진균 병학 (병원성)

FP-01 Virulence to Pumpkin Cultivars of Isolates of *Phytophthora capsici* from Pumpkin and Pepper. Byung Kook Lee[1], Boem Seok Kim[2], Seog Won Chang[1], and Byung Kook Hwang[1]. [1]Korea University, Anam Dong 5 ga 1, Seoul, Korea 136-701. [2]Institute for Structural Biology & Drug Discovery, Virginia Commonwealth University, Virginia Biotechnology Research Park 800 East Leigh Street, Suite 212, PO Box 980133 Richmond, Virginia 23298-0133.

Virulence of nine isolates of *Phytophthora capsici* from pumpkin and pepper of diverse geographic origins, including Korea, France, Italy and U.S.A., was evaluated on nine Korean and Japanese pumpkin cultivars under controlled environmental conditoins. The responses of tested nine pumpkin cultivars to *P. capsici* were quantitative rather than qualitative. No hypersensitive reactions were observed in any of the pumpkin cultivars inoculated with *P. capsici.* Significant differences were observed among cultivar x isolate interactions in the analysis of variance. As inoculum density of *P. capsici* increased, symptom development increased. The Korean cultivar Danmatmaetdol was highly resistant to the *P. capsici* isolates tested, suggesting a possible existence of resistance sources in pumpkin. Significant differences between the isolates of *P. capsici* tested were shown in virulence to the Korean and Japanese pumpkin cultivars, irrespective of host or country of origin. The pumpkin isolates such as P98130, P98131, and P98132 were more virulent than the pepper isolates to all the pumpkin cultivars tested. Soil-drench and stem-wound inoculation methods were more reliable than the foliar-inoculation method for evaluating cultivar resistance of pumpkin.

FP-02 Ultrastructure of Compatible and Incompatible Interactions of Pumpkin Stems Infected with *Phytophthora capsici.* Byung Kook Lee, Jeum Kyu Hong, and Byung Kook Hwang. Korea University, Anam Dong 5 ga 1, Seoul, Korea 136-701.

Early infection process of *Phytophthora capsici* was similar in the compatible and incompatible interactions at 24 h after inoculation on pumpkin (*Cucurbita maxima*) stems. Intercellularly growing hyphae penetrated host parenchyma cells by forming haustoria. An extrahaustorial matrix was found around the haustoria in either compatible or incompatible interactions. However, little wall apposition occurred at the infection sites in the parenchyma cells. In the compatible interaction, infecting hyphae grew well in the intercellular spaces between xylem vessels of stem tissues. Degraded host cell wall, plasmolysis of plasma membrane, and degenerated chloroplasts were pathological features of pumpkin stem tissues in both compatible and incompatible interactions. A characteristic host response in the resistant cultivar Danmatmaetdol was rapid cytoplasmic movement of host cells toward the oomycete haustoria.

FP-03 Occurrence and Characteristics of Strawberry Anthracnose. Seung-Han Kim, Seong-Yong Choi, Yang-Sook Leem, Jae-Tak Yoon. Kyongbuk Agricultural Technology Administration

Occurrence of Strawberry Anthracnose was surveyed in Kyungju, Goryung and Chungdo area in kyongbuk province for 4 years from 1997 to 2000. Strawberry plants were severly damaged by *Colletotrichum sp.* from Sep. to Oct. since then reduced. Ryu-Hong cultivar was sensitive but Su-Hong cultivar was resistant to anthracnose. Diseased rate according to nursing place of strawberry showed that nursery plants (Ryu-Hong cultivar.) were nursed in out-door, the infection rate of anthracnose was 100% but nursed in plastic house, it was only 1% of plants. To search penetration site by *Colletotrichum sp.*, 189 plants were collected from Kyungju, Goryung, Chungdo and Daegu area and cut them vertically under naked eyes. Eight-two plants(43.3%) were infected through runner, sixty plants(31.7%) were infected through wound by petiole removing and forty-eight plants(24.9%) was infected through root. Anthracnose symptoms were expressed well at 25℃ when leaves inoculated by mycelial disk of *Colletotrichum sp.* were incubated at 15, 20, 25 and 30℃ for 7 days. When runner, Petiole and leaf were inoculated by mycelal disk of *Colletotrichum sp.*, symptoms were expressed well in runner. Pre-planting inoculation of spore suspension to sterilized soil, 16.7% of strawberry plants was died but post-planting irrigation of spore suspension to commercial nursery soil, 83.3% of plants were died.

