DAFM Plant Pest Factsheet

Sweet potato chlorotic stunt virus

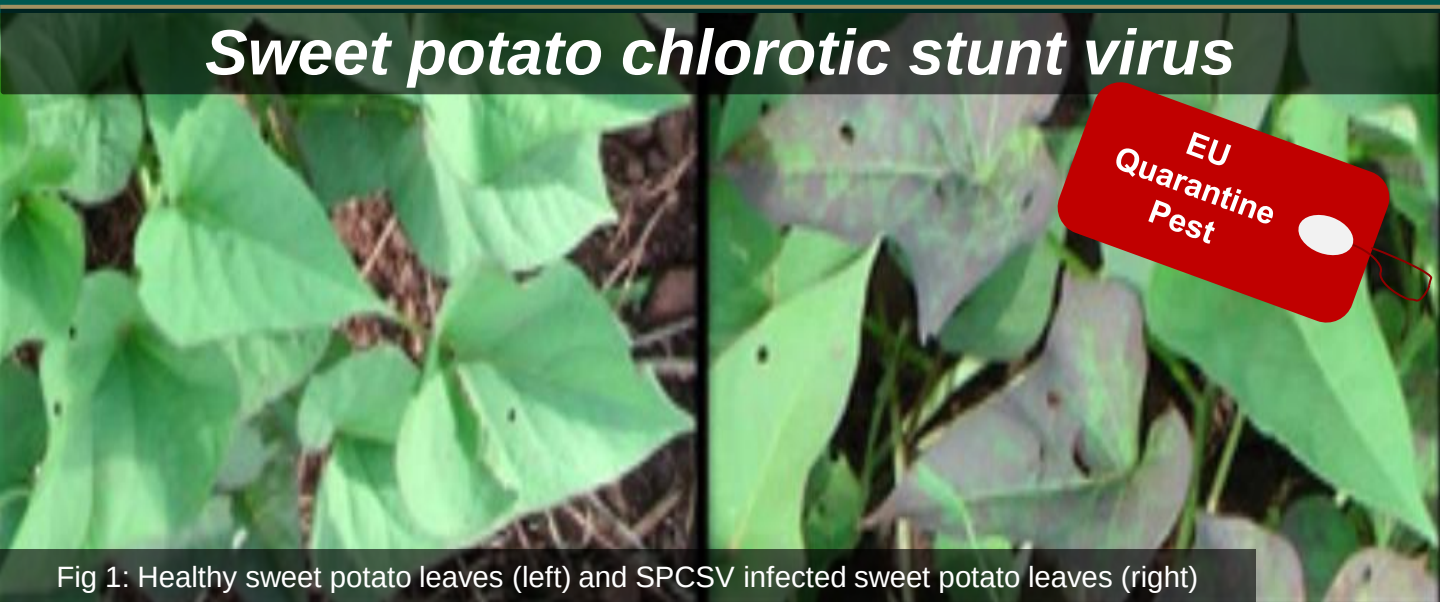

Fig 1: Healthy sweet potato leaves (left) and SPCSV infected sweet potato leaves (right)

Pest Characteristics

- **Pest:** *Sweet potato chlorotic stunt virus* (SPCSV)
- **Host(s):** The main host plant for SPCSV is sweet potato (*Ipomoea batatas*). However, the virus has also been detected in many other species of the *Ipomoea* genus, including the ornamental plant *Ipomoea setosa*. The virus has been detected in some wild non-*Ipomoea* species in areas surrounding sweet potato cultivated fields in certain regions in Africa.
- **Invasive Risk:** SPCSV is a member of the Cirinivirus genus. It is one of many viruses which impact sweet potato cultivation. Its symptoms were initially recognised in Africa, although its actual native range is uncertain as there are several distinct strains of the virus with different worldwide distributions. Sweet potato cultivation generally occurs by producing vegetative stock from vine cuttings from a previous crop (plant or sprouted tuber). This method of propagation cultivation is useful for producing large amounts of plants quickly but can result in a build up of systemic plant diseases, such as viruses, in the plant lines.
- **Adaptability:** Viruses of plants are generally capable of establishing anywhere that their host plants can be cultivated.
- **Visual Symptoms:** SPCSV symptoms can vary depending on the region but common visual signs of infection include discolouration of leaves such as yellowing (chlorosis), purpling or reddening (Fig 1 & 3). SPCSV infection can sometimes be visually symptomless. However, infection can stunt plant growth from reaching its full potential and/or reduce tuber crop yield, particularly with co-infection with other viruses (Fig 2 & Fig 3).

