Taxonomic studies on Cercosporoid fungi in Asia

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ABSTRACT:
The fungi living on plants often cause severe damage to crops, trees, wild plants, etc., during the cultivating and post-harvest. In Japan, 11,398 plant diseases are recognized on plants. Of those causal agents, fungi cause more than 75% (8,600 diseases). Species of *Cercospora* and its allied genera mainly cause leaf spots on various plants and have reported more than 300 species from Japan. Back in the 1920s and later, taxonomic studies based on the morphological characteristics on a host plant were carried out. Nowadays, these integrated taxonomic concept, morphology, phylogeny, and host plant, has been introduced. On the other hand, Cercosporoid species are invading new habitats by moving humans and transporting goods worldwide. Moreover, climate change causes changing the cropping system and the habitat of these pathogens. Then, unknown or re-emerging diseases originating from the tropical areas are newly reported in the temperate region. Accurately identifying causal fungi and diagnoses are essential to control the diseases. On the other hand, a comprehensive study of the diversity of Cercosporoid fungi is lacking in the Asian region. Especially, the diversity of Cercosporoid species in the tropical area is still unclear, whereas the rich diversity of host plants suggests that. Therefore, we have published several research papers about the biodiversity and taxonomy of these fungi in tropical countries. Although plant disease diagnoses at extension centers and plant quarantine require rapid and simple diagnosis methods, conventional identification methods based on morphological characteristics need long-term training. In recent years, molecular diagnosis methods such as PCR methods with specific primer, Quantitative PCR methods with real-time PCR, and Loop-mediated isothermal amplification (LAMP) have been introduced. For developing these methods, taxonomical studies are still essential. We will introduce projects to develop plant diseases diagnoses kits with researchers from Asian countries.

KEYWORDS:
Cercospora; Diversity, Plant disease, Pseudocercospora; Speciation; Taxonomy.