New Disease Reports

Occurrence of common bacterial blight on mungbean (*Vigna radiata*) in Iran caused by *Xanthomonas axonopodis* pv. *phaseoli*

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During the summer of 2011 and 2012, several mungbean (*Vigna radiata*) fields with suspected bacterial disease symptoms were observed in Southwest Iran (Khuzestan province: Shushtar, Dezfoul, Andimeshk, Mollasani and Gotvand Counties). High incidence of the disease was observed, with some fields in Shushtar and Gotvand (North Khuzestan) fully destroyed in 2011 and incidence up to 70% in 2012. Symptoms included irregular necrotic spots surrounded by a thin chlorotic and water-soaked halo that developed into leaf blight (Fig. 1). Symptom-bearing leaves were surface sterilised by dipping in 1% sodium hypochlorite for two minutes, lesion margins were macerated in distilled water and the resulting suspension was streaked onto nutrient agar (NA) and incubated at 27°C. Yellow, circular and raised bacterial colonies consistently appeared after 48 h (Fig. 2). Five representative bacterial strains (Xapk1-5) were selected and subjected to biochemical and molecular identification. All yellow pigmented isolates were Gram negative rods, appearing mucoid on yeast dextrose chalk agar and had oxidative but not fermentative metabolism; and all hydrolysed gelatin, starch, aesculin and casein, produced acid from arabinose and hydrogen sulphide from cysteine. They were also positive for catalase and lecithinase. All isolates were negative for the presence of pectinase, oxidase, arginine dihydrolase and nitrate reductase. *Xanthomonas axonopodis* pv. *phaseoli* (*Xap*)-specific PCR primers (X4c: 5'-GGCAACACCCGATCCCTAAACAGG-3' and X4e: 5'-CGCCGGAAGCACGATCCTCGAAG-3') were used to confirm the identity of the isolates (Audy *et al*., 1994). The Xap-19 isolate of *Xap* provided by the Department of Plant Pathology, Tarbiat Modares University was used as a positive control (Osdaghi *et al.,* 2009). As expected, a 700 bp fragment was amplified with the X4c/X4e primer pair (Fig. 3). Isolates were therefore identified as *Xap*.

Pathogenicity tests were carried out using 48 h old NA cultures of all the *Xap* isolates. The inoculum was prepared in sterile distilled water at a concentration of about $1x10^7$ cfu/ml. The fully expanded leaves of three 20-day-old mungbean plants were inoculated by spraying to the point of runoff. Plants were covered with transparent polythene bags for 24 h and incubated at 26°C for 10 days in a greenhouse. Small water-soaked spots developed 10-12 days after inoculation. The necrotic symptoms developed at the margins of the diseased leaves 20 days after inoculation confirming that all isolates were pathogenic. Bacteria were reisolated from symptomatic tissues as described above. While *Xap* was previously reported as the causal agent of common bacterial blight on *Phaseolus vulgaris* (Lak *et al.,* 2002), there are no previous reports of this pathogen on mungbean (*Vigna radiata*) in Iran.

References

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Figure 1

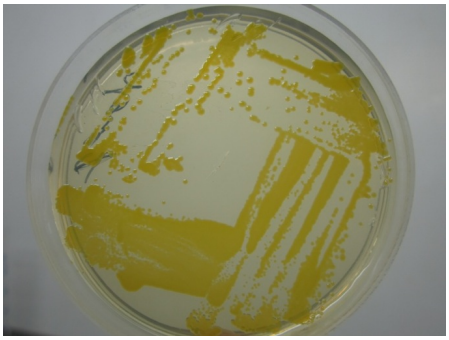

Figure 2

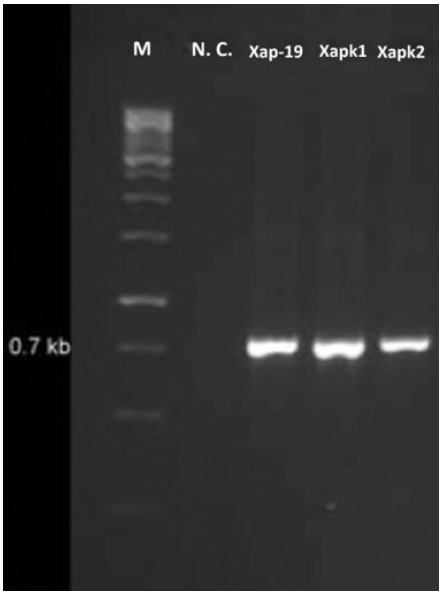

Figure 3

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