D-38 Isolation of an antagonistic bacterium active against *Fulvia fulva* causing leaf mold on tomato. Ok Ju Chun, Han Woo Kim, Kwang Youll Lee, Ki Hyuck Choi, Hyun Young Jang, Seon Woo Lee and Byung Ju Moon. Dong-A University, 840 Hadan2-dong, Saha-gu, Busan, Korea

Tomato leaf mold caused by *Fulvia fulva* is the most common and destructive disease in greenhouse-grown tomatoes, and is particularly severe under conditions of high humidity. For the period of Feburary 2005, incidence of tomato leaf mold was up to 28.8% at the four plastic greenhouses in Taejeo, Pusan. A total of 16 isolates of *Fulvia fulva* were obtained from diseased leaves of tomatoes. Among them, the *F.fulva* TF13 strain was the most virulent on the whole tomato plant. Thus, the strain TF13 was used as fungal inoculum to select potent biological control bacteria from healthy soils cultivated with crisphead lettuce. Nine bacterial isolates showed strong antifungal activity against *F.fulva* TF13 in confrontation culture on PDA media. In a pot test to confirm the biological control activity, A-2 strain exhibited the remarkable disease control value against the tomato leaf mold disease. The strain was, therefore, selected as a biocontrol candidate against leaf mold and its 16S rDNA sequence was analyzed. The A-2 strain was highly related to *Bacillus subtilis* and *B. amyloliquefaciens*. Further precise identification was performed by analyzing the *gyrA* gene sequence of the strain A-2. The *gyrA* sequence of the strain A-2 had 96% identify to that of *B. amyloliquefaciens*. Consequently, the isolate was identified as *B. amyloliquefaciens* A-2.

D-39 Suppressive effects of culture filtrates of ectomycorrhizal fungi on *Fusarium oxysporum* .Nam-Kyu, Kim, Keum-Cul Shin, IL-Won, Seo, and Jong Kyu Lee Tree Pathology and Mycology Laboratory, Division of Forest Resources, Kangwon National University, Chunchon, 200-701, Korea

Root disease suppression by ectomycorrhizal(ECM) fungi, *Pisolithus tinctorius, Rhizopogon rubescens, Hebeloma cylindrosporum, Suillus bovinus*, was investigated by *in vitro* examination and *in vivo* co-inoculation of both ECM fungi and root pathogenic fungus, *Fusarium oxysporum*, to the mycorrhizal-free *Pinus densiflora* seedlings. Mycelial growth and sporulation of *F. oxysporum* were inhibited from 9.3 to 18.6%, and from 20.1 to 58.9%, respectively, on potato dextrose arar containing culture filtrates of ECM fungi as compared with mycelial growth and sporulation on the control medium. Spore germination was also strongly inhibited by culture filtrates of *R. rubescens* for 90 days upto 81.8%. Inoculation of *P. densiflora* seedlings with ECM fungi before and

simultaneous inoculation of root pathogen resulted in resistance to infection by root pathogenic fungus *F. oxysporum* as compared with control seedlings. The survival rate of the seedlings inoculated with *F. oxysporum*, and subsequently with ECM fungi was averaged by 52%, but pre- or simultaneous inoculation of ECM fungi completely protected *P. densiflora* seedlings against root infection by *F. oxysporum*. Disease suppression by ECM fungi in *P. densiflora* is, therefore, associated with an increase of fungitoxic or fungistatic metabolites excreted by symbiotic ECM fungi to the rhizosphere of seedlings.

D-40 Selection of effective nutrient sources for mass culture of the biocontrol bacteria *Bacillus amyloliquefaciens* A-2. Han Woo Kim, Ok Ju Chun, Kwang Youll Lee, Hyun Ki Kong, Soon Je Jung, Seon Woo Lee and Byung Ju Moon. Dong-A University, 840 Hadan2-dong, Saha-gu, Busan, Korea

Bacillus amyloliquefaciens A-2 strain exhibited the remarkable disease control value against the tomato leaf mold disease caused by *Fulvia fulva*. The optimal temperature of the bacterial growth was 30~35℃ when cultured in nutrient broth. For the mass production of the biocontrol bacteria A-2, various carbon sources were amended and tested in a basal medium. It appeared that supplement of rice oil in a fermentation medium produced the highest cell density. Therefore, basal medium with 3% of rice oil (named as rice oil medium) was finally selected as a optimal medium for the mass production of biocontrol strain *B. amyloliquefaciens* A-2.

D-41 Screening and Characterization of Plant Growth Promoting *Pseudomonas* spp. for Biological Control of Damping off of Pepper caused by *R. solani*. M. Rajkumar[1], H. M. Kim[1], K. J. Lee[1], W. H. Lee[1], J. H. Kim[2] and B. T. Oh[3]. [1]Division of Biological Resources Science, Chonbuk National University, Jeonju 561-756, Korea [2]Jeollabuk-do Agricultural Research and Extension Services, Iksan 570-704, Korea [3]Department of Environmental System Engineering, Hallym University, Chuncheon 200-702, Korea

Fluorescent pseudomonads isolated from the rhizosphere of red pepper were screened for their ability to control the damping off of pepper caused by *R. solani*. Among a collection of pseudomonads, 13 isolates showed an inhibition of mycelial growth of *R. solani* in *in vitro* duel culture assay and some isolates increasing the growth of pepper in roll towel assay. Further, these 13 isolates were screened for the