

Cucurbit Viruses

There are many viruses that affect cucurbits. The most common symptoms are fruit deformities, fruit mottling, leaf distortion, leaf mottling, and stunting of the plant. The various viruses have different transmission methods and different host ranges. Since the methods to discourage disease rely on this sort of information, it is important to identify the virus or viruses causing the problem.



Sherrie Smith, University of Arkansas Cooperative Extension

If you live in Arkansas and suspect your cucurbit has a virus, take a vine with symptomatic leaves and/or take a couple symptomatic fruit to your local Arkansas county extension office in your county and ask for it to be tested for viruses. Cucurbits rot quickly in the mail, so bring samples early in the week and place fruit in a paper bag for mailing.

While viruses aren't curable, there are still methods of discouraging the spread of disease in a field and protecting future crops. What these methods are vary depending on the virus though. Some of the viruses that affect cucurbits include cucumber mosaic virus, melon severe mosaic virus, squash mosaic virus, papaya ringspot virus, watermelon mosaic virus, and zucchini yellow mosaic virus.

Cucumber Mosaic Virus (CMV) is a cucumovirus transmissible through seed, the parasitic weed known as dodder, and many species of aphid. CMV has an extensive host range. Since the virus is non-persistent in aphids, weed control and trap crops may help protect a cucurbit field from CMV.

Melon severe mosaic virus (MSMV) is an orthotospovirus of interest as it was first reported in Arkansas in 2023. Orthotospoviruses are vectored by thrips. MSMV in particular is suspected to be transmitted by western flower thrips. As the virus is persistent in the thrips, controlling thrip populations in the field can help reduce the spread of MSMV.



Danny Walker, University of Arkansas Cooperative Extension

Jason Pavel, University of Arkansas Cooperative Extension

Squash mosaic virus (SqMV) is a comovirus transmitted by seed and certain beetles. In Arkansas, one should keep an eye out for the striped cucumber beetle as a vector. Most isolates of SqMV do not affect watermelons but can affect all other cucurbits. SqMV also can affect legumes, plants in the celery/carrot family, and some lesser known plants. Since the virus is persistent in beetles, control of the striped cucumber beetle can help reduce the spread of SqMV in a field.

Papaya ringspot virus (PRSV), watermelon Mosaic Virus (WMV), and zucchini yellow mosaic virus (ZYMV) are all potyviruses. Potyviruses are aphid transmitted viruses that are non-persistent in their aphid vector.

PRSV affects cucurbits, black locust, papaya plants, and the goosefoot family (including quinoa). Given its limited host range, rogueing out nearby wild cucurbit and goosefoot plants and including trap crops can help exclude the virus if it isn't already in the field.

WMV is known to affect a broad host range. The green peach aphid, cowpea aphid, spirea aphid, and potato aphid are some of the aphids known to transmit WMV. Similar to CMV, weed control and trap crops may help protect a cucurbit field from WMV.

Besides being vectored by aphids, ZYMV can be seedborne. ZYMV mainly affects all cucurbit crops and can cause significant crop losses if gets into a field. Similar to PRSV, rogueing out wild nearby cucurbits and including trap crops can help exclude the virus if it isn't already in the field.



Sherrie Smith, University of Arkansas Cooperative Extension

Viruses are not curable. No matter which of these viruses it is, remove infected plants and plant material to reduce virus spread. In general, the best way to manage these diseases is the selection of resistant cultivars. Other good practices include prompt removal of crop debris after harvest and rogueing out nearby weeds or other plants that can carry the virus between seasons. Knowing which viruses are present can help decide what resistances may be of particular importance when looking to plant the next cucurbit crop. Since viruses such as CMV, SqMV, and ZYMV can be seedborne, it is also important to use virus-free seeds that have been screened for these viruses.