



Hyparrhenia grass white leaf disease, associated with a 16SrXI phytoplasma, newly reported in Kenya

E. Obura^{1*}, D. Masiga¹, C.A.O. Midega¹, M. Otim², F. Wachira³, J. Pickett⁴ and Z.R. Khan¹

¹ International Centre of Insect Physiology and Ecology, 00100-30772, Nairobi, Kenya; ² National Crops Resources Research Institute, 7084, Kampala, Uganda; ³ Egerton University, 20113-536, Egerton, Kenya; ⁴ Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ, UK

*E-mail: eobura@icipe.org

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Hyparrhenia rufa is a thatching grass commonly found throughout the tropics where it also serves as valuable cattle fodder and border grass to prevent soil erosion (Skerman & Riveros, 1990). In June 2010, we observed some *H. rufa* plants in the wild grasslands at several locations of Lambwe Valley in western Kenya that were stunted and appeared bushy, with small white leaves (Fig. 1), symptoms resembling those associated with Napier stunt disease in Kenya (Jones *et al.*, 2004). Unlike the adjacent healthy plants that were flowering, plants with these symptoms did not produce flowers. Phytoplasma aetiology being suspected, leaf samples were taken from each of 11 symptom-bearing and symptomless plants, stored in liquid nitrogen and taken to the laboratory for phytoplasma analysis. DNA was extracted from 1g of leaf tissue using the hot CTAB method of Doyle & Doyle (1990). The extracted DNA was used as the template in a phytoplasma nested PCR assay with 16S ribosomal DNA (16S rDNA) universal primers P1/P6 (Deng & Hiruki, 1991) and R16F2n/R16R2 (Gundersen & Lee, 1996). Phytoplasma infection was confirmed by amplification of 1200 bp rDNA fragments from all the samples showing symptoms (11/11, Fig. 2), while no amplification was recorded in the symptomless samples (0/11). The 1200 bp rDNA fragments were gel purified (GeneJET™ Gel Extraction Kit, Fermentas), and sequenced directly. The consensus partial nucleotide sequence was submitted to GenBank (Accession No. JN112372), and used to query the non-redundant database using BLAST (Altschul *et al.*, 1990). Sequence analysis revealed highest 16S rDNA sequence identity (99%) of the *Hyparrhenia* grass white leaf (HGWL) phytoplasma with that of the Napier grass stunt phytoplasma (GenBank Accession No. AY377876), confirming the HGWL phytoplasma as a member of the 16SrXI phytoplasma group (*Candidatus* Phytoplasma oryzae).

To our knowledge, this is the first record of the group 16SrXI, '*Ca. Phytoplasma oryzae*' associated with the white leaf disease of *H. rufa*, and the first record of the thatching grass as a host for a phytoplasma. This report also shows that *H. rufa* may be an alternative host plant for the

Napier grass stunt phytoplasma and might play a role in the epidemiology of Napier grass stunt disease in East Africa. As the disease spreads, it will affect the continued use of *H. rufa* as cattle fodder and thatching grass. The disease will negatively impact soil conservation efforts in parts of East Africa where *H. rufa* is the main border grass.

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Figure 1



Figure 2

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