

**6. Plant Disease Management in Hydroponic Culture System.** Ki-Woong Nam,  
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Hydroponic culture has been developed to control of soil-borne diseases, to increase yield and to enhance the quality of vegetables. The cultivation areas have been gradually increased and nowadays it reaches 648.8 ha in Korea. However, using hydroponic culture may cause epidemics by soil-borne pathogens and result in considerable losses of the yield. In contrast to the soil cultivation, antagonistic microbes are rarely found in hydroponic culture system, but the disease developed rapidly when a pathogen once introduced.

Disease incidences were surveyed in 98 plastic houses cultivating with hydroponic culture system in Korea. Tomato plants (25 %) were diseased by the pathogen causing bacterial wilt. Also, fusarium wilt, phytophthora root rot and stem pith necrosis (*Pseudomonas. corugata*) were observed in tomato. Bacterial wilt and phytophthora root rot in paprika as well as phytophthora root rot and fusarium wilt in cucumber plants were detected. Green vegetables were severely diseased by *Phytophthora* and *Pythium* in high temperature. Soft rot was also recorded in some plastic houses.

The pathogens may be introduced in the plastic house through the contaminated soil surrounding the house and/or through the infected young seedlings growing nursery soil. The pathogens existing in the house may cause the epidemic by bacterial wilt, especially in rainy season. The pathogens could be detected in infected plants materials, hydroponic tanks, culture solutions and solid media of the severely infected plastic houses. The density of pathogen population was coincided with the severity of disease incidence, for example, 1,900 cfu/ml of pathogens were counted from tomato plants sampled in the 20 % diseased houses.

Treatment with 1-0.5 % NaClO solution to perlite for 1-3 days could decrease the disease severities by soil-borne pathogens. Furthermore, the diseases could be controlled by an application with Validamycin-A or 3-indolepropionic acid (IPA) in growing season.