P-8. Characterizing the Key Factors in Potential Suppressive Anaerobic Digester Effluent on Bacterial Wilt Disease (*Ralstonia solanacearum*)

Mengjia FENG, Shuhei TAKIZAWA, Yasuhiro FUKUDA and Chika TADA

Graduate School of Agricultural Science, Tohoku University

Anaerobic digestion is a promising method for treating organic wastes, but it results in the discharge of huge amounts of effluent. Anaerobic digester effluent was reported to have the potential to suppress plant disease. However, the mechanisms of suppressive effects on plant pathogens are not yet well understood. In our study, the suppressive effect of anaerobic digester effluent on the typical soil-born plant disease, bacterial wilt (*Ralstonia solanacearum*), were investigated by screening the antagonistic bacteria from six types of anaerobic digester effluent. From the results, antagonistic bacteria were isolated from anaerobic digester effluent of vegetables, dairy manure, sludge and cattle manure, while no antagonist was detected from anaerobic digester effluent from mixed organic wastes. All of the isolated antagonists from anaerobic digester effluent were identified as *Bacillus* spp. and showed strong antagonistic activity against *R. solanacearum* in vitro. Higher Mg2+ concentrations positively affected the antagonistic activity of antagonist from the effluent. Furthermore, anaerobic digester effluent of cattle manure was applied in a pot experiment and showed a reduction trend on the disease incidence of plants. These results indicated the possibility that antagonistic bacteria contained in digested effluent of cattle manure may have been effective in inhibiting bacterial wilt. Anaerobic digester effluent with higher Mg2+ content may have a higher disease-suppressive effect by increasing the antagonistic activity of antagonists present within it. Thus, our study characterized the dominant disease-inhibiting factor in anaerobic digester effluent and provided new information for the effective use of such effluent as a bio-control agent.