

Potato Wart Disease

Why the concern?

Potato wart disease, caused by the soil-borne fungus *Synchytrium endobioticum*, affects cultivated potato and a number of wild *Solanum* species. It was once the most serious disease of potato but has now been controlled by statutory measures and the development of 'immune' varieties. However, it still poses a significant threat to potato production because the spores of the fungus can remain viable in contaminated soil for many years. Also, new strains of the fungus, capable of attacking potato varieties that were previously resistant, have developed in several European countries. Preventing the spread of these strains to the UK is especially important.

**Severe infection of
potato tuber**



Where is it found?

It is thought that the disease was first introduced to Europe with breeding material from the South American Andes in the aftermath of the 1840–50 potato blight disaster. Potato wart disease then spread to nearly all potato growing countries in Europe, until statutory measures finally restricted its spread. In most European countries, including the UK, it is now found only locally. Its distribution is very limited in other parts of the world.

What does it look like?



Potato tubers showing outgrowths from the eyes

Symptoms usually appear only on tubers and stolons (underground stems), therefore the disease is often not noticed until the tubers are lifted; true roots are never affected. However, infected plants may occasionally produce symptoms above ground including a reduction in vigour and with small, greenish-yellow warty growths at the stem base.

On infected tubers, the eyes develop into characteristic warty, cauliflower-like swellings. When formed underground, they are the same colour as the potato skin, but gradually darken with age. If exposed to light, they turn green.

Tubers may bear more than one warty outgrowth and, in some cases, the whole tuber can be affected. When infected early, tubers can become so distorted and spongy that they are almost unrecognisable. Warts on stolons are similar to those on tubers and may be visible if the stolon is exposed above ground.

Symptoms of powdery scab and bud proliferation can be similar to those of wart disease and are frequently mistaken for it. Full confirmation of wart disease requires a scientific laboratory diagnosis.

How does it develop?



Warty outgrowths on potato plant



Two visible resting spores as found in soil

When the warts rot and disintegrate, they release thick-walled resting spores of the fungus into the soil. These spores can survive between potato crop rotations for very long periods of time and remain viable for at least 30 years.

The main means of spread of the disease is in infected seed potatoes. It can also be carried in contaminated soil attached to tools and machinery, or on soil attached to plants and potatoes grown in infested fields. Manure from animals fed on infected potatoes is another possible source of contamination of clean fields, as the spores resist digestion by animals.

The disease is favoured by cool, wet soils and most of the UK outbreaks have been found in the West Midlands and the North West of England. The severity of the attack depends on soil conditions during tuber development and the variety of potato being grown. For instance, the variety King Edward is highly susceptible whilst others, such as Maris Piper, are resistant to the strain of *Synchytrium endobioticum* found in the UK.

When the crop is lifted, especially after a dry season, many of the warts may be extremely small and can be overlooked. However, the disease usually develops further in the store or clamp and tubers with warted outgrowths may be seen when dressing out.

What measures are currently taken?

- **Scheduling**

Whenever an outbreak is found on agricultural land, the infested field is scheduled under Notice by Defra. Potato production on such land is prohibited, as is production of any plants that would be transplanted, and only immune potato varieties can be grown in a safety zone around the scheduled fields. Some fields have now been descheduled because they have been found free of the disease after a lengthy period of restrictions.

- **Seed & ware crops**

Potato wart disease is listed under EC Plant Health legislation as a quarantine organism and so there are freedom requirements for seed potatoes and other planting material. There is therefore a nil tolerance for wart disease in the Defra Seed Potato Classification Scheme, and marketing of an affected ware crop would be strictly controlled.

- **New varieties**

New varieties are all tested for resistance to wart disease.

If you suspect the presence of this notifiable disease, you should immediately inform your local Defra Plant Health and Seeds Inspector or the PHSI HQ, York:

Tel: 01904 455174

Fax: 01904 455197

Email: planthealth.info@defra.gsi.gov.uk

Website: www.defra.gov.uk/planth/ph.htm