

5. Ecological Studies on Fusarium Diseases Occurring on Fruit-Vegetables in Greenhouses. Sung-Seok Yang and Choong-Hoe Kim. Plant Pathology Division, National Institute of Agricultural Science and Technology, Suwon 441-707 Korea

Incidences of fusarium disease on tomato and cucurbit plants were surveyed and its etiology was investigated. Environmental factors associated with incidence of fusarium wilt were also studied.

Epidemics by fusarium wilt of tomato caused by *Fusarium oxysporum* f.sp. *radici-lycopersici* (race J3) were recorded in low temperature period (January to April) in greenhouses, whereas cucurbit plants were severely infected with fusarium wilt in high temperature (May to September). Symptoms of both diseases appeared similar, with necrosis and rot of roots. Epidemics of fusarium wilt was easily developed in the areas with 2 or 3 years of continuous cultivation. The disease was severe in sandy and sandy loam soil, containing high salt concentration and excessive immature composts. Microbial populations including *Fusarium oxysporum*, bacteria and filamentous fungi were higher in the diseased field than in the healthy field, while density of actinomycetes was lower in the diseased field. Severity of fusarium diseases in young plants (1 to 2 leaf stage) were depended much on pathogen density, whereas that of aged plants (5 to 6 leaf stage) were influenced mainly by amount of the applied immature composts. Roots were greater severely rotten in the soil applied with more immature composts and with higher salt concentration. Severity of fusarium disease was higher in loamy sand where the soil moisture fluctuates easily. In the salt-accumulated soil *Fusarium oxysporum* f.sp. *cucumerinum* became virulent to other cucurbit crops other than cucumber plants.

Microbial population of *Fusarium oxysporum*, bacteria and filamentous fungi was higher in the soil applied with immature compost compared to that applied mature compost. Whereas, population of actinomycetes was lower in the soil applied with immature composts. Soil with mature composts contains more microbes suppressing growth of *Fusarium oxysporum* compared that of immature composts.

These results suggest that fusarium pathogen attacks more easily necrosed and damaged roots. The increase of pathogen population resulting from monocropping, excessive application of immature composts, salt accumulation in the soil, and lower soil moisture condition could make the plants more vulnerable to fusarium disease.