FP-05 Effect of Sod Culture on Fruit Rot of Peach Caused by *Phytophthora* species. San-Yeong Kim, Tae-Young Kwon, Im-Soo Kim, Hyeong-Jin Jee[1]. Cheongdo Peach Experiment Station, Kyongbuk Province ATA, Cheongdo 714-850, Korea. [1]National Institute of Agricultural Science and Technology RDA, Suwon 441-707, Korea.

This study was performed to verify the control effect of phytophthora fruit rot by sod culture in peach orchard. We examined the infection rate according to the method of surface covers. Sod culture using white clover and kentucky blue grass showed more than 95% control value, and black polypropylene mulch showed the control value of 80% or so. Most of farm household in Kyungbuk province manage field by clean culture. The infection rate of phytophthora fruit rot is as follows, 18.9% in clean culture, 11.9% in partial side culture, 4.4% in straw mulch, and 1.7% in sod culture. The infection rate of dropped fruits is as follows, 88.7% in clean culture, 60% in polypropylene mulch, 56.9% in straw mulch, 44.2% in sod culture.

FP-06 Molecular characterization of cDNAs encoding a blue light inducible protein-3 (MgBli-3) in *Magnapothe grisea.* Namsook Ahn, Soonok Kim and Yong-Hwan Lee[1] [1]School of Agricultural Biotechnology and RCNBMA, Seoul National University, Suwon, 441-744, Korea

Conidiation is one of the most important pathogenicity factors in plant pathogenic fungi including *Magnaporthe grisea.* Blue light inducible gene (*Bli-3*) of *Neurospora crassa* was identified to be related to conidiation. *Bli-3* homologue of *M. grisea* 70-15 (*MgBli-3*) was isolated from the cDNA library constructed from rice leaves (cv. Nipponbare) inoculated with *M. grisea* 70-15. MgBli-3 exhibited about 69% homologous amino acids to Bli-3 of *N. crassa. MgBli-3* contains an open reading frame of 627 nucleotides which encode 208 amino aicd residues. The estimated molecular weight was 22.8 kDa, with pI of 6.4. Southern blot analysis of genomic DNA revealed that the *MgBli-3* exists as a single copy in the haploid genome of *M. grisea. MgBli-3* mRNA was highly accumulated *in planta* during the pathogenesis. However it was not expressed in the complete medium, whereas its expression was upregulated in carbon or nitrogen starved conditions. To evaluate the role of *MgBli-3* in fungal pathogenicity and morphogenesis at molecular level, the gene knock-out strategy is being employed by insertional mutagenesis.

FP-07 Seed-borne fungi of Gramineae crops in Korea. Ik-Hwa Hyun, Byong-Chul Hwang, Noh-Youl Heo, and Yong-Hwan Lee[1]. Pathogen Research Division, National Plant Quarantine Service, Anyang 430-016, Korea. [1]School of Applied Biology and Chemistry and RCNBMA, Seoul National University, Suwon 441-744, Korea

Seeds of Graminea crops collected from 1998 to 2000 in Korea were investigated for their association with seed-borne fungi. Twenty-eight seed samples of rice, 20 samples of maize, 18 samples of barley, wheat and sorghum were studied to detect seed-borne fungi. *Bipolaris oryzae, Curvularia lunata* and *Pyricularia grisea,* and *Fusarium moniliforme* and *Fusarium proliferatum* were frequently detected on rice and maize seeds, respectively. In the case of barly seeds, *Fusarium graminearum* and *Curvularia lunata* were frequently detected. *Bipolaris sorokiniana* and *Fusarium graminearum,* and *Fusarium moniliforme* and *Olphitrichum* sp. were most common fungi on wheat and sorghum seeds, respectively. Among the 31 species of fungi detected from seeds of Gramineae crops, *Fusarium proliferatum, Nakataea sigmoidea, Tricothecium roseum, Pestalotiopsis guepini* were first reported as seed-borne fungi in Korea.

