Characterization of *Colletotrichum* Species Associated with Pepper Anthracnose in China, India, Indonesia, Taiwan and Thailand

Tien-cheng Wang[1], Zong-ming Sheu[1], Sylvia K. Green[1], Deyong Zhang[2], Yong Liu[2], N. Ramachandran[3], Ir. Widodo[4], and Srisuk Poonpolgul[5]

[1]AVRDC The World Vegetable Center, Shanhua, Tainan, Taiwan, [2]Hunan Plant Protection Institute, Changsha, Hunan, China, [3]Indian Institute of Horticulture Research (IIHR), Bangalore, India, [4]Dept. of Plant Pests & Diseases, Bogor Agri. Univ. (IPB), Bogor, Indonesia, [5]Plant Protection Research and Development Office, Dept. of Agriculture, Bangkok, Thailand

Pepper anthracnose is one of the major constraints of pepper production in the hot, humid tropics and subtropics. Several *Colletotrichum* species have been reported as causal agents of the disease. Their identification was almost exclusively based on morphological and cultural characteristics. However, morphological plasticity of *Colletotrichum* is well known and can lead to misidentification of the species. Understanding the pathogen profile is a prerequisite for managing the disease, including breeding for resistance. The objective of this study was to evaluate several phenotypic traits and specific primers for rapid and accurate differentiation of *Colletotrichum* species associated with pepper anthracnose in China, India, Indonesia, Taiwan and Thailand. AVRDC mycologist contributed the technique of application of phenotypic and molecular criteria for the identification of *Colletotrichum* spp. Isolates used were originated fromsingle conidial cultures and were maintained on silica gel at 4℃. They were then transferred from stock cultures to potato dextrose agar (PDA) to determine condial morphology, colony morphology and growth rate, casein hydrolysis medium (CHM) for protease activity determination and to potato dextrose broth (PDB) for PCR reactions with species-specific primers. Several specific PCR primers derived from the sequence of the internal transcribed spacer (ITS) region of the rDNA gene, such as *CaINT*[2] (5'- GGGGAAGCCTCTCGCGG-3'), *CgINT* (5' GGCCTCCCGCCTCCGGGCGG- 3') and *CcINT* (5'-TCTCCCCGTCCGCGGGTGG-3') were used for the detection of *C. acutatum* (Ca.), *C. gloeosporioides* (Cg) and *C. capsici* (Cc) respectively. Three species Ca, Cg and Cc were identified in China, India, Indonesia, Taiwan and Thailand based on the phenotypic and molecular criteria. This is the first report of the association of Ca species with pepper anthracnose in all countries except Taiwan. At AVRDC in Taiwan we have found diverse morphological characteristics and poor specificity in the case of *C. gloeosporioides* isolates from Taiwan-using the Cg specific PCR primer. This implies that previously identified Cg isolates may be a heterogeneous complex species. *C. boninense* was recently separated from *C. gloeosporioidesas* a distinct species based on morphological and molecular evidence.