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THE "PRSV CLUSTER" OF CUCURBIT-INFECTING POTYVIRUSES: MOLECULAR CHARACTERIZATION, GEOGRAPHIC DISTRIBUTION AND POTENTIAL EPIDEMIOLOGICAL IMPACT

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BACKGROUND and OBJECTIVES

More than 70 viruses infect cucurbits worldwide. Among the most common and agronomically important are several potyviruses: ZYMV, WMV, PRSV. Besides these viruses that have a worldwide distribution and present distinct biological, serological and molecular features, several viruses closely related to PRSV that could constitute highly divergent strains of this virus or related species have been defined, and could represent new threats for agriculture.

MATERIALS and METHODS

Biological, serological and molecular studies, as well as analysis of database sequences, were performed in order to characterize the different species in the PRSV cluster and study their geographic distribution and population structure (1,2). Isolates from worldwide origins were tested serologically (DAS-ELISA) or molecularly (RT-PCR with specific or generic primers) for the presence of the different viruses.

RESULTS

Based on their molecular properties, at least 10 distinct species exist in the "PRSV cluster" (3). Their geographic range, field prevalence and agronomic impacts are highly contrasted: PRSV and to a lesser extent ZTMV have a worldwide distribution, MWMV is widespread in Africa and emerging in the Mediterranean Basin but not reported elsewhere, while the other viruses appear endemic to one country even though they can be maintained locally over several decades.

CONCLUSIONS

The number of different potyviruses in the "PRSV cluster" is probably still underestimated. Excepting PRSV and to a lower extent ZTMV and MWMV, species in the "PRSV-cluster" seem to have a narrow geographic range and low epidemiological impact so far. At least two species appear endemic to Sudan, with contrasted frequencies. These results show that currently unimportant viruses may emerge if the local conditions change or if they are introduced in a more favourable environment.

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