FP-08 Characterization of Mummy Disease of Button Mushroom, *Agaricus bisporus*, Occurred in Boryung, Chungnam. Jae-Eun Chung[1], Se-Hee Cho[1], Woo-Jae Kim[1], Jae-Chun Lee[1], Hyouk-Inn Lee[2] Jae-Soon Cha[1]. [1]Dept. of Agricultural Biology, Chungbuk National University, Cheongju 369-763 Korea. [2]National Plant Quarantine Service, Seoul office, Seoul 158-055, Korea.

Severe mummy disease was occurred in button mushroom cultivation houses in Boryung, Chungnam. According to mushroom growers, Mummy disease has been observed for long time even if it has not been reported officially in Korea. The mushroom growers of the region believe that it is the most devastating disease on button mushroom now. In the diseased cultivation bed, typical symptoms of mummy disease were observed: tilted caps of mushrooms, browning and lignified internal tissue of stripe, rapid expansion of infected area, and mummified mushrooms. Electron micrographs prepared from internal tissue of stripe of the diseased mushroom showed that many bacterial cells present inside hyphal cells of the diseased mushroom. Observation of bacteria inside hyphal cells of diseased mushroom was one of the characteristics of mummy disease showed by previous study. *Pseudomonas marginalis* and *Pseudomonas agarici* were isolated mostly from diseased mushrooms; eight and seven isolates of total 22 isolates were *P. marginalis* and *P. agarici* respectively. Although mummy disease of button mushroom was first reported in 1935, the casual agent of the disease had not been known until recently because reproduction of the disease by inoculation of an isolated bacterium was extremely difficult. Two groups reported *P. aeruginosa* and *P. fluorescens* as pathogens of mummy disease in 1989 and 1991 respectively. All of the results of this study indicate that mummy disease occurred in Boryung, Chungnam is the typical mummy disease described in abroad, however, casual agents of the disease are not clear yet.

FP-09 Powdery Scab of Potato caused by *Spongospora subterranea* in Korea Jeom Soon Kim, Kyoung Yul Ryu, and Young Il Hahm. Crop Division, National Alpine Agricultural Experiment Station, Pyungchang, Korea. 232-955.

Scabbed tubers were discovered in several potato fields in Deakwallryung area during the 1999-2000 season. The symptoms were similar to those of common scab. The lesions were shallow and scabby with torn and raised skin around the periphery of tubers. However, the scab lesions expanded and formed hollowed out areas or very large warts in wet soil. Resting spores and plasmodium were observed in the lesions under light microscope. Single resting spore was round shape and the size was 3.5～4.5㎛ in diameter, ovoid shape plasmodium was 1.0～1.5 ×0.9～1.4㎛, respectively. With single artificial inoculation test using infected soil, typical powdery scab symptoms were formed on potato tubers and the galls were abundantly developed on root hairs. Powdery scab of potato caused by *Spongospora subterranea* is the first report in Korea.

FP-10 Effect of Characteristics, Temperature on Sporidia Formation and longevity rate in storage of Different temperature of *Puccinia horiania* on Chrysanthemum. Jae Dok Choi[1], Han Mo Koo[1], Dong Gi Shin[2], and Dong Hee Lee[2]. Department of Plant Resources, College of Industrial Science, Kongju National University[1]. Chung-nam Korea, 340-800. Yesan Chrysanthemum Experiment Station[2]. Chung-nam Korea. 340-800.

Effect of characteristics, optimum temperature on sporidia formation and longevity rate of different temperature in storage were investigated in the laboratory and greenhouse. Teliospores were oblong, single-septated, yellow and $7.8 \sim 19.76 \times 28.9 \sim 63.5\ \mu$m in size and singly-borne on promycelia from germinated teliospores. Maximum germination of the teliospores were developed at 5~25℃ within 48hr in the distilled water. Sporidia were developed at 5~35℃ after incubation. Optimum temperature for sporidia formation was at 20℃. In the growthchamber, lesion development on chrysanthemum plants was first observed 10 days after inoculation, and progressed rapidly from about 19days after inoculation. At the first, the spots exhibited under side and the corresponding spots appeared upper side of chrysanthemum leaf on later.
Influence of different temperature according to storage period were investigated on the germination rate. The longevity rate were maintained at -10℃ after inoculation 70 days.

