

transcriptional activator, ToxJ, whose expression is regulated by quorum sensing. We present biochemical evidence to demonstrate that ToxR, an octanoyl-L-homoserine lactone receptor, binds to the upstream of *tofI* and *toxJ* promoter regions having *lux*-box like sequences. ToxR binds to the upstream of *toxA* and *toxF* promoter regions having palindromic sequences, T-N11-A, and ToxJ binds to the *toxA* and *toxF* promoter regions. Gel shift assay and DNase I footprinting analysis demonstrate that ToxR and ToxJ function synergistically to activate expression of both *tox* operons and that the transcriptional activators exert their effect by directly binding to the upstream of their promoter regions. Our biochemical evidences demonstrate that ToxJ and ToxR co-activate transcription of *toxABCDE* and *toxFGHI* operons in a synergistic manner.

**B-19 Bacterial Leaf Spot and Dry Rot of Lettuce Caused by *Xanthomonas campestris* pv. *Vitians*.** Seungdon Lee, Jeonghee Lee, Hyun-Kyung Kim, Sunggi Heu and Dong-Soo Ra. Plant Pathology Division, National Institute of Agricultural Science and Technology, Suwon 441-707, Korea

During 1997 and 1998, a new disease of lettuce (*Lactuca sativa*) was observed on greenhouse-grown plants in Kwangju, Kwangmyung and Hoesung. Lesions on leaves were irregular, small, pale green to black, water-soaked, and 2 to 5 mm in diameter. Coalescing lesions sometimes caused defoliation of older leaves. Isolations made from diseased leaves on yeast extract dextrose calcium carbonate agar yielded nearly pure cultures of a yellow pigmented bacterium typical of a xanthomonad. Four bacterial strains were purified and used for further tests. Pathogenicity of strains was confirmed on 5-week-old lettuce plants injected with bacterial suspensions containing  $10^8$  cfu/ml of sterile water. The representative *Xanthomonas* strains isolated from lettuce were compared with a reference strain *X. campestris* pv. *vitians* for fatty acid profiles, metabolic fingerprints and 16s rDNA sequences, showing that all outcomes were indistinguishable between the representative and reference strains. The bacterium grew well between 18 and 33 °C, but optimum temperature was 30 °C on LB broth. This is the first report of bacterial leaf spot of lettuce in Korea.

**B-20 Bacterial Leaf Spot of English Ivy Caused by *Xanthomonas hortorum* pv. *Hederæ*.** Seungdon Lee, Jina Jo, Jeonghee Lee, Kyungsook Han<sup>1</sup>, Sang-Tae Seo<sup>1</sup>, Hyun-Kyung Kim, Sunggi Heu and Dong-Soo Ra. Plant Pathology Division, National Institute of Agricultural Science and Technology, Suwon 441-707, Korea. <sup>1</sup>Horticultural Environment Division, National Horticultural Research Institute

English ivy (*Hedera helix*) in Araliaceae family is an evergreen climbing vine. A severe bacterial disease of English ivy was observed and investigated in January 2005. Initial symptoms on the leaves appeared as small water-soaked lesions on the lower surface. As the spots enlarged, the center became brown to brownish black and greenish-brown water-soaked, irregular margins surrounded the center. The spots developed into large irregular blotches, sometimes 5~10 mm in diameter, then coalesced. Finally, the water-soaked margins raised, dried out, became corky and broke in the center. A bacterial organism, isolated from the advancing margins of the lesions, was tested for its pathogenicity according to the Koch's postulates and biochemical and physiological tests identified the isolated bacterium as a *Xanthomonas*. The representative *Xanthomonas* strains isolated from English ivy were compared with a reference strain *X. hortorum* pv. *hederae* for fatty acid profiles, metabolic fingerprints and 16s rDNA sequences, showing that all outcomes were indistinguishable between the representative and reference strains. The bacterium grew well between 20 and 29 °C, but optimum temperature was 26 °C on LB broth. This is the first report of bacterial leaf spot of English ivy in Korea.

**B-21 Race distribution of bacterial leaf blight (*Xanthomonas oryzae* pv. *oryzae*) in Korea.** Hyungjoon Park, Min-Seon Choi, Joo-Hee Lee, Hyun-Kyung Kim, Seungdon Lee, Dongsoo Ra, and Sunggi Heu. Division of plant pathology, NIAST, RDA, Suwon Korea

Bacterial leaf blight of rice (*Oryza sativa* L.), caused by *Xanthomonas oryzae* pv. *oryzae*, is a serious disease of global importance. No effective and economical chemical control methods are available. The major means of management is through the use of resistant cultivars. Isolates collected from various localities in Korea were examined for their virulence to five differentials of rice. Race distribution was different dramatically depends on the year and place which they were collected. Before year 2000, the Korean race K1 was dominant in all areas of Korea but after that, Korean race K3 were collected more and it covered more than 50% of collected isolates in Korea. The dominant race K1 was found in almost all areas, while race K3 was distributed somewhat differently among the localities. Most K3 isolates in year 2003 were collected in Cholla province. Epidemics of bacterial leaf blight of rice had been occurred all the times at several areas in Cholla province such as Haenam, Changheung, and Changsung. However, in year 2004, Eusung and Sangju in Kyungsang province showed good epidemics of bacterial leaf blight. Most isolates collected in Kyungsang province were belong to K1 race and K3 race. More isolates belong to K3 race were found in Kyungsang province than Kyungki or Chungchung province.