

Pumpkin Virus Alert

There are several widely prevalent plant viruses in Nevada, including alfalfa mosaic virus, apple mosaic virus, onion yellow dwarf virus, potato leafroll virus, potato virus X and Y, tobacco mosaic virus, and tomato spotted wilt virus. Last year, potato virus S was found very prevalent in potato field. This year, watermelon mosaic virus 2 (WMV-2) and papaya ringspot virus (also called watermelon mosaic virus-1, WMV-1) were found in a pumpkin field (Fig.1), which expanded the list of widely prevalent plant viruses in this state.



Fig.1. A patch of infected pumpkin plants by WMV-1 and WMV-2 in a field

Besides WMV-1 and WMV-2, pumpkin crop can also be attacked by squash mosaic virus, cucumber mosaic virus, and Zucchini yellow mosaic virus. Although these three viruses are widespread in the US, there is no record indicating their occurrence in Nevada.

Both WMV-1 and WMV-2 are capable of infecting all commercially grown cucurbits. The most common symptoms caused by them are leaf mosaic (variegated patterns of dark and light green to yellow that form a mosaic) and leaf distortion (Fig.2). Symptoms may vary from plant to plant according to the species or varieties, viral concentration in the plant, timing of

infection, single or mixed infection, or temperature.



Fig.2. Severe mosaic and distortion of infected pumpkin leaves

On pumpkin plants, WMV-1 and WMV-2 either infect the plant alone or together. If a plant is infected by only one of them, the symptom generally is milder than by both. Infection by both viruses initially causes strong mosaic and distortion on leaves (Fig.2). Infected plants have smaller and smaller new leaves. During the late stage, leaves turn yellow or become scorched along the edge (Fig.3), and finally die.



Fig.3. Yellow and scorched leaves in the later season

Pumpkin fruits are also affected. Some may lose market value. Initial symptoms include surface discoloration, earlier browning, small fruit, shrinking or death (Fig.4). Secondary infection by other microorganisms may occur on the diseased fruits and cause soft rot.



Fig.4. Yellowing of a premature pumpkin in the early season

Viral infection will stand out in a pumpkin field as the clustering of down-sized plants with yellow foliage is shown (Fig.1), which makes the disease more evident. However, some plants may not show such severe symptom even though they are infected. The clustering of diseased patch generally is caused by aphid transmission. Both WMV-1 and WMV-2 are efficiently transmitted by aphids. Seeds can also transmit both viruses.

Infected plants have no way to get rid of viruses and stay viruliferous throughout growing season. Some plants may either recover from the symptoms or tolerate the infection, but rarely in the field condition. Yield loss can be 30-50%; in some cases, it may be higher. Control of pumpkin viruses can be achieved by spraying pesticides to kill aphids. Please note that spraying pesticides does not kill viruses but it will help block virus introduction into the field or prevent spreading of viruses in the field by aphids. Use of certified virus-free seeds is very critical to avoid these viruses.