FP-11 Unrecorded *Alternaria* diseases of flowering plants in Korea(I). Hye Sun Cho[1], Byung Ryun Kim[1], Hyang Burm Lee[2] and Seung Hun Yu[1]. [1]Chungnam National University, 220 Gung Dong, Yuseong Gu, Taejon, Korea 305-764. [2]Korea Research institute of Bioscience and Biotechnology, Taejon, Korea 305-600

In the course of our studies on the fungus genus *Alternaria* occurring in Korea, we encountered several *Alternaria* diseases of flowering plants previously unreported from Korea. This is the first of the series of the *Alternaria* diseases of flowering plants observed newly in Korea. It contains descriptions on symptoms, morphology and pathogenicity of the pathogens for each of the following 8 *Alternaria* diseases; leaf spot of *Rudbeckia hirta* by *A. helianthi* and *A. protenta*, leaf spot and blight of *Dianthus chinensis* and *D. superbus* var. *longicalycinus* by *A. dianthi*, leaf spot and flower bud rot of *D. superbus* var. *longicalycinus* by *A. dianthicola*, leaf blight of *Belamcanda chinensis* by *A. iridicola*, leaf blight of *Gladiolus gandavensis* by *A. iridicola*, and leaf spot and blight of *Senecio flammeus* by *A. cinerariae*.

FP-12 Unrecorded *Stemphylium* diseases of economic plants in Korea(I). Hye Sun Cho and Seung Hun Yu[1] [1]Chungnam National University, 220 Gung Dong, Yuseong Gu, Taejon, Korea 305-764

During the course of our work on the fungus genus *Stemphylium* occurring in Korea, we encountered several unrecognized *Stemphylium* diseases of economic plants from Korea. This is the first of the series of the *Stemphylium* diseases of economic plants observed newly in Korea. It contains descriptions on symptoms, morphology and pathogenicity of the pathogens for each of the following 6 *Stemphylium* diseases; leaf spot of *Medicago sativa* by *S. globuliferum*, leaf spot of *Trifolium pratense* and *T. repens* by *S. sarciniforme*, leaf spot of *Cirsium japonicum* var. *ussuriense* by *S. lycopersici*, leaf spot of *Solanum melongena* by *S. lycopersici*, leaf spot of *Allium victorialis* by *S. vesicarium*, and leaf blight of *A. tuberosum* by *S. vesicarium*.

FP-13 Some new host records of *Alternaria panax* from Korea. Hye Sun Cho and Seung Hun Yu[1] [1]Chungnam National University, 220 Gung Dong, Yuseong Gu, Taejon, Korea 305-764

Twenty five isolates of *Alternaria* sp. caused leaf spot and blight were collected from eight species of Araliaceae plants from 1997 to 2000 at different locations in Korea. All the isolates were identified as *A. panax* based on morphological characteristics. Pathogenicity was confirmed by culturing the isolates on V-8 juice agar under a 12h light/12h dark cycle, obtaining spore concentrations of 30,000 conidia per mℓ, and spraying suspensions onto detached leaves of the plants. After 2 to 4 days, leaf spots similar to the original symptoms were developed. Among eight species of host plant, six are new records not previously reported in literature. They are as follows; *Acanthopanax koreanum*, *A. senticosus*, *A. sessiliflorus*, *Aralia elata*, *Echinopanax horridum*, and *Kalopanax pictus*.

FP-14 Brown Spot of Graft-cactus Caused by *Alternaria* Species.
Jung Ho Kim[1], Young Ho Kim[1] and Myoung-Il Jeoung[2]. [1]School of Agricultural Biotechnology, Seoul National University, Suwan, Korea 441-744. [2]Floriculture Division II, National Horticultral Research institute, Rural Development Administration, Suwon, Korea 441-744.