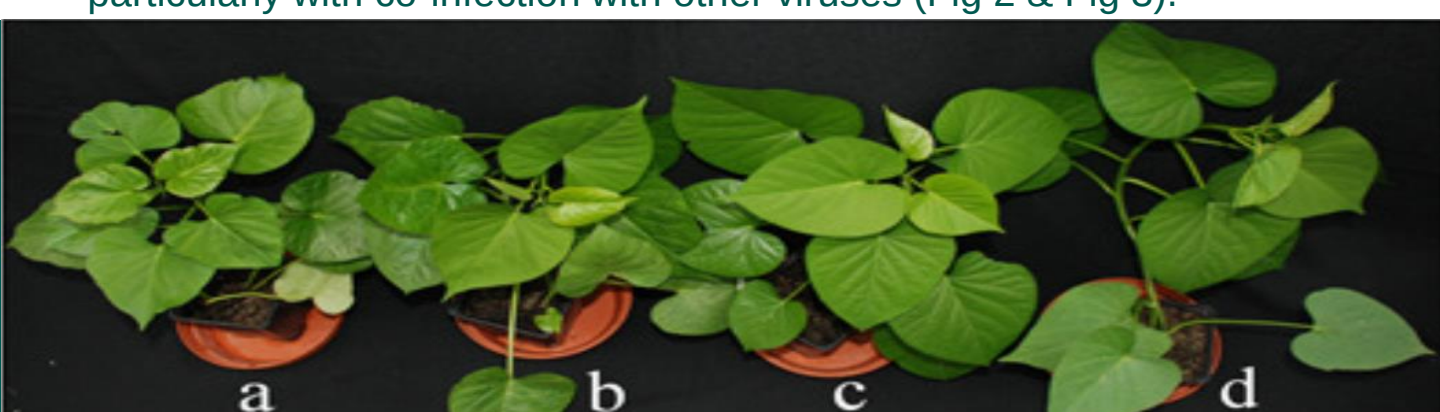

Fig 2: Stunting of sweet potato by SPCSC and SPFMV (a) co-infection of wild type SPCSV + SPFMV; (b) coinfection of 'mild' SPCSV + SPFMV; (c) SPFMV single infection; (d) healthy plant

