



## 論文内容の要旨

専攻名 資源循環学

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題目 Systematics studies of plant pathogenic Coelomycetes  
 (植物病原性分生子果不完全菌類の分類学的研究)

Coelomycetes encompass asexual fungi with conidia formation within a cavity lined by fungal or fungal and host tissue. This grouping reflecting pre-molecular reliance on morphological characteristics for fungal classification. Phylogenetic relationships transformed fungal identification, moving from traditional fungal taxonomy to a more objective and reliable fungal systematics. This prompted the change to Fungal Nomenclature from dual naming system to "One fungus, one name". Following the current taxonomic criteria, this study reexamined plant pathogenic genera under Coelomycetes. Using multi-locus phylogenetic analysis, morphological, and culture characteristics, it aims to elucidate diversity and update the Japanese mycoflora.

First part reviews the genus *Elsinoë* (*Elsinoaceae*, *Myriangiales*) causing scab, spotted anthracnose and morphological distortions on various plants including crops and ornamental plant. The asexual morph of *Elsinoë* is an acervular coelomycetous fungus with polyphialidic conidiogenous cells, known as *Sphaceloma*. Twenty-three Japanese collections of *Sphaceloma* and *Elsinoë* were re-examined, resulting in three novel species proposed, which is, *E. hydrangeae*, *E. tanashiensis*, and *E. sumire* and new combination of *E. akebiae*. Additionally, taxonomic treatment based on herbarium species had proposed new combination for *E. catalpae*, *E. japonicum*, *E. paderiae*, *E. peucedani*, and *E. zelkova*.

Second part examine the genus *Sphaerulina* (*Mycosphaerellaceae*, *Mycosphaerellales*) that causes leaf spot on arboreous plant and occasionally on herbaceous plant which presented similar symptoms as *Septoria*. Historically, some *Sphaerulina* fungi were cataloged as *Septoria* due to generic morphological criteria. However, multi-locus phylogeny had demarcated *Sphaerulina* from *Septoria* into independent genera. A total of twenty-seven Japanese isolates recorded as *Septoria* were re-examined and seven novel species (*Sph. farfugii*, *Sph. hydrangeicola*, *Sph. idesiae*, *Sph. lapsanastri*, *Sph. miurae*, *Sph. styracis*, and *Sph. viburnicola*) were proposed, and two species (*Sph. duchesnea* & *Sph. nambuana*) were transferred from the genus *Septoria*.

The third part discuss the genus *Septoria* (*Mycosphaerellaceae*, *Mycosphaerellales*), a widely distributed fungal pathogen linked to leaf spot disease. Despite exhibiting *Mycosphaerella*-like sexual stage, the name *Mycosphaerella* does not apply. *Septoria* was traditionally distinguishes them by the host plant infected. However, molecular data indicates that multiple species can infect the same host, and some *Septoria* species have a broad host range. A total of twenty-three isolates were examined and result shows that *Septoria* species isolated from hemp is different from *Septoria cannabidis* of the same host plant from America, proposing a novel species, *Septoria cannabicola*

(備考) 日本語 (2000字以内) 又は英語 (500ワード以内) にまとめて記載してください。

The last part investigates the genus *Diaporthe* (*Diaporthaceae*, *Diaporthales*) from asymptomatic Sakura tree in Japan. Traditionally, traits such as host specificity, disease symptoms, ascomata, and spore shape are used for identification of new species, however, multi-locus analysis had revealed homoplasy in *Diaporthe*. In this part of the study, a total of 31 isolates are examined from *Prunus* s.l. in Japan. Apart from multi-locus analysis, this chapter also uses the coalescent method to assist in species delimitation. This resulting in identification of two novel species, *D. endoprunicola* and *D. pseudoamygdali*, along with three known species of *Diaporthe* and another three *Diaporthe* s.l.

Coelomycetes are one of a group of asexual stage of Ascomycota. This study shows that an integrated criteria composed of the phylogenetic analysis, morphology, habitat, and host had improved the understanding in the delimitation of fungal at taxonomic level. Although the molecular analysis is an important part of delimiting fungal species, morphological observation remains as one of the important aspects in the identification of the species.