In 1999 and 2000, cactus stem diseases were surveyed in the areas Suwon, Anseong, Eumseong, Cheonan, Daegu, and Goyang. from which *Alternaria* spp. were found mostly in rots, blights, and spots. Typically, the fungi were more freqently isolated from brown spots of graft-cactus scions such *Chaemaecereus silvestrii* and *Gymnocalycium mihanovichii* than other fungi including *Fusarium oxysporum* and *Bipolaris cactivora*. The fungal isolates were identified either *Altermaria alternata* or possibly *Alternaria tenuissima* based on their morphological and cultural characteristics. Wound inoculation of the fungal spores on *G. mihanovichii* formed typical brown spot symptoms identical to the original symptoms in greenhouse within 2 to 3 days after inoculation. The fungi showed a weak pathogenicity to stock species of graft-cactus such as three-angled cactus (*Hylocereus trigonus*), *Cereus tetragonus*, and *Cereus peruvianus*. This is the first report of brown spot of cactus caused by *Alternaria* species.

FP-15 Virulence of *Cryphonectria parasitica* isolated from the blights on chestnut trees.
Young-Jik Joo[1], Byung Kwan Kim[1], Dae-Hyuk Kim[2], and Byeongjin Cha[1]. [1]Dept. of Agricultural Biology, Chungbuk National University, Cheongju 361-763, Korea. [2]Div. of Biologinal Science, Chonbuk National University, Chonju 561-756, Korea.

Total 676 isolates of *Cryphonectria parasitica* were isolated from about 2600 blight lesions collected from major chestnut plantations over the country. Isolation rates of each province were ranged from 13.5% of Cheonbuk-Do to 37.4% of Kyungnam-Do, and the average was 25.6%. The isolates were categorized into 6 groups according to the color and shape of colony on PDA: smooth margin (S) and irregular margin (I), yellow (Y), white (W), and the color between yellow and white (C). Among the types, IY was the most abundant and the isolation rate was 65%. On the other hand, SW, SC, IW, and SY were quite rare and the rate of those ranged from 2% to 6%. When the 663 isolates were inoculated on the chestnut twigs, 380 isolate caused the larger lesions than EP-1, the type virulent isolate, and 147 isolates caused the smaller lesions than UEP-1, the type hypovirulent isolate. The incidences of high virulent isolates were not correlated to the isolation rates of the pathogen. For examples, Cheonbuk-Do, where the isolation rate was the lowest, showed the highest rate (90.6%) of virulent isolates. However, in Kyungnam-Do where the isolation rate was the highest, the rate of virulent isolates reached to 65.8%, the fourth high among the provinces. When color change ability of the isolates were tested on Bavendamm medium, 87.4% of the isolates belonged to the virulent group and the only 12.6% belonged to hypovirulent group. In the provinces including Cheonnam-, Cheonbuk-, and Kyungnam-Do which have a lot of chestnut plantations, the rates of hypovirulent isolates were over 20% according to Bavendamm test. The results of inoculation test and Bavendamm test were not exactly but generally matched to each other. As much as 88% of virulent isolates in inoculation test belonged to virulent group in Bavendamm test, but just 77.5% of virulent isolates in Bavendamm test belonged to virulent group in inoculation test. However, just 17.4% of hypovirulent isolates in inoculation test belonged to hypovirulent group in Bavendamm test, even though 31% of hypovirulent isolates in Bavendamm test belonged to hypovirulent group in inoculation test. Therefore, inoculation test appeared to be better than Bavendamm test in the selection of virulent isolates, and vice versa in the selection of hypovirulent isolates.

FP-16 Effect of inoculation season and the biological characteristics of *Cryphonectria parasitica* isolates on the size of the lesion on chestnut twigs. Young-Jik Joo[1], Byung Kwan Kim[1], Dae-Hyuk Kim[2], and Byeongjin Cha[1]. [1]Dept. of Agricultural Biology, Chungbuk National University, Cheongju 361-763, Korea. [2]Div. of Biological Science, Chonbuk National University, Chonju 561-756, Korea.

