

Potato wart disease

(*Synchytrium endobioticum* (*Schilbersky*) *Percival*)

EC listed disease



Warty outgrowths near stem base.



Severe infection of tuber showing white, warty outgrowths.



Warty outgrowths, associated with potato 'eyes', starting to decay.

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(*Synchytrium endobioticum* (*Schilbersky*) *Percival*)

HOSTS: Potato is the only cultivated host. There are various pathotypes (races) that are defined by their virulence on different potato cultivars.

DISTRIBUTION: Most of Europe. Also present in parts of North America (e.g. parts of Canada and Mexico), South America, Africa, Asia and New Zealand. Pathotype 1 (European race 1) is locally present in most of Europe, including the UK. Other pathotypes have a restricted distribution in continental Europe, e.g. the Netherlands and areas of central and eastern Europe; they also occur in various non-European countries.

SYMPTOMS: These occur only on tubers and stolons, not roots. On infected tubers, infected 'eyes' develop into characteristic warty, cauliflower-like swellings. If infected early, the whole tuber can be replaced by a warty proliferation. The warts are initially white but gradually darken with age and eventually rot and disintegrate. If warts develop on tubers or stolons exposed above ground, they turn green; warts developing on tubers in store usually have the same colour as the tuber skin. Symptoms on stolons are similar to those on tubers.

Diagnosis requires a laboratory examination as similar symptoms can be caused by the cankerous form of powdery scab or bud proliferation.

SOURCES: The main risk of introduction is by infected seed potatoes or contaminated soil attached to transplants, though the production of seed potatoes or transplants in known infected fields is prohibited. Other potential sources include: soil attached to farm machinery or tools; soil from

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vegetable processing plants; and manure from animals fed on infected tubers.

DEVELOPMENT: The pathogen survives for long periods in soil by means of thick-walled resting 'spores' (winter sporangia). These can survive for more than 30 years in the absence of the host, so outbreaks can occur in fields that have not grown potatoes for many years. In the presence of a potato crop, winter sporangia germinate in the spring under cool, moist conditions and release zoospores which move in soil water. On susceptible cultivars, they infect stolon or tuber initials, or the 'eyes' of developing tubers. Infected cells become greatly enlarged and summer sporangia are produced. These are short-lived and release numerous zoospores that infect surrounding host cells or infection sites on adjacent tubers; further generations of summer sporangia are produced. Cells round those infected swell and the tissue proliferates to produce the characteristic cauliflower-like warts. This cycle of re-infection and proliferation continues as long as cool, wet conditions prevail. The disease is therefore less damaging in warm, light, well drained soils. Under stress, e.g. dry conditions, winter sporangia are produced. These are released into the soil when the warts decay.

If the cultivar grown is resistant (field-immune) to the pathotype present, host cells are infected, but further development is restricted and warts are not produced.

DISEASE STATUS: Potato wart disease (*Synchytrium endobioticum*) is a serious disease that is listed in EC plant health legislation. If the disease is suspected, inform your local Plant Health Inspector.

Text prepared by CSL