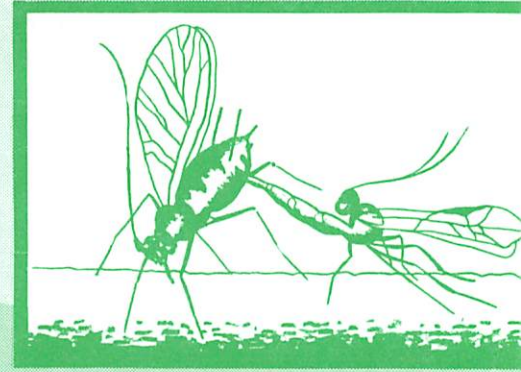


PEST-O-GRAM



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A new and potentially damaging whitefly-transmitted virus of cucurbits was found this fall 2014 in Imperial County, CA.

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The new virus that appears to be related to, but distinct from, *Squash vein yellowing virus* (SqVYV) a *Bemisia tabaci*-transmitted ipomovirus (family *Potyviridae*) that occurs in Florida was found in the fall, 2014 in Imperial County, CA. The new virus was first identified by Dr. Ozgur Batuman in Dr. Robert Gilbertson's laboratory at UC Davis and has been verified by Dr. William Wintermantel's USDA-ARS laboratory, Salinas, CA and by Dr. Tongyan Tian of the California Department of Food and Agriculture (CDFA). Sequence comparisons performed with the cylindrical inclusion (CI) and capsid protein (CP) genes of this California ipomovirus revealed the closest identity, 83% and 99%, respectively, with the CI and CP genes of SqVYV. Pumpkin and squash plants inoculated with sap prepared from leaves of three pumpkin plants in which the California ipomovirus was detected by RT-PCR, developed mild mottling, vein clearing and yellowing symptoms that are similar to those reported for SqVYV.

The SqVYV was identified infecting squash in Florida in 2003. It was subsequently shown to cause watermelon vine decline (WVD), which is similar in appearance to a bacterial wilt type of disease. WVD has caused substantial losses to watermelon production in Florida. Therefore, the finding of a very similar whitefly-transmitted ipomovirus in California is certainly a major concern and unwelcome news, especially for watermelon growers but also for growers of other cucurbits as well. Melon growers in the low desert productions areas of southeastern California and western

Arizona are already combating a complex of whitefly-transmitted viruses that include *Squash leaf crumple virus* and *Cucurbit leaf crumple virus* (SLCV and CuLCrV, genus *Begomovirus*) and *Cucurbit yellow stunting disorder virus* (CYSDV, genus *Crinivirus*), in addition to several aphid-transmitted viruses such as *Cucumber mosaic virus* (CMV, genus *Cucumovirus*), *Papaya ringspot virus* (PRSV, genus *Potyvirus*), *Watermelon mosaic virus* (WMV, genus *Potyvirus*) and *Zucchini yellow mosaic virus* (ZYMV, genus *Potyvirus*).

The good news is that all of the pumpkin and melon plants found to be infected with the new ipomovirus were at the UC Desert Extension and Research Center (DREC) in the Imperial Valley and have been destroyed. Hopefully, the prompt identification of the virus together with the destruction of these plants will prevent the establishment of this ipomovirus in Imperial County. However, watermelon, squash and melon growers should be on the lookout for any unusual virus-like symptoms in their cucurbit crops, especially wilting and vine decline symptoms in watermelon, and report them to the UC ANR Cooperative Extension Imperial County Office, or to the Imperial County Agricultural Commissioner's Office.

Hosts of SqVYV have been reported to be limited to crops and weeds in the cucurbit family, *Cucurbitaceae*. The cucurbit family includes melon (*Cucumis melo*; e.g., cantaloupe and honeydew), cucumber (*C. sativus*), pumpkin, numerous varieties of summer and winter squashes (*Cucurbita pepo*, *C. moschata* and *C. maxima*), watermelon (*Citrullus lanatus*), cucurbits grown as ornamental vines (*Luffa spp.*) and a few common weeds, e.g., buffalo gourd (*C. foetidissima*). We don't yet know the host range of the newly identified California ipomovirus, but it will very likely be similar to the host range of SqVYV.

SYMPTOMS: The newly discovered ipomovirus was originally identified infecting pumpkin plants at the DREC that were showing severe virus-like symptoms including stunting and leaf yellowing, crumpling and down cupping (epinasty). These plants were infected with multiple viruses, including the new ipomovirus as well as SLCV and CYSDV. In greenhouse experiments, squash and pumpkin plants were inoculated with sap extracts from the symptomatic pumpkin plants. The inoculated plants developed only mild mottling and vein clearing symptoms. Tests confirmed the inoculated plants were only infected with the new ipomovirus (SLCV and CYSDV are not transmitted by this type of inoculation). Thus, the symptoms of the new ipomovirus in pumpkin and melons begin with a slight mottling and yellowing of the foliage followed by vein clearing (Figure 1). We have not observed any vine decline-type symptoms in the inoculated pumpkin and melon plants. Additionally, because most melons in Imperial County often show symptoms of infection with CYSDV as well as other viruses (see above), symptoms induced by the new ipomovirus may be masked. To date, we have not detected infections of the new ipomovirus in watermelon, so we do not know what the symptoms in this host will be. It will be important to determine if the California ipomovirus causes WVD symptoms like SqVYV does in Florida. In Florida, watermelon fruits produced on plants infected with SqVYV often exhibit discolored blotches in the rind, discolored flesh (excessive coloration) and a poor taste that together renders these fruits unmarketable.

While it is too early to know what the impact, if any, of this new ipomovirus will be on cucurbit production in the Desert Southwest U.S., it is important to be aware of the potential of this virus to infect and injure cucurbit crops in California and Arizona. Please report any suspicious virus-like symptoms in watermelons, melons, pumpkins or squashes to your local Cooperative Extension or Agricultural Commissioner office.



Figure 1. On the left, symptoms of slight yellowing of the foliage followed by vein clearing in a field grown melon (Photo J.D. McCreight) and on the right yellow mottling and vein clearing symptoms in a field grown pumpkin (Photo E.T. Natwick), symptoms are presumed to be due to the newly identified ipomovirus infection; both tested positive for infection with the new virus.