Among 676 *Cryphonectria parasitica* which were isolated from blight lesions on chestnut twigs all over the country, 14 isolates were selected randomly and the variations of the virulence according to the age, colony type, and inoculation season were investigated. To check the effect of pathogen age, three *C. parasitica* cultures of different generations (4-13) were prepared on PDA for each 14 isolates by transculture method. All those cultures of different age and isolates were inoculated at the same time on chestnut twigs of the same tree. The lesion sizes were measured 5 days after inoculation. The virulence of the isolates which was expressed by lesion sizes seems to be stable regardless of the generation of the culture. In lesion size, the virulent-like isolate showed similar pattern to the type virulent isolate EP-1, and the hypovirulent-like isolate followed the pattern of the type hypovirulent isolate UEP-1. To check the effect of inoculation season, 14 isolates of the same generation were cultured on PDA and inoculated on chestnut twigs of the same tree at every two months for one year. In the test, all isolates caused the largest lesions in July and the lesion sizes gently decreased until March when the lesions recorded the smallest size during the year. The lesion size of most tested isolates including the UEP-1 increased sharply in July compared to May. Also, the difference in lesion size among the isolates became the most clear in July. Therefore, July was the best season for the determination of the virulence of *C. parasitica* by twig inoculation. Actually, 9 of 14 isolates seemed to be less virulent than EP-1 at the beginning of the test (November), but all of them turned to be more virulent than EP-1 in July. Moreover, 3 of 5 isolates which showed higher virulence than EP-1 at the beginning caused smaller lesions in July. Most of the isolates which showed colony type of yellow and irregular margin revealed the high increment ratio in the lesion size in July. On the other hand, the isolates of other types increased or decreased as almost same ratio.

FP-17 Anthracnose of English Ivy Caused by *Colletotrichum trichellum*. Wan Gyu Kim, Sung Kee Hong and Weon Dae Cho. Plant Pathology Division, National Institute of Agricultural Science and Technology, Suwon 441-707, Korea.

Anthracnose severely occurred up to 50% on leaves of English ivy (*Hedera helix* L.) grown in Cheongwon area greenhouses of Korea in April, 2000. Symptoms developed as concentric spots with dot like acervuli on the host leaves. A total of 24 isolates of *Colletotrichum* sp. were obtained from the lesions and identified as *Colletotrichum trichellum* (Fr.:Fr.) Duke based on the morphological characteristics. Conidia were hyaline, aseptate, falcate, slightly curved, fusiform, tapered abruptly toward each end and measured 19-25 × 4-5㎛. Setae were dark brown to black, 1-6 septate and measured 45.0-235.0 × 4.0-5.5㎛. Appressoria were brown, lobed or crenate and measured 6-14 × 5-10㎛. Similar symptoms were produced on the host leaves by artificial inoculation with isolates of the fungus. This is the first report that *C. trichellum* causes anthracnose of English ivy in Korea.

FP-18 Occurrence of Gray Mold Caused by *Botrytis gladiolorum* on Freesia.

Sung Kee Hong[1], Wan Gyu Kim[1], Weon Dae Cho[1] and Hong Gi Kim[2]. [1]Plant Pathology Division, National Institute of Agricultural Science and Technology, Suwon 441-707, Korea. [2]Department of Agricultural Biology, Chungnam National University, Taejon 305-764, Korea.

Gray mold of freesia (*Freesia hybrida* L. H. Bailey) severely occurred in Imsil, Jeongeup and Icheon areas of Korea from 1998 to 2000. Water-soaked and irregular lesions were produced on leaf sheaths of infected freesia plants at the early stage. The lesions progressed upward and downward the leaf sheaths under moist condition and showed brown discoloration with gray conidial mass. Small spots with a reddish brown border were produced on infected flowers and stems. As symptoms progressed, infected plants turned pale yellow and eventually died. All fungal isolates from infected freesia plants were identified as *Botrytis gladiolorum* Timmerm. based on the morphological and cultural characteristics. Conidiophores were brown, lighter at the top and up to 700㎛ long, and ampullae bearing conidia swollen at the tips. Conidia were hyaline, smooth, subglobose to obovoid, single celled and measured 11.0～19.0 x 8.0～10.0㎛ (av. 15.8 x 8.7㎛). Gray mold symptoms were induced on freesia plants by artificial inoculation with the isolates. This is the first report that *B. gladiolorum* causes gray mold of freesia in Korea.

