



BROCHURE

INTERNATIONAL SYMPOSIUM

ON SSDNA VIRUSES

-IS³DV-

26th September - 1st October 2022

Domaine du Lazaret,
Sète,
France



Assessment of risk posed by betasatellites on vegetable crops in the Mediterranean Basin

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The risk posed by emerging begomovirus (Family Geminiviridae, circular single-stranded DNA) is high in the Mediterranean Basin, particularly on vegetable crops. Tomato yellow leaf curl viruses and tomato leaf curl New Delhi virus are responsible for important damages, which can be increased when these viruses are associated with betasatellites. These DNA components depend on the assistant begomovirus for replication and spread by the whitefly *Bemisia tabaci*. Although the risk of introduction of betasatellites in the Mediterranean Basin is high, there is little information on factors involved in their maintenance at the plant or the agro-ecosystem levels, and on the functioning of such associations with several nucleic acid segments encapsidated separately. The research planned in the thesis aims to characterize emerging threats posed by betasatellites to vegetable crops in the Mediterranean Basin. More specifically, the work will focus on the impact of betasatellites from different origins on begomovirus diseases occurring in the Mediterranean Basin, the transmission of betasatellites between host/virus complexes and genomic adjustments that may occur when a new begomovirus/betasatellite complex forms in a host plant.