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Identification of *Pseudomonas syringae* pv. *phaseolicola* as the causal agent of halo blight in yellow beans in northern Sinaloa, Mexico

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Abstract

Yellow beans are produced under irrigation during the fall-winter growing season in the coastal lowlands of Sinaloa, Mexico. Halo blight, is the most important disease during the winter time. The objectives of this study were to: a) identify the causal agent of the disease and b) determine the physiological races of the bacterium. Twelve isolates of the bacterium associated with infected leaves and pods from the Azufrado Higuera cultivar were obtained from December 2013 through January 2014. Biochemical, physiological and molecular characteristics of the bacterial isolates coincide with those of *Pseudomonas syringae* pv. *phaseolicola* (*Psph*) reported in the highlands of Mexico. All twelve isolates of the bacterium from bean were inoculated under greenhouse conditions and caused similar symptoms as those observed in the field. The genes *rpoB* and *rpoD* were sequenced for phylogenetic analysis and compared to databases to confirm their identities. These markers were thus used to determine that the 12 analyzed isolates are identical, and are similar to the *Psph* sequences currently available in databases. Compatibility patterns between bean cultivars from the differential set revealed that six out of the twelve isolates infected all differential plants and matched the pattern of race six. In contrast, the remaining isolates displayed inconclusive compatibility patterns, indicating that the differential set does not provide conclusive information for pathotype identification. This suggests that the current differential set of genotypes requires the inclusion of novel bean genotypes, in order to explore the existence of potential new races of this pathogen.

Keywords

Phaseolus vulgaris Bacterial disease Physiological races *rpoB* and *rpoD* genes

Notes

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