FP-19 *Streptobotrys dicentrae* sp. nov. Causing Leaf Blight of Bleeding Heart.

Sung Kee Hong[1], Wan Gyu Kim[1], Weon Dae Cho[1], G. L. Hennebert[2] and Hong Gi Kim[3]. [1]Plant Pathology Division, National Institute of Agricultural Science and Technology, Suwon 441-707, Korea. [2]University of Louvain, 32 Rue de l'Elevage, B-1340 Ottignies-LLN, Belgique. [3]Department of Agricultural Biology, Chungnam National University, Taejon 305-764, Korea.

A hyphomycete fungus with streptoform, *Botrytis*-like conidiophores was isolated from diseased leaves of bleeding heart [*Dicentra spectabilis* (L.) Lemaire. Symtoms appeared as dark brown leaf blight with haloes at the margins. Conidia borne in botryose cluster on terminal branchlets are globose, unicellular, pale brown and diameter of conidia measure 11.2～14.0㎛ (av. 12.4 ㎛). Conidiophores with interlacing streptoform branches are septate, brown and usually 1mm long. Sclerotia are black, round or oval to oblong and measure 0.4～1.5 x 0.3～0.7mm. There is no species consistent with the description of this fungus among members of the genus *Streptobotrys* reported until now. Based on the morphological characteristics, *Streptobotrys dicentrae* sp. nov is described.

FP-20 Factors on the Pathogenicity of *Botrytis cinerea*. Gum Jeong Kim, Heung Tae Kim, Gyung Ja Choi, Jin-Cheol Kim, Kyung Soo Jang and Kwang Yun Cho. Screening Division, Korea Research Institute of Chemical Technology, Yusong P.O. Box 107, Taejon, Korea 305-600.

To illustrate the pathogenicity of *Botrytis cinerea* causing gray mold disease, the pectinase activity and the phytotoxin production were tested from the isolates of *B. cinerea* NSS3-1 and KJ-1 collected on strawberry and cucumber in 1995, respectively. NSS3-1 was identified as a sclerotial culture type and resistant against benomyl and vinclozolin, whereas KJ-1 was a spore culture type and resistant against benomyl only. On the host plants, including pepper, tomato, cucumber, chinese cabbage, tobacco, and apple fruit, the pathogenicity was much more severe in NSS3-1 than KJ-1 in 3 days after inoculation. Total pectinase activity of NSS3-1 incubated for 3 days in modified Czapek medium was higher than that of KJ-1 in 100 ml of supernatant from culture medium because of its faster mycelial growth. However, the phytotoxin production was detected only from KJ-1 on tabacco leaf after incubation for 12 days. Based upon our results, we supposed that the important factor on the pathogenicity of *B. cinerea* might be the cellulolytic enzyme in the early infection stage, and the phytotoxin in the late stage. For the future study, it is needed to investigate the cellulolytic enzyme activity on the host plant depending on infection period and the kinetics of phytotoxin production of *B. cinerea*.

FP-21 Fusarium Blight of Zoysia Grass. Gyung Ja Choi, Mi Jeong Son, Heung Tae Kim, Jin-Cheol Kim and Kwang Yun Cho. Screening Division, Korea Research Institute of Chemical Technology, Yusung P.O. Box 107, Taejon, Korea 305-600.

A blight disease occurred in numerous lawn grounds and home lawns composed of zoysia grass in early summer of 2000 at Taejon, Korea. The disease appeared as foliar blighting and death of plants in irregular circular patches ranging from 30 cm to nearly 1 m in diameter. 11 isolates of *Fusarium* spp. were obtained from blighted leaves of zoysia grass according to cultural characteristics. They were identified as *F. acuminatum* (6 isolates) and *F. equiseti* (5 isolates) by using a light microscope. The optimal growth temperatures of *F. acuminatum* and *F. equiseti* isolates were 25℃ and 25 to 30℃, respectively. All isolates caused foliar blighting symptoms on turf grasses such as zoysia grass, bent grass, and bermuda grass. Zoysia grass and bermuda grass were more susceptible than bent grass. Among the isolates tested, 4 isolates of *F. acuminatum* and 3 isolates of *F. equiseti* showed stronger pathogenicity than the other isolates. This is the first report on occurrence of Fusarium blight of zoysia grass in Korea.

