



PLRV secondary symptoms in lower foliage.

Credit Eric Anderson, Scottish Agronomy Ltd.

Spread and Multiplication of Potato Viruses

1. For effective management, it is important to understand the key differences between the two transmission types, **see table below**.
2. Aphid populations can double every 2-3 days in ideal conditions and individual aphids may produce up to 50 offspring in their lifetime.
3. Non-persistent viruses are spread quickly by a broad range of colonising and non-colonising aphid species. Persistently transmitted viruses are spread by a more limited range of colonising aphids.
4. There may be several reservoirs for the virus and/or vector. This can include infected seed, groundkeepers within the crop and in neighbouring crops other than potatoes, and potentially alternate host plants including some common weeds, e.g. nightshade species and shepherd's purse.

Virus and Vector Comparison Table

PERSISTENT VIRUS, E.G. PLRV	NON-PERSISTENT VIRUSES, E.G. PVY
Survives within the aphid gut and saliva therefore the aphid, once infected, remains a virus vector throughout its life.	Carried on the aphid mouthparts therefore the aphid does not remain infective without regular acquisition of the virus.
Requires a period of several minutes feeding by the aphid to acquire the virus, and then several hours to circulate before transmission.	The aphid rapidly transmits the virus between infected and non-infected plants by probing with its mouthparts.
Potential to be transmitted over large distances through aphid migration hence isolation from an infection source is not always effective as a control measure.	Spreads locally from the infection source therefore isolation from infection sources can be used as a control measure.
Spread by several potato colonising aphids. Some species are more effective than others as a vector.	Spread by both colonising and non-colonising aphids. Some species are more effective than others as a vector.
Potential control through the effective use of an appropriate systemic insecticide program.	Poorly controlled by using systemic insecticides. Mineral oils and pyrethroids can reduce transmission of non-persistently transmitted viruses. Most peach potato aphids and willow carrot aphids are resistant to pyrethroids.