

Udomsak Lertsuchatavanich 2006: Detection, Identification and Control of *Xanthomonas smithii* subsp. *citri* in *Citrus spp.* in Thailand. Doctor of Philosophy (Tropical Agriculture), Major Field: Tropical Agriculture, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Niphone Thaveechai, Ph.D. 77 pages.
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Asiatic citrus canker (CC), caused by *Xanthomonas smithii* subsp. *citri* (Xsc) is a devastating disease of *Citrus spp.* in growing countries worldwide including Thailand. New semi-selective (XSC) medium was developed for effective recovery Xsc from citrus samples. The ingredients (per liter) consisted of Nutrient agar (NA) 23 g, potato starch 10 g, casein hydrolysate 2 g, dextrose 2 g, methyl green 15 µg/ml, methyl violet 2B 2.5 µg/ml, cycloheximide 50 µg/ml, cephalixin 25 µg/ml and D-methionine 3.0 µg/ml. Colonies diameter of 0.5-1.0 mm of Xsc appeared on XSC agar as fast as on NA within 2 days and 3 days from pure stock culture and fresh samples, respectively. Typical colonies of Xsc on XSC medium were round, convex, pale green color and surrounded by clear zone due to starch hydrolysis.

New specific primers, 354 primers were designed for PCR based technique detection. The sequences of the primers were as follows: 354F (5'-GACGGCGCGG CTCAGGATG-3') and 354R (5'-CAGCCCAGCCAACTCAGCACCCAG-3'). Twenty three strains of Xsc and 34 strains of other xanthomonads were used for specificity testing. The 354 primers gave specific amplify only with Xsc. The sensitivity detection of pure culture and total DNA were 70 cell/µl and 50 pg/µl. The 354-bp target fragment was sequenced and its nucleotide sequences were carried out to compare similarity with Genbank database by using BLAST program. The similarity results showed that 354-bp target product sequences were 99.7% similarity with Xac strain 306 (Accession AE011881).

Efficacy of Azole compound (Canoron[®]) compared with other chemicals to control Xsc was assayed in laboratory, greenhouse and orchard. Canoron[®] was not inhibit growth of Xsc by paper disc test in laboratory but in greenhouse, Canoron[®] sprayed at new flush of lime seedlings with Xsc suspension 0.1 OD at 600nm on wounded leaves by needle puncher showed that disease incident (%) was reduced 100% by Canoron[®] (FP) and 74% by Canoron[®] (WP). Thus, Canoron[®] was selected to test for control citrus canker in field experiments for two years from October through December 2004 and July through November 2005 on 5-year old lime trees (*Citrus aurantifolia* cv. Pan Rum Pi) in Phetchaburi Province. Experiment in rainy season (Oct. 7 – Nov. 17, 2004) Canoron[®] (FP) showed effective control of citrus canker by significantly reduced disease incidence (%) and AUDPC compared with water control but in the dry season Canoron[®] was not significantly different with other treatments and control.

Student's signature

Thesis Advisor's signature

