

Dissertation Title	Molecular Phylogeny and Taxonomy of Plant Pathogenic Complex of <i>Bipolaris</i> , <i>Cochliobolus</i> , <i>Curvularia</i> and Endophytic <i>Colletotrichum</i>
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ABSTRACT

The plant pathogenic generic complex *Bipolaris* - *Cochliobolus* - *Curvularia* comprises many destructive plant pathogens that cause severe cereal crop losses worldwide. The taxonomy of *this complex* is confused as frequent nomenclatural changes occurred over the past 50 years.

The *Bipolaris* - *Cochliobolus* - *Curvularia* complex is investigated based on a set of ex-type cultures and collections from northern Thailand and elsewhere. Combined gene analysis of ITS (nuclear ribosomal internal transcribed spacer), GPDH (glyceraldehyde 3-phosphate dehydrogenase), LSU (large subunit) and TEF (translation elongation factor 1- α) revealed the segregation of this generic complex into major two groups. *Bipolaris* and *Cochliobolus* species clustered in Group 1 along with their type species, whereas *Curvularia* species (including species named as *Bipolaris*, *Cochliobolus* and *Curvularia*) clustered in Group 2, with its generic type of *Curvularia*. The initial generic resolution was fundamental to the comprehensive assessments of taxonomy and phylogeny. The nomenclatural conflict in this complex is resolved giving priority to the more commonly used established generic names

Bipolaris and *Curvularia*, therefore the *Cochliobolus* names were recognised as synonyms.

The genus *Bipolaris* is revisited with all available type materials and most of the additional materials selected from worldwide herbaria. A phylogenetic analysis of the genus provided with fresh collections and including the additional authenticated cultures. The generic type *Bipolaris maydis* is neo-typified with other ex, neo-types of *B. chloridis*, *B. cynodontis*, *B. maydis*, *B. salviniae*, *B. victoriae*, and *B. yamadae*. Lectotypes were designated for *B. hadrotrichoides* and *B. stenospila*. Modern descriptions and illustrations are provided for 46 species of *Bipolaris*, with a revision of synonyms, and notes on nomenclature, biology and ecology of the species. A taxonomic key is provided for the morphological identification of the species within the genus. The generic wide phylogenetic tree is provided for future studies within the genus.

The genus *Curvularia* is revised in two consecutive phylogenetic assessments resulting 3 new species including *C. asianensis*, *C. alcornii* and *C. boedjinii*. Additionally the generic type *C. lunata* and *C. kusanoi* is neotypified, and the generic concepts were reassessed. Nineteen species previously thought to be *Bipolaris* are transferred to the genus *Curvularia*, broadening the species numbers within the genus based on phylogenetic and morphological deference.

The endophytic *Colletotrichum* from several grass species were studied with ITS, ACT (actin), CAL (calmodulin) and GPDH phylogeny and morphology. A new species, *C. endophytica* is described with full descriptions and illustrations. This study revealed an unknown diversity of *Colletotrichum* species associated with tropical grass with perspectives for future studies.

In overall, this thesis serves as a complete account of graminicolous species complex *Bipolaris-Curvularia*, as well as endophytic *Colletotrichum* providing grounds for further study in plant pathology and fungal systematics.

Keywords: Epitypification / Graminicolous fungi / Helminthosporoids / mycoses / Pleosporaceae / Systematics/ Mycotoxins

