Potato Blight Fact-Sheet

How to Identify Potato Blight
The first signs of potato blight are dark brown markings on the edges of the potato plant leaves.

The next stage is that the leaves curl and the whole potato plant wilts and eventually falls over. This happens extremely quickly and the whole process can take only a matter of days.

The picture on the left shows the first signs of potato blight. If you see this on a couple of your potato plants the only course of action is to cut the plant down to ground level immediately.

This will prevent the disease reaching the potato tubers under the ground.

Burn the foliage immediately because this is a highly infectious disease. The spores will live in the soil for a couple of years if they are not destroyed. The same fungus also causes Tomato Blight.

If the foliage is destroyed immediately Potato Blight is noticed, there is a very good chance that the potato tubers under ground will be unaffected. Growth of the potato tubers underground will be slow when the foliage has been destroyed but they will be edible and will store for some time in the ground. See the picture below to identify if the potato tubers have been affected.

Treatment of Potato Blight
Once you have it there is no treatment. To help avoid potato blight there are two main courses of action:

1. Destroy all infected plants by burning them. Do not plant potatoes (or tomatoes) on the same patch of land without leaving an interval of three years.

2. Spray potato and tomato plants with Bordeaux Mixture (available at most garden centres) in May and June to help prevent infection.
As far as we are aware, eating potatoes infected with potato blight will not cause serious medical problems. However the picture on the right shows the effects on the tuber if the disease is left to take its natural course. Its not as pretty sight I am sure you will agree,

**Crop Rotation**
The fungus which causes potato blight goes under the name of Phytophthora infestans. It is spread by either wind or rain in temperatures above 10°C (50°F)

Avoid it occurring in subsequent years by good crop rotation and burning all infected plants as soon as the disease is noticed.

The Potato Council have distributed fact sheets on Potato Blight one of which has been reproduced below for you.

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**Potato Council on Potato Blight**

**Media**

**Information**

**Watch Out for Potato Blight**

Gardeners and allotment owners are being urged to be on the look out for potato blight this summer, the disease that caused the Irish potato famines in the 1840s. Experts say that more and more outbreaks of blight are originating from allotments and gardens. These can spread to other gardens and allotments, but also affect commercially grown potatoes.

Gary Collins, Technical Executive with the Potato Council, said: “In the current climate more people are growing their own potatoes. As potato blight is a major concern to the industry, we keep a check on where outbreaks are coming from. Between 2007 and 2008 the number of outbreaks from allotments and gardens more than doubled. Because potato blight can spread very easily over large distances, everybody needs to keep a close eye on their potatoes. Not only can it can reduce the quality of your home-grown crop, but also your neighbour’s crop, and the local farmer’s crop too. A little knowledge and effort can go a long way to reducing the impact of this disease”
Blight is most likely to appear between July and September, particularly when the weather is warm and humid. Gardeners should look out for dark brown or blackish patches or lesions on the top of the leaflets [1], often surrounded by a pale yellow halo. These lesions may also be found on the stems [2]. Under humid conditions, there may be a downy white coating that looks like fine cotton wool developing on the underside of the leaflets, or again on the stems. Blight spores released from this white coating is how the disease spreads from the foliage to other plants, or down on to the soil, where they can infect the tubers, causing sunken areas on the potato surface, and a chestnut-coloured rot under the skin.

If you discover what looks like potato blight you should snip off the leaflets, or even whole stems to stop the disease spreading and remove them from the crop. If vigilant, this may slow the spread to a point where the crop is unharmed, and you will have done your bit to help reduce the spread of blight. The potatoes can still be harvested after two to three weeks. Make sure you remove all the potatoes from the ground, and do not leave any in the soil or on garden tips.

