

mycelium. It readily formed reddish orange mycelium on PDA. It produced typical microconidia and macroconidia. The microconidia were the reniform. The macroconidia were wide, slightly curved, usually 3 to 4 septate and size was 45 ~ 85 X 5 ~ 10 μ m. The pathogen produced chlamydospore singly on short hyphal branches within 2 to 3 weeks, which was hyaline, globose, and smooth walled.

The pathogen was, therefore, identified as *Fusarium solani* based on cultural and morphological characters. This is the first report on the leaf blight of kudzu caused by *Fusarium solani* in Korea.

4-19. Monoclonal Antibody-Based Indirect-ELISA for Early Detection, Diagnosis and Monitoring of Epiphytic *Didymella bryoniae* in Cucurbits.

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Gummy stem blight, caused by *Didymella bryoniae* occurs exclusively on cucurbits. This fungus has been known not to produce its pycnidium *in vitro* unless irradiated. Through this study, we optimized cultural conditions for mass-production of pycnidiospore by Metal Halide Lamp irradiation. In brief, the mycelial was cultured at 26 °C on PDA, for 2 days under the darkness, and then the plate was illuminated with MH lamp continuously for 3-4 days at 26 °C, a great number of pycnidia was simultaneously formed. Thus produced pycnidiospores were used as immunogen. From fusions of myeloma cell (v-653) with splenocytes from immunized mice were carried out. And, two hybridoma cell lines that recognized the immunogen *Didymella bryoniae* were obtained. One Monoclonal Antibody, Db1, recognized the supernatant and the other monoclonal antibody, Db15, recognized the spore. Two clones were selected which were used to produce ascite fluid two MAb Db1 and Db15, were immunotyped and identified as IgG1 and IgG2b, respectively. Titer of MAb Db1 and MAb Db15 was measured absorbance exceeded 0.5 even at a 10⁻⁵ dilution. The MAbs reacted positively with *Didymella bryoniae* but none reacted with other of fungi and CMV, CGMMV. Sensitivity of MAb was precise enough to detect spore concentration as low as 10³well by indirect ELISA characterization of the MAb Db1, Db15 antigen by heat and protease treatments show that the epitope recognized by the MAb Db1, Db15 were a glycoprotein.

4-20. *Gymnosporangium* species causing cedar-apple rust diseases in Korea

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Cedar-apple rust fungi had been collected at 36 sites throughout the country from 1984 to 2001 and deposited at the Herbarium of Korea Forest Research Institute (HKFRI). We conducted the morphological examination on the dried specimens by light and scanning electron microscopy and as

results six *Gymnosporangium* species were identified. Three species, *G. asiaticum*, *G. clavariiforme* and *G. yamadae*, were previously described in Korea, while the other three species, *G. cornutum*, *G. globosum*, and *G. japonicum* were new to Korea. Here we present the detailed morphological descriptions, distribution, host ranges and keys to species in both aecial and telial stages of each species. Some morphological characteristics related with telial formation on trees were newly identified; witches brooms for *G. asiaticum*, small galls for *G. yamadae* and telial formations on trunk for *G. japonicum*. Geographically *G. asiaticum* and *G. yamadae* distributed widely throughout Korea, while the others were collected only at the limited locations. Eight *Juniperus* species as telial hosts and fifteen Rosaceous plants as aecial hosts were confirmed to be new in Korea.

4-21. Verification of aecial host ranges of four *Gymnosporangium* species based on artificial inoculation.

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Aecial host ranges of four *Gymnosporangium* species causing cedar-apple rust diseases, *G. asiaticum*, *G. cornutum*, *G. japonicum* and *G. yamadae*, were investigated through artificial inoculation. Thirteen species of nine genera among Rosaceous plants, which have been reported as aecial hosts in Korea, were inoculated with fresh teliospores spores in early days of May of 2000 and of 2001, respectively. In the results, we re-confirmed that there was highly specific relationship between the rust species and aecial hosts and report new aecial hosts of four *Gymnosporangium* species. Teliospores of *G. cornutum* collected from *Juniperus rigida* successively produced spermogonia and aecia only on *Sorbus alnifolia*, the first report on host alteration of *G. cornutum* in Korea. Positive responses by teliospores of *G. japonicum* from *J. chinensis* of Suwon and from *J. chinensis* var. *horizontalis* of Jeju island were obtained only on *P. villosa*. *Crataegus pinnatifida* was confirmed as a new aecial host of *G. asiaticum*. Until this time, *G. yamadae* was believed to have *Malus* as the aecial host. However, teliospores of *G. yamadae* collected from *J. chinensis* var. *kaizuka* successively formed spermogonia and aecia on the leaves of *Chaenomeles lagenaria*, *C. sinensis*, *Pyrus pyrifolia* var. *culta*, *P. ussuriensis*, *Malus pumila* and *M. sibirica*. The date for maturation of spermogonia and aecia, and symptom development varied according to the rust fungi and aecial host plants, respectively.

4-22. Rapid Identification of Potato Scab Causing *Streptomyces* spp. from Soil Using Pathogenicity Specific Primers.

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