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Rice Sheath Rot Complex in Mali and Nigeria – A Contrasting Tale of two Different Worlds

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Abstract

During an extensive survey of rice fields across West Africa, sheath rot symptoms were notably observed in Mali and Nigeria. The objectives of this study are (i) to identify the pathogens associated with sheath rot symptoms on rice, and (ii) to ascertain the roles of the different pathogens associated with sheath rot of rice in Africa. In Nigeria, two rice fields were sampled at Chanchaga and Ibadan while a rice field was sampled in the arid Selingue, Mali. Molecular characterisation results revealed that in Nigeria, rice sheath rot associated pathogens were predominantly *Sarocladium oryzae* (65 %), *Fusarium spp.* (20 %) and *Burkholderia gladioli* (2 %). However, in Mali, we found mainly *Fusarium sp.* (50 %) and *S. oryzae* (10 %). *S. oryzae* isolates from both countries clustered in three genetic groups whereas five different Fusarium species were found in both countries. Using indigenous rice varieties from Mali and Nigeria, pathogenicity studies with *S. oryzae*, *Fusarium* spp and *B. gladioli* isolates revealed that *S. oryzae*-Group III isolates were the most pathogenic on both FARO 44 (Nigeria) and ADNY11 (Mali) rice varieties. Furthermore, pathogenicity tests using representative Fusarium isolates on both rice varieties showed that *F. andiyazi* from Ibadan-Nigeria was the most pathogenic *Fusarium* species. *B. gladioli* isolates were mildly pathogenic in comparison with the other two pathogens. Also interesting was the observed interaction between *S. oryzae* and *Fusarium* species, which are likely due to the production of secondary metabolites by either or both pathogens. Future work will focus on the Nigeria scenario in order to elucidate the *Sarocladium-Fusarium* interaction and the interplay of both in the incidence of the rice sheath rot complex.

Keywords: *Burkholderia gladioli, Fusarium spp*, rice sheath rot complex, *Sarocladium oryzae*

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