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ONLINE ISSN : 1882-0484

PRINT ISSN : 0031-9473

Japanese Journal of Phytopathology

Vol. 72 (2006) , No. 3 pp.135-142

[\[PDF \(929K\)\]](#) [\[References\]](#)

Potato berry bioassay to detect *Streptomyces* spp. that produce phytotoxic thaxtomin A and cause potato common scab

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(Received April 25, 2005)

(Accepted January 11, 2006)

ABSTRACT

The thaxtomin-A-producing ability of *Streptomyces* spp. isolates (nine isolates of *S. scabies*, five isolates of *S. turgidiscabies*, one isolate of *S. acidiscabies*) was assessed by the development of necrotic lesions on potato berries. Berries collected from field-grown potato plants were inoculated with plugs of pathogenic isolates from starch nutrient or oatmeal media and then kept in a moist container for 7 days at 25°C under a 12-h photoperiod or continuous darkness. Each of the thaxtomin-A-producing, pathogenic strains caused an obvious necrotic lesion (more than 4–6 mm in diameter) on the berries. On the other hand, the nonpathogenic strains (two isolates of *S. ipomoeae*, one isolate of *S. acidiscabies*, six isolates of *Streptomyces* spp.) that did not produce thaxtomin A barely induced any necrotic symptoms. Crude chloroform extracts from the oatmeal-broth cultures of thaxtomin-A-producing strains of *S. scabies*, *S. turgidiscabies* and *S. acidiscabies* and the authentic thaxtomin A induced necrotic lesions on the berries. In contrast, crude extracts from strains that did not produce thaxtomin A and were nonpathogenic to potato tuber did not induce symptoms on the berries. The potato berry bioassay is thus a simple procedure that is suitable for the consistent detection of thaxtomin A production by *Streptomyces* spp. that cause common scab disease.

Key words: common scab, necrosis, potato berry, *Streptomyces* spp., thaxtomin A

To cite this article:

S. NAITO, M. MAEDA, S. TANI, D. IMAJI, S. AKINO and N. KONDO (2006). Potato berry bioassay to detect *Streptomyces* spp. that produce phytotoxic thaxtomin A and cause potato common scab . Japanese Journal of Phytopathology 72: 135-142 .

doi:10.3186/jjphytopath.72.135

JOI JST.JSTAGE/jjphytopath/72.135

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