Tips for preventing blight include:

- Always buy your seed potatoes from a reliable source
- Choose a variety that is less susceptible to blight
- Ridge the soil well after planting your potatoes
- Mulch to reduce the amount of water required
- Water the soil and not the potato foliage
- Harvest all your potatoes – even the tiniest ones
To find out more about potato blight, visit [www.potato.org.uk/blight](http://www.potato.org.uk/blight) for an in-depth fact sheet. On this site, you can also register free to receive weather warnings that let you know when the conditions are right for the spread of blight - known as a Smith Period, or that there may be blight in your area. These are sent by email and as a text message.

Ends

**Note to editors**

- Potato Council is part of the Agriculture and Horticulture Development Board [www.ahdb.org.uk](http://www.ahdb.org.uk) working on behalf of British potato growers and purchasers to promote potatoes. Potato Council is funded through a statutory levy on 3,000 potato growers and potato trade purchasers and aims to support the British potato industry

- Please below a Fact Sheet with more information on blight.

**Potato Blight – The Facts**

- Potato blight is the most important potato disease.

- Potato blight is a fungal disease spread by spores.

- Potato blight is most likely to appear between July and September, when the weather is at its warmest.
The signs of potato blight are dark brown or blackish patches on the leaves, often surrounded by a pale yellow halo. On the underside of the leaves there may be a downy white coating of spores in moist conditions, particularly at night. These blight lesions may also be on the stems.

The blight can spread from the foliage to the tubers, causing sunken areas of the potato, and chestnut coloured rot under the skin.

Once blight affects a plant, the infection can easily spread given the right weather conditions.

If the weather is humid, the spores that spread blight can spread over long distances.

Between 2008 and 2009, the percentage of outbreaks of blight originating from allotments or gardens rose from 3.6% to 9.1%.

Organisations such as Potato Council monitor conditions for periods when blight infection can spread most rapidly. These are known as ‘Smith Periods’, and occur when there are at least two consecutive days of temperatures of 10°C, and on each day there are 11 hours when the humidity is greater than 90%. You can find more information and register for forecasts at www.potato.org.uk/blight.

Gardeners who discover potato blight should remove the affected leaves or stems to prevent blight spreading to the potatoes. The earlier this is done the better. This will also stop the spores spreading. This may reduce the number and size of the tubers growing on the stem.

Tubers should be harvested after two to three weeks, and may be unaffected.

Those growing their own potatoes can take a number of steps to ensure that reduce the likelihood of blight occurring:

- Always buy your seed potatoes from a reliable source. Do not bring seed potatoes from another country, or save your own as they may be infected.

- Some maincrop varieties show some resistance and are slow to develop blight.
Always remove all potential sources of blight. Harvest even the tiniest potatoes, and remove any potatoes that grow by themselves (volunteers).

Never abandon old tubers around the garden or allotment, or try to compost them.

Remove blighted tubers before storing, and always store your potatoes under dark, cool conditions.

Avoid planting in sheltered sites and plant in rows into the wind if possible.

If watering is required apply to the base of the plants, soil improvement and mulching will reduce the amount of watering required.

Blight spores on foliage are washed down through the soil to infect tubers. Earthing up potatoes, or mulching the soil with hay or straw can reduce levels of infection.

Potato blight caused the Irish potato famines in the 1840s and led to widespread starvation.
What is potato and tomato blight?

Potato and tomato blight is a disease caused by the fungus-like organism *Phytophthora infestans* which spreads rapidly in the foliage of potatoes and tomatoes causing collapse and decay. The disease spreads most readily during periods of warm and humid weather with rain. *P. infestans* can also infect potato tubers causing a rapid tuber rot. It is the most important disease of potatoes, and caused the Irish potato famine of the 1840s. It has therefore been around for a long time, and over the years has adapted with more aggressive strains making it harder to control.

It is a serious disease for outdoor tomatoes, but not as common on tomatoes grown in greenhouses as the greenhouse reduces access by the air-borne spores when vents are shut. Also, water on the leaf surface is required for infection. If however an infection does take hold, the humid conditions within a greenhouse mean that the spread can be fast with devastating results.

