

Détection et diversité du SCYLV au Kenya

AWARD - Scylv detection and diversity in Kenya

ABSTRACT

Sugarcane yellow leaf is a disease caused by Sugarcane yellow leaf virus (SCYLV). It is a major emerging disease of sugarcane that has been reported worldwide the last two decades. Efficient tools have been developed for detecting SCYLV but their use requires sophisticated facilities and still remains expensive. Our partners from developing countries cannot easily use them, which hamper an efficient and early diagnostic of the disease in sugarcane production regions. The main goal of this study was to develop an "easy-to-use" method for detecting SCYLV at the level of partner laboratories and potentially at the field level. We develop a novel reverse transcription loop-mediated isothermal amplification method (RT-LAMP) for detecting SCYLV. This method was compared to the classical methods routinely used at CIRAD Montpellier sugarcane quarantine facilities (RT-PCR and Tissue Blot Immunoassay). The three methods were then used for detecting SCYLV in three sugarcane production regions from Kenya, for which no data of prevalence of the disease existed so far. Samples of leaves of sugarcane leaves were collected from Western, Nyanza and Coast provinces of Kenya in April and May 2012. In Western samples were collected from Butali sugar company and from farmers in Kakamega and Busia districts. In Nyanza they were collected from Muhoroni sugar company, Chemelil sugar company and from farmers in Kisumu, Awasi, Awendo and Migori. At the coast, samples were collected from Kenya Sugar research Foundation fields in Kilifi and at the Kwale International Sugar Company. A collection of 200 samples was done during this sampling survey. The first results showed that the RT-LAMP is more efficient than the reference methods. SCYLV is present in the three sugarcane production regions with prevalence rate ranging from 4% to 52%.

This is the first report of sugarcane yellow leaf disease in Kenya. Furthermore, this is the first report on the application of the LAMP assay for early diagnostic of sugarcane yellow leaf disease from sugarcane production regions. Due to its simplicity, sensitivity and cost-effectiveness for common use, we believe that this assay should be used as an early diagnostic tool by our partners at the field level.

Keywords : Agroecology, Plant, Diversity/variability, Genetic diversity

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Project leader's RU : BGPI-PHIM

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PERSPECTIVES

Confirmatory tests will be undertaken on the Kenyan plant samples that tested positive for SCYLV. The genetic diversity of the viruses isolated from Kenyan plant will also be assessed. We then intend to do a publication in a refereed journal and also present the results at the 12th International Plant Virus

epidemiological Symposium on 28th January-1st February 2013 (Arusha, Tanzania) and at the 14th Rencontres de Virologie Végétale on 13th-17th January 2013 (Aussois, France). Ruth Amata had also requested Philippe Roumagnac and E. Fernandez for support towards developing loop primers for detecting potyviruses infecting maize. This would contribute greatly towards detecting those viruses that affect maize in Kenya and lead to significant yield loss.