all tested plants. To confirm the Koch's rule, fungi cultured from inoculation origins of kidney bean were grown on PDA media and re-inoculated to hosts. The fungi isolated from inoculation origins induced the typical disease symptoms on hosts. However virus free fungi did not induce any sympom on the experimental hosts. This bioassay showed that these typical symptoms were caused by virus, not fungi.

3-24. Comparison of viral population of pathologically and geographically different areas of Southern provinces and Jeju, Korea

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The objective of this work was to analyze the population of sequence variants of *citrus tristeza virus* (CTV) isolates in Korea and to make the phylogeny trees of CTV in Korea. We also tried to analyze and find the mild strain of CTV to apply for the cross protection. The CTV isolates from yuzu (C. Junos) collected from different geographic areas of Southern provinces such as Namhae-Do, Kerche-Do, Bosung, Wan-Do and Koheung and Jeju-Do, Korea were used for SSCP analysis. The SSCP profiles of the cDNAs obtained by RT-PCR with primers specifically designed for the p20 of the CTV population. The SSCP profiles obtained from 150 PCR products in yuzu contained two or three DNA bands, whereas, in some case, others contained four or more bands of similar intensity. The pathologically mild isolates of CTV usually yielded two DNA bands by SSCP profiles, whereas the SSCP profiles of the most virulent isolates contained more than two DNA bands. Plants shown severe stem pitting were corresponded to those plants with typical SSCP profiles of severe strains, and vice versa. This results indicate that the primers designed for SSCP analysis can be used for distinguishing the mild strains from severe strains of CTV.

3-25. Genetic diversity of *Fusarium graminearum* from rice in Korea

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Fusarium graminearum (telomorph: *Gibberella zeae*), an important fungal pathogen of cereal crops with ubiquitous geographic distribution, produces mycotoxins on diseased crops that has threaten human and animal health. Recently severe epidemics of scab diseases of barley and rice by this fungus occurred in Korea, causing serious economic losses. To determine genetic diversity of *F. graminearum* from rice in Korea, a total of 269 isolates were obtained from Southern part of Korea during 2001-2002. A phylogenetic tree of the isolates was constructed by using amplified fragment length polymorphism (AFLP). Population structure of the rice isolates consists of a single lineage (lineage 6). Frequency of female fertility among these isolates was relatively low (37%) compared to that among lineage 7 isolates from Korean corn. PCR amplification using chemotype specific primers

derived from *Tri7* and *Tri13* genes at the trichothecene biosynthesis gene cluster revealed that most isolates (260) were NIV chemotype; 9 isolates were identified as DON chemotype by *Tri13* but as either NIV chemotype or unknown by *Tri7*. The result of chemical analysis also supported the chemotype determination; all of the NIV chemotype isolates produced NIV, whereas the 9 isolates produce either DON or no toxin.

3-26. Studies on Physiology, Ecology and Protection of Citrus Canker Caused by *Xanthomonas axonopodis* pv. *citri*

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Citrus canker is very important disease in international trade of citrus . The disease was usually take place from late of June , and severe middle of July to middle of August, though disease occurrence was affected by environmental conditions. In pathogenicity test, three varieties, orange, lemon and kiyomi among 7 varieties, were succeptible, two varieties, satsuma mandarin and iwasachi, intermediate resistant. On the other hand, shiranuhi and yuzu were resistant relatively. The pathogen, *Xanthomonas axonopodis* pv. *citri,* grew well in PD broth adjusted to pH 7.0 at 26℃. It's growth was best in medium containing group of monosaccharide as a carbon source and group of ammonium as a nitrogen source.

Tow isolates were resistant to streptomycin among 11 isolates isolated from diseased leaves in field in Jeju-Do. The streptomycin sensitives isolate was controlled by in greenhouse test. On the other hand, the resistant and sensitive isolates were controlled by treatment with copper sulfate, the control value is 88.7% and 90.6%, respectively.