Blight is specific to potatoes and tomatoes, and some ornamental relatives of these two crops are also susceptible. Cases have been recorded on some ornamental *Solanum* species such as *S. laciniatum*, and also on *Petunia*.

**Symptoms**

You may see the following symptoms:

- The initial symptoms of blight on potato plants are small, dark spots or lesions on leaflets, usually on the margins, which enlarge with new ones possibly developing. The brown lesion is surrounded by a halo of light green tissue. During humid conditions, a fine white downy growth may be seen around the edge of the lesion on the underside of the leaflets. This downy growth can release thousands of spores (sporangia) each day. Eventually the leaflet shrivels and dies.
- Brown lesions may also develop on the stems, mainly at the leaf axils.
- The spores of the pathogen will be washed down from the leaves or stems onto the soil surface, and can reach the tubers. Infected tubers have a brown or purple discolouration on the surface, and reddish-brown granular markings in the tuber flesh. The tubers may remain firm but can develop bacterial soft rot if the tissues are invaded by weak secondary bacteria that cause tissue breakdown. Early attacks of blight may not be visible on tubers, but any infected tubers will usually rot during storage.
- See photographs at the end of the fact sheet.
Biology

The blight pathogen is a microscopic, fungus-like organism whose spores (sporangia) easily break away from infected foliage and may be wind-blown for long distances during dull, humid weather. There are two types of *P. infestans* spore that commonly infect: sporangia that are air-borne and are generally responsible for infection at higher temperatures and zoospores that are water-borne and generally infect at lower temperatures. After infection, the pathogen spreads rapidly, killing the plant cells. Under humid conditions, stalks bearing sporangia grow from the infected plant tissue and the disease can spread rapidly through the crop.

Potato blight will defoliate a potato crop, but if the disease arrives after the tubers are a good size and they are harvested before they become infected, little is lost. However early attacks can be a problem, as the tubers may be under threat of infection for a long time, especially as they are developing.

Sources of infection

The pathogen over winters in infected seed potatoes, outgrade potatoes left by the sides of fields, or in groundkeepers, which grow from tubers left in the ground the previous season. This is why it is important to remove all tubers, or parts of tubers from the soil. If these are left and germinate in the following year, they will not produce a worthwhile crop, but will still need to be checked for blight and be a potential source of blight infection. However, the great majority of infections in gardens arise from wind-blown sporangia originating in other gardens, allotments and commercial crops, which can originate from miles away. In the UK, outbreaks may occur from June onwards, usually earliest in the South West.

New blight strains

The genetic population of the pathogen is ever changing but until the 1970s in Britain there was only one mating type. New findings have shown that a new dominant strain, called 13_A2, is more aggressive and fitter than most other strains. Potato Council is conducting new research to identify the differences between strains and the possibility of these strains mating to give oospores, which are a third type of *P. infestans* spore, i.e. the thick-walled spores that can survive in soils over long periods.

Variety choice

There are varietal differences in resistance to blight infection. Those varieties that have a high degree of resistance to blight may not show blight symptoms at all, or under high blight pressure, will only delay the onset and reduce the severity, so vigilance is still key. Varieties can have some resistance to foliage blight, but are susceptible to tuber blight and vice versa. Currently it is difficult to give specific advice about which varieties are more resistant because the recent emergence of strain 13_A2 requires considerable re-testing of varieties and this is in progress.

Non-chemical control

The most effective control for the spread of infection is warm, dry and sunny weather. Watering your crop can increase the humid microclimate around the haulm (tops) which can help the spread of the disease. If the potato crop is to be watered, it is best to water the soil
around the base of the stems rather than wetting the entire plant. Take care not to wash away soil. A good depth of soil cover over the potato tubers or mulching provides some protection to tubers. Early-harvested potatoes, which are generally more susceptible, are more likely to escape infection as they tend to be harvested before the weather is warm and humid enough for the extensive spread of blight. If you are growing more than one variety, there is evidence that growing alternate rows of different varieties can help to reduce the spread of blight if disease pressure is not too high.

