what is expected for *Curtobacterium flaccumfaciens* pv *flaccumfaciens* (3). One isolate from each field was selected for pathogenicity tests using two different methods. Bacterial suspensions (approximately 10^8 CFU/ml) were spray inoculated on bean seedlings of cv. Andecha (10 plants with three true leaves for each isolate). Beans were covered with transparent plastic bags for 2 days and held at 25°C and 80% relative humidity with a 12-h photoperiod. In addition, 10 healthy seeds of cv. Andecha were soaked in bacterial suspensions (approximately 10^8 CFU/ml) for 1 h and incubated at 25°C (2). Seedlings sprayed with distilled sterile water and seeds soaked in water served as controls. With both methods of inoculation, assays were conducted twice. Results were recorded after 3 weeks. Symptoms that developed on plants after infection with the four isolates were similar to those observed in the field. They included golden yellow necrotic leaf lesions and wilting. Wilting was more pronounced in the field and when inoculation was performed by spraying seedlings rather than by soaking seeds. Control plants did not develop symptoms and grew bigger than the inoculated plants. Two pathogenic isolates were identified through sequencing of the 16S rRNA gene. The genes were amplified by polymerase chain reaction (1) and their nucleotide sequences (1,418 bp) proved to be identical (Accession No. AJ879110). Comparison of these sequences with databases showed that they were also identical to those of *C. flaccumfaciens* strains LMG 3645 and P 259/26 (Accession Nos. AJ312209 and AJ310414) and *Curtobacterium* sp. strains 2384 and 3426 (Accession Nos. AY688359 and AY688360). In Spain, the bean pathogen *C. flaccumfaciens* was first isolated from seeds

during 2001 (4). However, to our knowledge, this is the first report of damage caused by this bacterium in the field. Bacterial wilt has been recorded, but often not substantiated, in several countries from North and South America, Africa, Asia, Oceania, and Europe.

References: (1) U. Edwards et al. *Nucleic Acid Res.* 17:7843, 1989. (2) T. F. Hsieh et al. *Plant Dis.* 86:1275. 2002. (3) K. Komagata and K.-I. Suzuki. Pages 1313–1317 in: *Bergey's Manual of Systematic Bacteriology*. Vol. 2. Williams and Wilkins, Baltimore, MD, 1986. (4) J. L. Palomo et al. Page 154 in: *XI Congreso de la Sociedad Española de Fitopatología*, Almería, 2002.

Cited by

Diversity of culturable bacteria and occurrence of phytopathogenic species in bean seeds (*Phaseolus vulgaris* L.) preserved in a germplasm bank

[Estefanía Trapiello](#) and [Ana J. González](#)

Genetic Resources and Crop Evolution Aug 2012

[CrossRef](#)

Curtobacterium flaccumfaciens pv. *flaccumfaciens* on Soybean in Germany - A Threat for Farming

[Ulrike F. Sammer](#) and [Katharina Reiher](#)

Journal of Phytopathology Apr 2012no-no

[CrossRef](#)

Curtobacterium flaccumfaciens pv. *flaccumfaciens* *EPPO Bulletin* Dec 2011, Volume 41, Number 3: 320-328

[CrossRef](#)