invading DNA, such as bacteriophage and plasmid DNA. We confirmed the presence of Type I R-M related genes of Xoo strains and analyzed the relationship between R-M systems and transformation efficiency.

B-17 Effect of Ca^{+2} Concentration in Nutrient Solution on Development of Bacterial Wilt and Population of *Ralstonia solanacearum* in Xylem of Tomato Seedlings. Inn-Shik Myung, Young-Ki Lee, Ki-Woong Nam, Jong Hyeong Lee, and Jong Min Baek. Plant Pathology Division, National Institute of Agricultural Science and Technology (NIAST), Rural Development Administration (RDA) Suwon 441-707, Korea

The effect of Ca^{+2} concentration in the nutrient solution on the development of bacterial wilt and the population of bacterial pathogen, *Ralstonia solanacearum* in tomato seedlings was examined. Tomato seedlings were cultured in a nutrient solution containing Ca^{+2} at concentration of 2, 5, 10, 15, and 20 mM, and inoculated with the pathogen by clipping method. The disease incidence and disease index were recorded for a period of 9 day. The population of the pathogen in stem of the plant was counted by plating on a medium at 4, 6, and 9 day after inoculation. That xylem vessels were clogged by the pathogen in the Ca^{+2}-treated seedlings was observed by using scanning electron microscopy (SEM) at 6 and 9 day after inoculation. When the plants were cultured in the nutrient solutions containing at above 10 mM, those were resistant to bacterial wilt. The population of the pathogen in the stem and percent of clog in xylem decreased with increasing concentration of Ca^{+2} in the solution. However, even in the presence of Ca^{+2} at a high concentration, infection with the pathogen was observed in the xylem of the plant.

B-18 ToxJ and LysR-type regulator ToxR co-activate *Burkholderia glumae tox* operons encoding toxoflavine biosynthesis and transporter in a synergistic manner. Jinwoo Kim[1], Yongsung Kang[1], Jae-Eun Jeong[1], Yunjung Kim[1], Tomohisa Nagamatsu[2], and Ingyu Hwang[1]. [1]School of Agricultural Biotechnology, Seoul National University, Seoul 151-921, Korea; [2]Faculty of Pharmaceutical Sciences, Okayama University, Tsushima, Okayama 700-8530, Japan.

Burkholderia glumae produces toxoflavin, which is a key pathogenicity factor in rice grain rot and wilt in many field crops. We have previously presented that ToxR, a LysR-type regulator, regulates both *tox* operons (*toxABCDE* and *toxFGHI*) in the presence of toxoflavin as a coinducer. In addition, expression of the operons requires a