**Chemical control**

All of the non-chemical control measures should be adopted. If, as a Leisure grower you want to use chemicals, you must rely on a very restricted range of protectant fungicides containing copper (Bordeaux Mixture or Murphy Traditional Copper Fungicide) or mancozeb (Dithane), since the more modern and more effective products are not approved for amateur use. These protectants are best applied prior to any infections, and applications should be repeated on a regular basis. It is important to realise that these fungicides will not kill an infection, but will only slow down the spread of the disease, by offering some protection to the healthy plant tissue.

When wet weather is forecast from June onwards, protectant sprays are advisable. Remember to include outdoor tomatoes, as these are as susceptible to blight as potatoes.

**What if an infection occurs?**

First of all, all is not lost. Infected material should be cut off as quickly as possible and buried or burned rather than composted, as composting may leave the haulm exposed, which will allow blight spores to spread until the green material dies. There is also a possibility that the infected material may contain oospores that will be returned to the soil when the compost is used. If composting is the only option, the infected material should be placed under the top layer in the compost to help reduce the movement of spores in the wind. Keep a close eye on the crop, if leaflets or compound leaves or even stems have been removed, there is a strong possibility that other lesions will show shortly afterwards, as it can take a few days for signs of the disease to show. Treat these in the same way by cutting them off and discarding.

A crop that is to be stored will be more at risk if there has been blight in the tops. When the tops have been dead for three weeks the risk of tuber infection at harvest is reduced because most sporangia in the soil will have died. Also, the skins will have set on the tubers, which will give the best protection to the tubers as well as being necessary for storage. Remember to remove all tubers.

There are no problems using the soil for next year for other crops, but the potatoes should be moved to another part of the allotment or garden. This is just part of good practice for crop rotation.

**Blight websites**

Because infection is so dependent on specific combinations of temperature, humidity and leaf wetness the periods of high risk (blight infection periods or Smith Periods) can be predicted accurately. The Potato Council has linked with another provider to give commercial growers combined warnings on which they can base their fungicide spray programmes. Leisure growers are able to access this service free of charge by registering with Potato Council on its website. The web sites show blight in the area as reported by blight scouts, and weather
conditions that are ideal for the spread of the disease, which is described earlier as Smith Periods. You can log onto Potato Council’s website at www.potato.org.uk/blight. When you register for the blight outbreaks information on the site, you can receive email and/or text messages that warn you of both the presence of blight (Potato Council site) and Smith Periods (Blightwatch) for up to five postal districts.

**Blight photographs**

As examples of blight, below are photographs of blight infections on the leaves, stem, and tuber. Blight can look different on different varieties, and can also be confused with other diseases, such as Botrytis or even wind damage. To be safe remember, if it looks like blight, bag it and bin it!

Blight on a leaflet

Fine, white downy growth on underside of leaflet
Blight on a compound leaf

Stem blight

A plant with blight amongst healthy plants
Thank you to the following organisations that have helped with guidance and photographs for this fact sheet.

Garden Organics  
National Society of Allotment and Leisure Gardeners  
Royal Horticultural Society  
Scottish Agricultural College  
Soil Association  
Sutton Bridge Experimental Unit  
WCF Phoenix

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Controlling potato blight in the garden

Louise Cooke and George Little, AFBI Applied Plant Science and Biometrics Division, Newforge Lane, Belfast; Stephen Bell, College of Agriculture, Food and Rural Enterprise, Greenmount Campus.

Potato blight is the greatest threat to successful production of potatoes in gardens or allotments as well as in commercial crops. Caused by the fungus-like organism *Phytophthora infestans*, it’s been a problem ever since its introduction in 1845 resulted in the Irish Potato Famine.

