Biological properties of *Tomato apex necrosis virus*

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Tomato apex necrosis virus (ToANV) is the first of several recently described, closely related viruses that affect solanaceous plant hosts, and are representative of a new taxon. These viruses have small isometric capsids, bipartite single-stranded RNA genomes and are of the picornavirus lineage. ToANV, like *Tomato torrado virus*, is transmitted to plants by the sweet potato whitefly, *Bemisia tabaci*. ToANV has a host range including other solanaceous plants and in Mexico, tomatillo (Mexican husk tomato, *Physalis philadelphica*) is commonly infected but unlike tomato, does not show obvious necrotic symptoms. So far we have no evidence for seed transmission of ToANV in any of its identified host plants. We have developed serological and RNA-based methods to rapidly and accurately identify ToANV in various host plants. We also have evaluated methods for efficiently screening tomato germplasm for ToANV resistance. Interestingly, despite being efficiently mechanically transmissible to host plants such as *Nicotiana benthamiana* and tomatillo, ToANV is not consistently mechanically transmissible to tomatoes. This has made efficient greenhouse screening for resistance technically challenging. We have evaluated various approaches for screening, including air pressure delivery of inoculum. So far the most consistent and reliable approach has been to use *B. tabaci* with ToANV-infected tomatillo as the source plant. These results will be discussed.