



20^{es} RENCONTRES de Virologie Végétale

CAES du CNRS - CENTRE PAUL-LANGEVIN

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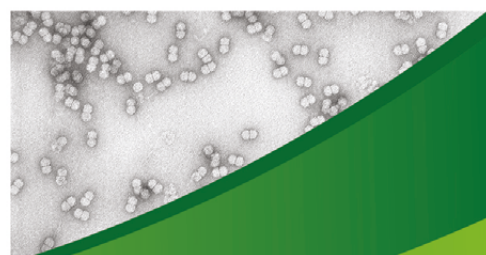
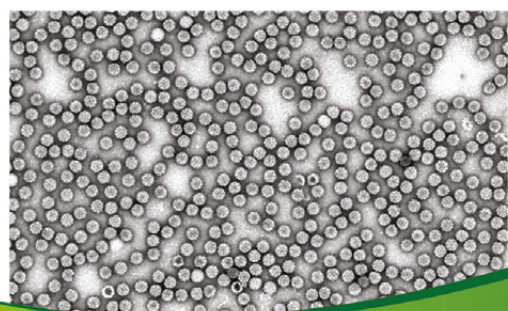
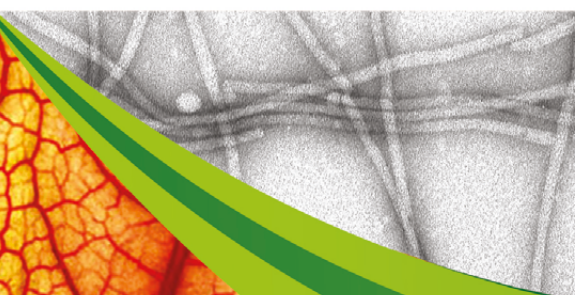
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Genomic and phylogenetic investigations suggest that sugarcane streak mosaic virus is vectored by at least one species of mite

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The insect vector of sugarcane streak mosaic virus (SCSMV) is unknown. SCSMV belongs to the genus *Poacevirus* of the family *Potyviridae*. This genus currently includes four virus species: *Sugarcane streak mosaic virus*, *Triticum mosaic virus*, *Caladenia virus A*, and *Zoysia mosaic virus*. *Triticum mosaic virus* is transmitted by the wheat curl mite (WCM) *Aceria tosichella*, an eriophyid mite that failed to transmit SCSMV. This mite is also the vector of wheat streak mosaic virus (WSMV), a tritimovirus of the family *Potyviridae*. WSMV has a zinc finger like (ZFL) motif [H(X2)C X29 C(X2)C] in the HC-Pro protein that is necessary for its transmission by the WCM. However, all viruses of the *Potyviridae* family that possess a HC-Pro protein have a ZFL motif in the HC-Pro, which is therefore not specific to mite transmission. Two other well studied motifs, namely KITC and PTK, are associated with aphid-transmission of potyviruses. Among 131 species of the *Potyviridae* family, the KITC [or a similar motif that is attached to the C(X2)C motif of the ZFL motif] and the PTK motifs are present in almost all aphid-transmitted potyviruses, but are missing in all non-aphid transmitted viruses. A phylogenetic tree was constructed with the HC-Pro sequences of the 131 *Potyviridae* species and was linked to protein motifs and virus vectors. SCSMV clustered with a group of viruses spread by *Aceria* mites, which suggested that at least one mite species is a vector of SCSMV. Most mite species found on sugarcane belong to the Eriophyidae family with at least 10 species belonging to six genera that are distributed in Africa, America, Asia, and Oceania. Eriophyid mites are able to spread most mite-transmitted viruses. Consequently, eriophyid mites are good candidates for vectoring SCSMV and should be identified and tested in geographical locations where this virus is present.

Mots clés : SCSMV - Vector - Mite - Sugarcane.