**What to look out for?**
The first symptoms of blight are usually dark brown spots on the leaves often with a lighter green margin (Figure 1). When it’s very humid, white mould growth develops on the undersides of the leaves in this light green area as the pathogen emerges from the leaf tissue and produces its airborne spores (Figure 2). Stems can also be infected and develop brown patches. Blight tends to attack lushly-growing potato plants and is not normally associated with poor or yellowing foliage. In mild, humid weather, blight spreads rapidly and can completely destroy the foliage in days. Most importantly for the gardener, spores washed into the soil by rain can infect the tubers causing brown markings in the flesh (tuber blight; Figure 3). Blighted tubers are extremely susceptible to secondary soft rots, which can lead to total loss of the crop.

*P. infestans* also attacks tomatoes. Symptoms on outdoor tomatoes are similar to those on potato, with dark brown patches on the leaves, often with white sporulation. Infected tomato fruit develop dark brown markings in the flesh visible through the skin and then rot.

Potato tubers and tomato fruit from blighted crops may appear healthy when harvested, but often develop symptoms rapidly in storage because they were already infected. If infection has been seen in the foliage, it is generally inadvisable to store the crop.

**Is there a remedy?**
Gardeners who want to avoid problems with blight should consider choosing a potato variety with a good level of resistance; information on this and other characters can be found on the AFBI website at [http://www.afbini.gov.uk/index/services/services-specialist-advice/reclists-homepage/reclists-potato-homepage](http://www.afbini.gov.uk/index/services/services-specialist-advice/reclists-homepage/reclists-potato-homepage). However, many will want to grow traditional varieties and as most are extremely susceptible, it’s important to try to minimise the risk. Start by using healthy, certified seed and avoid home-saved seed particularly if blight was present the previous year.

Blight needs wet or humid weather with night temperatures around 10°C (50°F) to spread. Generally in Northern Ireland, the first outbreaks of blight in field crops occur from mid-June onwards. You can check if the weather favours infection and if outbreaks have occurred by phoning the AFBI Blightline service on 02890 382372 or using the DARD Blight-Net website at [http://www.ruralni.gov.uk/index/crops/potatoes/blight_net.htm](http://www.ruralni.gov.uk/index/crops/potatoes/blight_net.htm).

For gardeners who are willing to use fungicides, applying a suitable product will help to protect the crop. Only products based on mancozeb (‘Dithane’) or copper (Vitax Bordeaux Mixture or products containing copper oxychloride) are approved for home-garden use on potatoes and these must be applied before blight is present. These fungicides cannot cure an established infection and they will need to be re-applied at intervals. Read product labels carefully and comply with all the conditions of use.

No product can completely eliminate the risk of infection, so for all gardeners, it’s vital to check plants regularly for symptoms, particularly if the weather favours infection or blight is present in
the area. If blight is seen, the best option is to remove the foliage and destroy it (see below). This will help to prevent spores being washed down and infecting the tubers and also stop them spreading infection to nearby crops. After removing the foliage, it is best to wait 2-3 weeks before digging the crop to reduce the risk of infection lifting. This will also allow any tubers already infected to develop obvious symptoms so they can be discarded. Alternatively, just dig tubers as they are needed and use them straight away.

Good crop hygiene is essential – don’t attempt to compost blighted foliage or tubers as they can be an ongoing source of infection for current and future crops. Blighted foliage and tubers will rot down quickly if put into plastic bags, which should be disposed of with non-recyclable waste. At this time of year, gardeners should check compost heaps and any areas where potatoes have been discarded and destroy any potato shoots by cutting and covering with a mulch.

In Northern Ireland, the blight pathogen does not survive in the soil for more than a few weeks except in infected tubers, so crop rotation won’t prevent blight. However, if the garden or plot allows, it is sensible to avoid growing potatoes in the same area year after year as groundkeepers left after lifting may provide a source of infection. Repeated cropping of potatoes can also lead to a build up of other pest and disease problems in the soil, such as potato cyst nematodes (eelworm).