20es RENCONTRES de Virologie Végétale

CAES du CNRS - **CENTRE PAUL-LANGEVIN**

AUSSOIS - Savoie - France

Du **19** au **23**

JANVIER 2025

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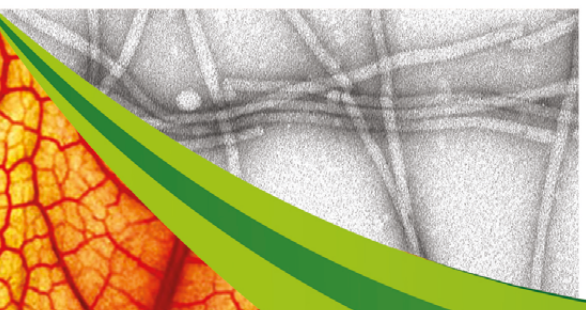

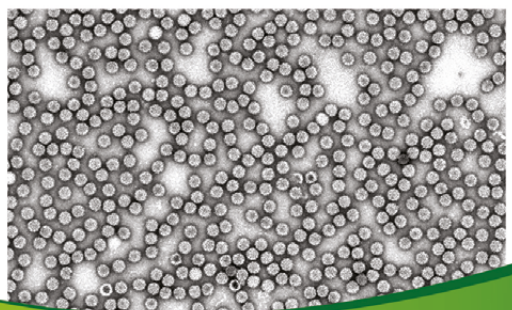

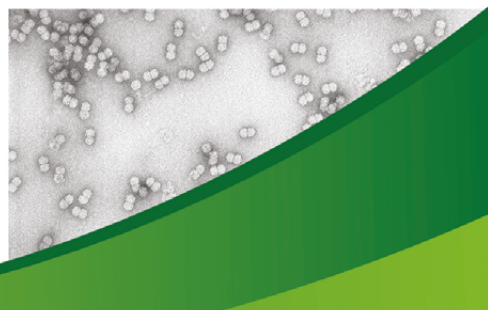

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Investigations into the virome of grasses growing in the environment of sugarcane in Florida

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Samples of 22 plant species and one aphid species (*Melanaphis sorghi*) were collected in the Everglades Agricultural Area (South Florida) from 2017-2019 to investigate the virome of grasses growing in the environment of sugarcane. Leaf samples were obtained from cultivated species such as *Saccharum* spp. (sugarcane), *Sorghum bicolor* (sorghum), *Zea mays* (maize), and wild species such as *Cynodon dactylon* (Bermuda grass), *Dactyloctenium aegyptum* (crowfoot grass), *Digitaria ciliaris* (Southern crabgrass), *Eleusine indica* (Goose grass), *Panicum dichotomiflorum* (Fall panicum), *Sorghum almum* (Columbus grass), *Stenotaphrum secundatum* (Saint Augustine grass), and *Urochloa platyphylla* (broadleaf signal grass). Detection and identification of the viruses present in 388 plant and 11 aphid samples was performed using the virion-associated nucleic acid (VANA)-metagenomics approach. Twenty-six viruses were identified, and 13 plant species and the aphid were infected by at least one virus. Fifteen of these 26 viruses were known viruses but 11 were putatively new virus species, including a marafivirus (*Tymoviridae*), a mastrevirus (*Geminiviridae*), a potyvirus (*Potyviridae*), and three sobemoviruses (*Solemoviridae*). The highest number of viruses was detected in Columbus grass and sorghum (9 and 13, respectively). *Potyvirus sacchari* (formerly *Sugarcane mosaic virus*, family *Potyviridae*) and *Waikavirus zeae* (formerly *Maize chlorotic dwarf virus*, family *Secoviridae*) were the most widespread virus species (9 and 7 plant species, respectively) and were also detected in the aphid. In a phylogenetic tree constructed with partial genome sequences (4000 nt) of *P. sacchari* obtained previously and herein, virus isolates from broadleaf signal gras, maize, sorghum, Southern crabgrass, sugarcane, and Saint Augustine grass were distributed in three different lineages, thus suggesting significant diversity of this virus in Florida. Only two *Saccharum*-infecting virus species, *P. sacchari* and *Polerovirus SCYLV* (*Sugarcane yellow leaf virus*), were found in sorghum and other grasses. These plants are, therefore, putative reservoirs for the causal agents of two sugarcane diseases in Florida.

Mots clés : Poaceae - Grasses - Sugarcane - VAVA sequencing - Virus diversity.