fields. Based on the company recommendation, those fungicides were applied by a sprayer at the recommended rates on a weekly application schedule. Effect of ten fungicides on foliar blight was based on area under disease progress curve (AUDPC). Across all fungicides was reduced by 77% in AUDPC and dimethomorph was reduced by 92% in AUDPC during the same period, respectively. Those fungicide were inhibited the mycelial growth of isolate with different rate in chemical amended medium and several fungicides were completely limited the growth of isolate.

2-08. Gene Expression Analysis in Cucumber Leaves Primed by Root Colonization of *Pseudomonas chlororaphis* O6 upon Challenge-inoculation with *Corynespora cassiicola*.

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Colonization of *Pseudomonas chlororaphis* O6, a nonpathogenic rhizobacterium, on the roots induced systemic resistance in cucumber plants against target leaf spot, a foliar disease caused by *Corynespora cassiicola*. A cDNA library was constructed using mRNA extracted from the cucumber leaves 12 h after inoculation with *C. cassiicola*, which roots had been previously treated with O6. To identify the genes involved in the O6-mediated induced systemic resistance (ISR), we employed a subtractive hybridization method using mRNAs extracted from *C. cassiicola*-inoculated cucumber leaves with and without previous O6 treatment on the plant roots. Differential screening of the cDNA library led to the isolation of 5 distinct genesencoding a GTP-binding protein, a putative senescence-associated protein, a galactinol synthase, a hypersensitive-induced reaction protein, and a putative aquaporin. Expressions of these genes are not induced by O6 colonization alone. Before challenge inoculation, no increase in the gene transcriptions could be detected in previously O6-treated and untreated plants but, upon subsequent inoculation with the pathogenic fungus, transcription levels in O6-treated plants rose significantly faster and stronger than in untreated plants. Therefore, the O6-mediated ISR may be associated with an enhanced capacity for the rapid and effective activation of cellular defense responses which becomes apparent only after challenge inoculation on the distal, untreated plant parts, as suggested by Conrath et al. (2002). This work was supported by a grant R11-2001-092-02006-0 from the Korea Science and Engineering Foundation through the Agricultural Plant Stress Research Center at Chonnam National University

2-09. Selective colonization and removal of senescent flowers of zucchini squash by *Trichoderma harzianum* YC459, a biocontrol agent for gray mold, *Botrytis cinerea*.

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In commercial greenhouses, senescent flower petals or flowers of vegetables such as tomato, strawberry, hot pepper and zucchini squash were blighted to be removed from fruits within five days after spraying of *Trichoderma harzianum* YC459 (TORY), a biocontrol agent for the gray mold rot of vegetables caused by *B. cinerea*. The mechanism for selective colonization of senescent floral tissues by *T. harzianum*

YC459 was elucidated using fresh and senescent (4days and 14days after flowering, respectively) floral tissues of zucchini squash (*Cucurbita moschata* Duchesne). The spores of *T. harzianum* YC459 were produced more on agar and liquid culture media supplemented with 5% dry powder of senescent floral tissues than fresh tissues during 15days. Mycelial growth was also much better in the media with senescent tissues than with fresh tissues. Enzyme activities of amylase, polygalacturonase and cellulase in the liquid media which might be involved in the colonization of tissues by *T. harzianum* YC459 were compared. The activities of three enzymes were much higher in the media with senescent floral tissues than with fresh floral tissues reaching to the maximum during 9 to 12days of incubation. Based on the results, the removal of senescent floral tissues, a possible inoculum source of the pathogen, may be another mechanism for biocontrol of gray mold rot of vegetables by *T. harzianum* YC459.

2-10. Effects of Seed-treatment Fungicides on Bakanae Disease of Rice

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Bakanae disease, caused by *Gibberella fujikuroi* (anamorph : *Fusarium moniliforme* J. Sheldon), a typical seed-borne disease of rice occurs from nursery to paddy fields. Consequently, chemical seed disinfectants is the most efficient control method. Several seed treatment methods with various fungicides were attempted to inhibit disease. Spray and 24 hrs immersion of seeds using prochloraz emulsion reduced disease infection and the control value were 99.3 and 100%, respectively. In contrast, dressing to wet seeds thiophanate-methyl+thiram wp and benomyl+thiram wp reduced disease infection more effectively than 24 hrs immersion of seeds. However, dressing of carpropamid+imidacloprid+fludioxonil wp to wet seeds did not reduced disease as well as wettable liquid of fludioxonil. The results suggest that the bakanae disease might be disinfected effectively by 24 hrs immersion of seeds in prochloraz emulsion and seed dressing of fungicides.

2-11. Comparisons of inorganic amounts in paddy fields, rice straw and seed with varying severity of brown spot caused by *Cochliobolus miyabeanus*

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In order to elucidate influence of nutritional status on rice brown spot caused by *Cochliobolus miyabeanus*, rice cultivation soils and rice straws were collected from paddy fields where rice brown spot occurred severely, moderately, a little and none respectively. Rice plant materials were analyzed to measure inorganic nutrients in rice straws and rice seeds. Analysis of chemical properties of rice paddy soil showed that EC and contents of available phosphate, cation and silicic acid in soil with severe infections were lower than those in healthy soil. This result