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Molecular phylogeny of *Bipolaris* and *Curvularia* species associated with browntop millet

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Browntop millet (*Urochloa ramosa, Poaceae*) is a warm season grass commonly used as a cover crop in pasture management systems. This species is inexpensive compared to other forage crops and its ability to easily reseed and to remain viable in the soil for years makes browntop millet an excellent regenerating food plot for wildlife. The genera *Bipolaris* and *Curvularia* (*Pleosporaceae*) are closely related and comprise many pathogenic species associated with poaceous hosts. Of these, only *B. setariae* and *C. hawaiiensis* have previously been reported from *U. ramosa*. The taxa belonging in these sister genera are often difficult to identify based on morphology alone, especially when co-occurring on a single host. In May 2015, infected seeds of *U. ramosa* grown in Tifton, Georgia, USA were observed and collected. Conidia and conidiophores were observed using compound and dissecting light microscopy. Single spore isolation techniques were used to obtain pure cultures, which were also observed scanning electron microscopy. Genomic DNA was extracted from isolates of *Bipolaris* and *Curvularia* using the DNeasy Plant Mini Kit (Qiagen). The *ITS*, *GPDH*, *TEF* and *RPB* gene regions were amplified and the resulting amplicons were sequenced using the BigDye Terminator v. 3.1 on an Applied Biosystems 3130xl Genetic Analyzer. Phylogenetic analyses were carried out using maximum parsimony and maximum likelihood methods. Five *Curvularia* and nine *Bipolaris* cultures were isolated, and a total of 42 new DNA sequences were generated in this study. GPDH gene region resolved most species in both genera. Maximum parsimony analysis of combined ITS, GPDH and TEF loci for *Bipolaris* included 58 isolates and 81 isolates for *Curvularia*. Based on morphological and phylogenetic data, the isolates found on the seeds of *U. ramosa* are identified as *Bipolaris yamadai*, *Curvularia geniculata* and a previously undescribed species of *Curvularia*. To our knowledge, these are the first records of these fungal species in association with *U. ramosa*. Surface ornamentation and texture of *Curvularia* conidia were clearly observed under SEM than under light microscope. Although other conidial cells are smooth, basal cell of the conidium can be either smooth or verrucose and this was used as a morphological character to delimit some members of the "geniculata" group. *Curvularia geniculata*, *C. urochloae* and *B. yamadai* had conidia with smooth basal cell under SEM. Therefore SEM imaging will be useful to observe micromorphological characters that are difficult to distinguish using conventional light microscopy. The discovery of these potentially pathogenic fungi on an economically important host provides new insights for disease surveillance to