

# First Report of Rice yellow mottle virus on Rice in the Democratic Republic of Congo

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## Disease Notes

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*Rice yellow mottle virus* (RYMV), genus *Sobemovirus*, is a widespread rice pathogen reported in nearly all rice-growing countries of Africa. Although the virus was detected in Cameroon, Chad, Tanzania, Rwanda, Burundi, and Uganda (2,3), RYMV has never been described in the Democratic Republic of Congo (DRC). In July 2012, plants with leaf yellowing and mottling symptoms were observed in large irrigated rice production schemes 30 km south of Bukavu, in eastern DRC, and in lowland subsistence fields in the surroundings of Bukavu. Several dozen hectares affected by the disease were abandoned by the farmers. Symptomatic leaf samples were collected in different farmer fields. Back-inoculations to susceptible rice variety IR64 resulted in the same yellowing and mottling symptoms 7 to 9 days post-inoculation. Infected leaves gave positive results using double antibody sandwich (DAS)-ELISA tests with polyclonal antisera (as described in [1]), indicating for the first time the presence of RYMV in DRC. Triple antibody sandwich (TAS)-ELISA tests with discriminant monoclonal antibodies (1) revealed that they all belong to serotype 4 found in the neighboring region in Rwanda. Total RNA of three samples from South Kivu was extracted with the RNeasy Plant Mini kit (Qiagen, Germany). The 720 nucleotide coat protein (CP) gene was amplified by reverse transcription (RT)-PCR with primers 5'CTCCCCACCCATCCCGAGAATT3' and 5'CAAAGATGGCCAGGAA3' (1). The sequences were deposited in GenBank (Accessions KC788208, KC788209, and KC788210). A set of CP sequences of 45 isolates representative of the RYMV diversity in Africa, including the sequences of the DRC samples, were used for phylogenetic reconstruction by maximum-likelihood method. The isolates from South Kivu belonged to strain S4-lv, mainly found around Lake Victoria. Specifically, within the S4-lv strain,



the South Kivu isolates clustered with isolates from eastern and southern provinces of Rwanda and Burundi, respectively (2), suggesting a recent spread from these countries. Recently, efforts have been directed to shift from the traditional upland system to lowland and irrigated systems in which water availability allows sequential planting and maintenance of higher crop intensity. This agricultural change may increase insect vectors and alternate host plant populations which may result in higher RYMV incidence in DRC (3). Similar yellowing and mottling symptoms have been observed in Bas-Congo and Equateur provinces of the country, which would justify further surveys and characterisation of RYMV in the DRC.

*References:* (1) D. Fargette et al. *Arch. Virol.* 147:583, 2002. (2) I. Ndikumana et al. *Plant Dis.* 96:1230, 2012. (3) O. Traoré et al. *Mol. Ecol.* 14:2097, 2005.

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