Pacific Pests, Pathogens and Weeds - Online edition

Sweetpotato virus G (374)

Common Name

Sweet potato virus G.

Scientific Name

Sweetpotato virus G; previously it was known as C8 virus. The abbreviation is SPVG. Different strains of SPVG are reported. The virus particles are flexus rods.

Distribution

Asia, Africa, North (Hawaii) and South America, the Caribbean, Europe, Oceania. It is recorded in Australia, Easter Island, French Polynesia, New Zealand, Papua New Guinea, and Solomon Islands.

Photo 1. Appearance of sweet potato virus-G on the indicator plant, *Ipomoea setosa*. Symptoms on sweet potato varieties are rare in the field.

Hosts

Sweetpotato; there are no reports that the virus has been found in other crops or in weeds.

Symptoms & Life Cycle

Plants infected with SPVG rarely show symptoms in sweet potato; possibly, the concentration of the virus is too low to cause disease. However, this does not mean that the virus is not a potential threat to sweet potato production. The concern is that when SPVG occurs with other sweet potato viruses (e.g., *Sweetpotato feathery mottle virus* (**see Fact Sheet no. 258**) or *Sweetpotato chlorotic stunt virus* (**see Fact Sheet no. 375**), it allows SPVG to multiply causing symptoms of *Sweetpotato virus disease*. Plants are stunted with narrow yellow leaves and lack storage roots.

Symptoms of the virus are best seen on the indicator plant, *Ipomoea setosa* (Photo 1).

Spread of SPVG occurs in three ways. First, it is spread between plants by aphids, e.g., *Aphis gossypii* and *Myzus persicae*. The virus is picked up as the aphids feed on plant sap. Once aphids have the virus in their mouthparts, they can then infect healthy plants immediately, but this ability to infect is lost quickly. Secondly, the virus is spread in cuttings used for planting. Thirdly, the virus is spread in storage roots sent to markets: buyers often take the roots and grow sprouts from them for planting.

Survival of the virus between crops or cropping seasons occurs in vines left in the field after harvest, in storage roots discarded in the field or intentionally kept as a source of planting material. Possibly, SPVG occurs in wild morning glory *(Ipomoea)* species.

Impact

On its own in sweet potato, SPVG causes little impact; this is not unusual for sweet potato viruses. However, when it occurs with *Sweetpotato feathery mottle virus*, the yield of storage roots is reduced by about 14% (in the USA). There are reports that a similar disease occurs when SPVG and *Sweetpotato chlorotic stunt* occur together, but this has not yet been reported from Oceania.

These complexes between different viruses can be very damaging, even though the viruses do little harm when on their own. For instance, in east and west Africa, *Sweetpotato feathery mottle virus* and *Sweetpotato chlorotic stunt virus* together causes the very serious *Sweetpotato virus disease*, with losses of 50-90% in the yield of susceptible plants.

Detection & inspection

The best way of detecting SPVG is to graft shoots of sweet potato onto *Ipomoea setosa*, the indicator plant for sweet potato viruses. If SPVG is present, it is likely to show on the newly emerged leaves in 10-20 days; the leaves will be pale yellow with spots or patches of yellow between veins. However, proof that the symptoms are caused by SPVG (and, perhaps, other viruses) requires tests by ELISA and/or PCR.

Management

CULTURAL CONTROL

Virus-tested planting material

The most useful cultural control measure is to use virus-tested planting material. This is the method of control used for this and many other virus diseases affecting sweet potato in Australia, China, South Africa and the US; it is also a method under investigation in Papua New Guinea. Plants are tested for virus and, if infected, given heat treatment before removing the meristem and growing it into a healthy plant in tissue culture. The plant is then re-tested and, if free from virus, multiplied and cuttings are released to growers. [Note, these methods remove all known viruses and also sweetpotato little leaf phytoplasma disease (**see Fact Sheet no. 55**)].

Before planting:

- Use healthy planting material, produced through a healthy 'seed' scheme.
- Remove wild *Ipomoea* species if they are present around the sweet potato plantings, in case they are hosts of SPVG.

After harvest:

- Remove old, harvested, vines and burn, bury or compost them.
- Do not allow discarded storage roots to sprout. Collect and feed to livestock, or bury them.

RESISTANT VARIETIES

There are no known varieties resistant to SPVG, but there are varieties resistant to *Sweetpotato virus disease* in Africa.

CHEMICAL CONTROL

Not a method that can be used to control this virus. The transfer of virus from aphid to plant occurs quickly, and this means that by the time an insecticide has killed the aphid, infection has already taken place.

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