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Title: Studies on Diversity and Detection of *Xanthomonas campestris* pv. *campestris* Causing Black Rot of Crucifers

Publisher: IARI, Division of Plant Pathology

Type: Thesis

Abstract: Genetic and pathogenic variability of *Xanthomonas campestris* pv. *campestris* (Xcc) causing black rot of crucifers were studied. The diseased samples were collected from 11 different states of India viz., Delhi, Haryana, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Jammu and Kashmir, Jharkhand, Orissa, Karnataka, Meghalaya and Gujrat, belonging to different agro-climatic regions ranging from temperate to tropical conditions. Pathogenic variability of 24 isolates of *X. campestris* pv. *campestris* were tested on 27 cultivars of seven different Brassica spp. including *B. campestris*, *B. carinata*, *B. juncea*, *B. napus*, *B. nigra*, *B. oleracea* and *B. Rapa*, *Sinapsis alba*, *Eruca sativa* and *Raphanus sativus* under field conditions at IARI, New Delhi during November to March 2010-11. Maximum disease incidence 85.15% was found in the cultivars of crucifers caused by isolates Xcc-C124, Xcc-C6, Xcc-C125, Xcc-C111, Xcc-C131 after 15 days of inoculation and significantly increased in all the tested cultivars after 30 days of inoculation. Disease severity in cultivars of crucifers caused by *X. campestris* pv. *campestris* varied from 0-6.9 out of 9 scale after 15 days of inoculation. No disease incidence was recorded in all the cultivars of *B. juncea* (Pusa Bold, Varuna, Pusa Mustard- 21 and Pusa Vijay) against all the isolates *X. campestris* pv. *campestris*. Wide range of genetic diversity in *X. campestris* pv. *campestris* isolates was found. Amplification in each isolates *X. campestris* pv. *campestris* varied in both the methods of PCR as amplicon 7–11 in REP-PCR and 5 - 15 in BOX- PCR. In BOX- PCR, maximum 15 fragments of amplicons were found in five isolates of *X. campestris* pv. *campestris* viz., Xcc-C28, Xcc-C132, Xcc-C4, Xcc-C6 and Xcc-C130 isolated from cabbage (IIHR, Bangalore, Karnataka), cauliflower (UAS, GKVK, Bangalore, Karnataka), broccoli (IARI Farm, New Delhi), cabbage (IARI Farm, New Delhi), and cabbage (Ranchi, Jharkhand) respectively. In this study, genetic and pathogenic variability in Indian isolates of *X. campestris* pv. *campestris* were established, which will be helpful in the development of resistant genotypes against this bacterial pathogen.

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