Fungi associated with root and crown rot of wheat and barley in Tanzania

BY

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RESUMÉ

A total of 37 fungal taxa were isolated from wheat and barley planted to soil collected from the three main small-grain crop production areas in Tanzania, viz. Hanang Wheat Complex, Karatu and West-Kilimanjaro. The most prevalent species were *Bipolaris sorokiniana, Fusarium equiseti, F. nygamai, F. oxysporum, F. subglutinans, Periconia macrospinosa, Phoma macrostroma* and *P. medicaginis*, which were present in soil from all three areas. Roots yielded a greater variety of fungi than crowns. *Fusarium* spp., mainly *F. oxysporum* and *F. nygamai,* dominated the fungi isolated from roots, whereas *F. equiseti* represented the main *Fusarium* sp. isolated from crowns. *B. sorokiniana* was predominantly isolated from crowns of both wheat and barley.

In artificial inoculation studies most of the *Fusarium* isolates tested impeded seedling root and shoot growth and shoot mass of wheat and barley. The most virulent species were *F. nygamai* and *F. chlamydosporum*. *B. sorokiniana* caused the greatest reduction in shoot growth and mass of wheat and was significantly more virulent on wheat than on barley.

Rhizoctonia solani anastomosis group (AG) 6, the causal agent of patchy stunting (PS) in Tanzania, was retrieved from soil in all three areas, albeit at low frequencies. Artificial inoculation confirmed its pathogenicity and high virulence to wheat. Pathogenicity of *R. solani* AG-6 to barley was also established, although the latter crop appeared to be less affected than wheat. Observation of patches on different soil types as well as the absence of significant differences in isolation frequencies of *R. solani* AG-6 from different soils showed that PS is not limited to a particular soil type.