FP-22 Occurrence of stem rot on some species of cacti by *Bipolaris cactivora*. Ik-Hwa Hyun, Sang-Dok Lee[1], Jong-Young Heo, Kyoung-Il Ko, Byung-Ki Kim and Hoo-Sup Chung. Pathogen Research Division, National Plant Quarantine Service, Anyang 430-016, Korea. [1]Koyang Cactus Experiment Station, Kyonggi Provincial Rural Development Administration, Koyang 411-450, Korea

Stem rot of cacti was found at major cultivating areas including Goyang, Ansung and Eumsung of Korea in 2000. *Bipolaris cactivora* was consistently isolated from lesions of the diseased cacti. The disease occurred on eight species of cacti, which were *Cereus peruvianus*, *Cereus neopithahaja*, *Chamaecereus silvestrii* var. *iegata*, *Chamaecereus silvestrii*, *Gymnocalycium denudatum* var. *pentacantha*, *Hylocereus trigonus*, *Gymnocalcium mihanovichii* var. *friedrichii* and *Isolatocereus dumortier*. The major symptoms on cacti except *Hylocereus trigonus* were almost identical. A rapid rot of upper portion of the cacti was appeared and became blackened and mushy or somewhat dry. On *Hylocereus trigonus*, the symptom was initially light yellow, water-soaked lesion, turned into light brown and dried to death. According to pathogenicity test, ten species of cacti including *Zygocactus truncatus* and *Aporocactus flagelliformis* were produced identical symptoms as found in the field. But the fungi did not show the pathogenicity to *Notocactus scopa, Echinocactus grusonii, Eriocactus leninghausii, Gymnocalycium baldianum, Lobivia nealeana, Mammillaria elongata var. intertexta.*

FP-23 First Report of Zonate Leaf Spot on *Vigna vexillata* var. *tsusimensis* and *Cocculus trilobus* Caused by *Cristulariella moricola*. Hyang Burm Lee, Seung Hun Yu[1] and Chang-Jin Kim. Korea Research Institute of Bioscience & Biotechnology, YusongGu, Taejon 305-333, Korea. [1]Div. of Appl. Biol. Chem. Food Science, Chungnam Nat'l. Univ., Taejon 305-764, Korea.

A fungus *Cristulariella moricola* (Hino) Redhead (=*C. pyramidalis*) causing a zonate leaf spot was observed on *Vigna vexillata* var. *tsusimensis* and *Cocculus trilobus*. This is the first report of a new host *V. vexillata* var. *tsusimensis* for *C. moricola*. The fungus was also observed on the leaf spots of *Cocculus trilobus* for the first time in Korea. During September and October, the fungus has been frequently observed on the plants in the foot of the mountain areas in Chongyang, Chungnam Province, Korea. Leaf spots amphigenous, target-like yellowish gray to brown, with distinct margin, raised and pigmented along the rings, sometimes confluent. Symptoms progressed from small, circular, tan lesions with dark brown margins to large lesions with concentric rings, appearing as zonate leaf spots. Especially, there were more zonation on leaves of *Vigna vexillata* var. *tsusimensis* than on those of *C. trilobus*. The spots eventually encompassed the entire leaf, causing a blight. Blighted leaves fell to the ground. Sporophores on natural hosts hypophyllous, abundant on large spots, solitary, erect; central hyphae hyaline, broad, septate, tapering towards an acute apex, sometimes constricted at the septa, consisting of a basal stalk, entire stalks 272-289μm long, and upper portion which is compact, short and compact branched to form a globose or pyramidal head, heads up to 534μm long, fusiform to ventricose, cristulate. Blastospores as conidia are not commonly produced, one celled, hyaline and globose. At the present time *C. moicola* is regarded as a foliar pathogen on a new host *Vigna vexillata* var. *tsusimensis*. In addition, the incidence of *C. moricola* on the leaves of *Cocculus trilobus* is being introduced for the first time in Korea.