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Isolation and Plant Host Range of *Rhizobacter dauci*, Causal Agent of Carrot Bacterial Gall.

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ABSTRACT

Bacterial galls were found on roots of tomato (*Solanum lycopersicum*), cabbage (*Brassica oleracea*), shepherd's purse (*Capsella bursa-pastoris* var. *pinnata*), bog yellowcress (*Rorippa palustris*), purple deadnettle (*Lamium purpureum*) and corn speedwell (*Veronica arvensis*) in Shizuoka Prefecture from December 2007 to July 2008. Galls had formed on the main or secondary roots, and bacterial aggregates were often observed on the surface of the galls. Bacterial isolates from the plant galls formed white, rough colonies and had properties identical to those of *Rhizobacter dauci*. Phylogenetic analysis based on 16S rDNA sequence showed that the isolates had the highest homology (similarity of 100%) with that of the type strain of *R. dauci*. Pathogenicity of the isolates was confirmed by inoculating the roots of carrots and the original host species. After 4 weeks, galls had formed on the roots of the plants, and the bacterium was reisolated. This report is the first of bacterial galls caused by *R. dauci* on tomato, cabbage, shepherd's purse, bog yellowcress, purple deadnettle and corn speedwell. To investigate the host range of *R. dauci*, 20 vegetable crop species of seven families were planted in a field infested with the bacterium. After 1.5 months, galls had formed on the roots of nine vegetables representing four families, and a bacterium that forms white, rough colonies was isolated from the infested plants. Pathogenicity of the isolates was confirmed by inoculating the roots of carrots; galls formed on the roots, and the bacterium was reisolated. After direct inoculation of 77 plant species from 24 families with the carrot isolate *R. dauci* O1, galls formed on the roots, stems or tubers of 46 plant species of 20 families, and the inoculated bacterium was reisolated. These results suggested that *R. dauci* has an extremely wide host range. It may commonly inhabit the roots of various plants in the field.

Key words

carrot, bacterial gall, *Rhizobacter dauci*, tomato, shepherd's purse, host range