



## First report of potato bacterial ring rot caused by *Clavibacter michiganensis* subsp. *sepedonicus* in Africa

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In 2014, potato tubers (cv. Diamant and cv. Spunta) showing typical symptoms of bacterial ring rot disease caused by *Clavibacter michiganensis* subsp. *sepedonicus* (Cms) were observed in Gharbia, Menoufia, Minia, Assiut and Sohag governorates, Egypt, in 10 out of 10,000 samples examined at the time of planting. Splitting infected tubers toward the stem end revealed a yellow to brown discolouration of the vascular tissue. The discoloured area had a cheesy appearance and exuded a milky ooze when squeezed (Fig. 1). Samples were tested for the presence of ring rot disease, according to the EC Directive 93/85/EEC (Anon., 1993). Extracts from 1 cm tuber heel-end cores were streaked onto NCP-88 medium (de la Cruz *et al.*, 1992), yeast peptone glucose agar (Anon., 1993) and yeast peptone glucose agar with the addition of neomycin (3.5 mg/l), polymyxin B sulphate (16250 IU) and clotrimazole (10 mg/l). The resultant colonies (white to cream, round to irregular with entire margins, raised, smooth, mucoid and glistening) were selected and purified.

Suspensions of isolates in distilled water (10<sup>6</sup> cfu/ml) were injected (EU, 2006) into stems of eight *Solanum melongena* plants (cv. Black Beauty) per isolate at the three leaf stage. Plants were incubated at 21 ± 2°C and 70-80% RH. Control plants were inoculated with sterile water. After 14 days plants began to wilt, wilted tissue appeared dark green or mottled but turned paler before becoming necrotic. Inter-veinal wilts had a greasy water-soaked appearance. Necrotic tissue had a bright yellow margin. Some plants were killed completely. No symptoms were observed in control plants. Bacteria were re-isolated from symptomatic inoculated plants and identified.

Pure cultures of ten Gram-positive isolates hydrolysed aesculin, utilised

acetate and produced catalase. They produced acid from mannitol and sorbitol, but not from glucose, glycerol, lactose and salicin. They were negative for oxidase activity, urease activity, hydrogen sulphide production, indole production, growth at 37°C, tolerance of 7% NaCl, and gelatin liquefaction. They gave negative or weak reactions for starch hydrolysis (Anon., 1993). Identification of the isolates was confirmed by PCR using primers Cms50F/Cms50R (Gudmestad *et al.*, 2009) that yield an amplicon size of 192 bp. This is the first report of potato bacterial ring rot caused by *Cms* in Egypt. To our knowledge, this is the first report of *Cms* in Africa.

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Figure 1

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