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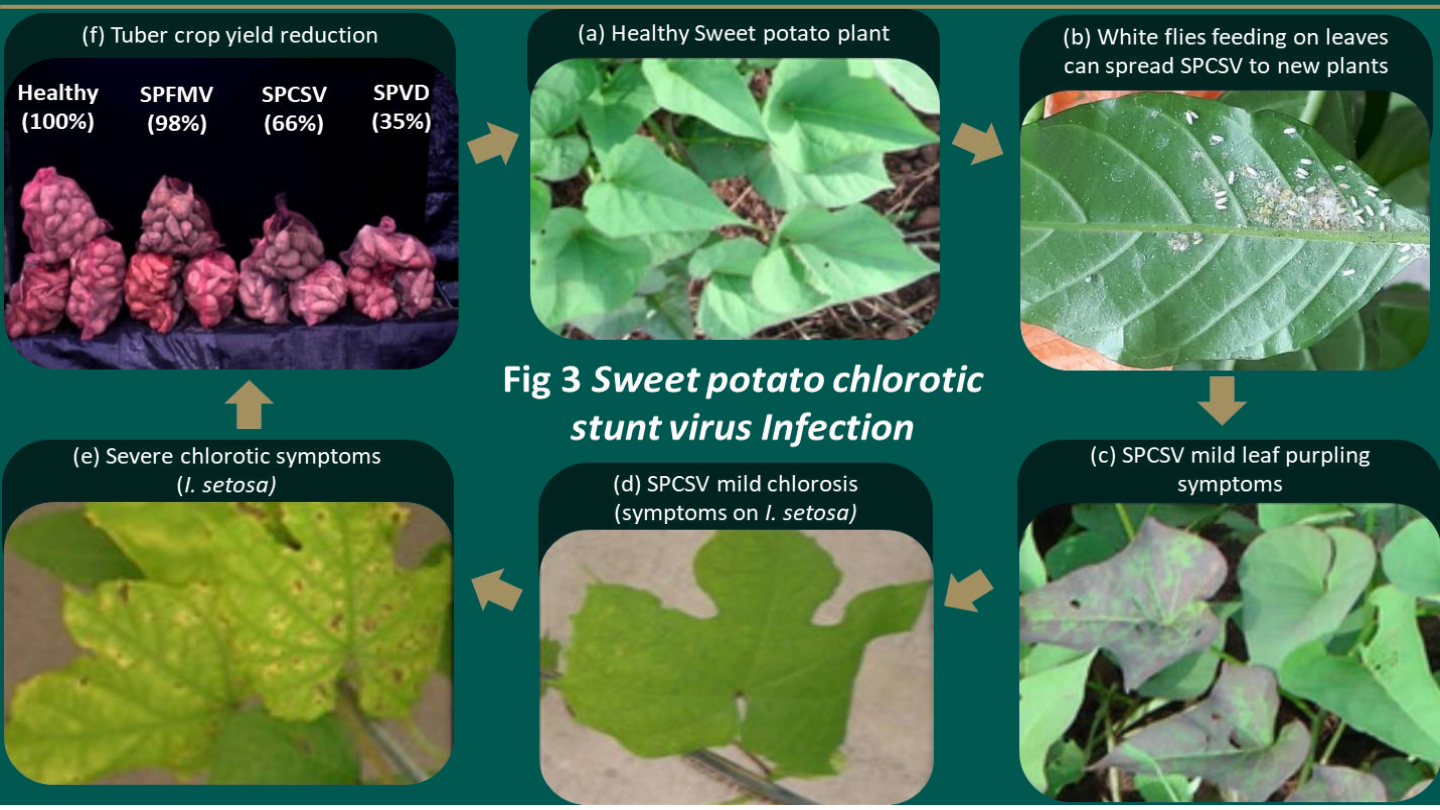

Fig 3 *Sweet potato chlorotic stunt virus Infection*

- **Lifecycle:** SPCSV is introduced into healthy plants by whiteflies which act as vectors for the disease (Fig. 3). Whiteflies feed by penetrating the plant phloem to suck out nutrients and in doing so they can introduce SPCSV and other diseases into the plant. SPCSV is a phloem based virus and as such is spread systematically throughout the entire plant. SPCSV infection negatively impacts the plant by impairing normal plant cell functioning.
- **Impact:** SPCSV is considered one of, if not, the most damaging virus of sweet potato. Notably, different strains of the virus display varying degrees of severity. Currently, there are two recognised strains present in Africa, the Western African (WA) and the Eastern African (EA) strains. The EA strain appears to be the most virulent with many isolates appearing to have acquired a gene (P22) which suppresses host plant virus immunity. SPCSV has the capacity to reduce crop yield substantially by itself, though its most damaging impacts occur with coinfection with other viruses such as sweet potato feathery mottle virus (SPFMV). The combined effect of SPCSV and CPFMV is commonly known as sweet potato virus disease (SPVD) and this can reduce yields in some cultivars by >80% (Fig 2; Fig 3 (f)).
- **Distribution:** SPCSV is present in most regions where sweet potato is cultivated. The virus is widespread in Africa, Europe, North & South America and some Asian and Pacific countries.
- **Entry Pathways:** The movement of SPCSV infested sweet potato tubers and/or propagation material is the likely pathway by which the virus has been spread around the world into new regions.
- **Dispersal:** In the field SPCSV is transmitted between plants by whiteflies such as *Bemisia tabaci*. Its global distribution new sweet potato growing regions has been facilitated by infested propagation material and tubers.
- **If suspected:** If you find suspected symptoms on cultivated plants, please submit images to DAFM at: plantpestreport@agriculture.gov.ie

Photo credits: Fig 1, Fig 2, Fig 3 (a, c-e), Wasswa *et al.* 2016 (dx.doi.org/10.4314/acsj.v26i3.2). Fig 3 (b): EPPO (https://gd.eppo.int/taxon/BEMITA/photos). Fig 3 (f) Hort innovation (https://www.horticulture.com.au/globalassets/hort-innovation/resource-assets/vg13004-spcsv.pdf)

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