POSTER SUMMARY

A NEW SPECIES OF RUST INFECTING SUGARCANE IN SOUTH AFRICA AND SWAZILAND

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Abstract

This poster describes a new species of rust, referred to as African rust, which has been found on a number of popular South African sugarcane varieties, including N25, N31, N41, N46, N49, N53 and more recently N12. This new rust species was first observed on sugarcane in Swaziland, and later found infecting sugarcane in Pongola and Umfolozi. It has since been observed in most cane growing areas in South Africa. Its symptoms appear as dark brown lesions on the leaf, with bright orange spores developing in pustules on the upper and lower leaf surfaces. General internal transcribed spacer (ITS) sequences confirmed that the unknown isolate belongs to the *Puccinia* genus. Although closely related to *Puccinia sparganioides* (ash rust) and *P. physalidis* (infecting *Physalis* species of the Solanaceae), no identical matches were obtained through sequencing of the 28S nuclear large subunit (rLSU) gene region, and subsequent comparative analysis against the NCBI database. Preliminary phylogenetic analyses show that this rust is closely related to taxa within a group of rusts genetically distinct from *Puccinia melanocephala* and *Puccinia kuehnii*, the pathogens that cause brown and orange rust, respectively. These results suggest that African rust forms its own distinct clade with other 'grass-infecting' rusts which have dicotyledonous alternative hosts. Further phylogenetic analysis will be carried out to finalise the results from the 28S rLSU gene region and include additional rust taxa should more reference sequences become available on the NCBI database. This work will allow the preliminary phylogenetic placement of African rust within a broader context of the Pucciniales taxon, which may assist in determining its point of origin and ultimately assist in the management of this disease.

Keywords: African rust, brown rust, *Puccinia melanocephala*, orange rust, *Puccinia kuehnii*, gene sequencing, phylogenetics