Pest & Disease Identification Cards

in association with

syngenta
Although it is often easy enough to spot that there is something wrong with your crop, it is not always that easy to identify exactly what. So, in association with Syngenta Crop Protection the BPC has produced this series of identification cards for you to take into the field. It should make identifying the most common pests and diseases easier, and so help you find the right treatment sooner rather than later and minimise your losses.
Blight

Dead leaf tissue caused by blight with characteristic pale surrounds
Symptoms

Haulm

- Initially appears as small dark spots mainly on leaf margins
- Under moist conditions spots become surrounded by whitish spore-bearing mould, especially on the underside of the leaf
- Spots enlarge and new ones develop
- Stems may develop dark brown patches usually starting where leaves join them

Tubers

- Brown or purplish discoloration of skin spreading inwards to reddish-brown granular markings in the tuber flesh
- May remain dry and mummify or become infected with other organisms, e.g. bacteria, leading to secondary wet rots
Brown rot
Brown rot

Symptoms

• Affects vascular system of plants and spreads systemically to progeny
• Causes vascular ring of tubers to go brown, leading to the whole tuber becoming brown and rotten

If you suspect you have found brown rot, contact MAFF plant health department.
Verticillium wilt

Classic symptoms of half the leaf affected
Verticillium wilt

Symptoms

• Aggravated by stress conditions
• Often associated with potato cyst nematode infection
• Plants die back early (often only one half of a plant or leaf will go yellow first)
Common scab
Common scab

Symptoms

• May be slightly corky lenticels to extensive raised or pitted scabs
• Most commonly angular corky scabs
• May be found singly or in groups
• In extreme cases the entire surface may become covered
Powdery scab
Powdery scab

Symptoms

• Scabs on tubers which usually erupt to liberate a fine powder of spores leaving a ragged edged scab more circular than with common scab
• Non-erupting scabs may develop a surrounding area of discoloured tissue which is variable in size and may be confused with skin spot pustules
• Cankers and cankerous tumours may deform the tubers
• The tuber outgrowths of powdery scab are not cauliflower-like as in the case of wart disease
• Powdery scab tumours may be formed on roots, distinguishing it from wart disease
Stem canker and black scurf - *Rhizoctonia solani*

Black scurf close-up

Rhizoctonia damage to stems - canker
Stem canker and black scurf - Rhizoctonia solani

Symptoms

Tubers
• Brown to black particles of variable shape and size easily detached from the skin with the thumb nail

Sprouts
• Sprout tips blackened causing secondary sprouts to grow, which may in turn be infected
• Sprouts may not emerge under severe attack

Stems
• Stem bases bear brown cankers which may girdle stem and may cause rolling, wilting and formation of aerial tubers
• Distinguished from leaf roll by presence of stem cankers
• Distinguished from blackleg by absence of blackened stems at ground level
• Sometimes a superficial white powdery collar may develop just above ground level
Spraing

TRV symptoms in foliage

Brown arcs, spraing, caused by TRV

PMTV symptoms in foliage

Brown arcs, spraing, caused by PMTV

Tuber surface spraing caused by PMTV
Symptoms

• Brown corky arcs and spots in tuber flesh, rarely visible on skin surface
• Spraing infected tubers usually produce healthy plants but some may have several healthy stems and one stunted stem with symptoms, i.e. stem mottle
• Yellowish mottle on leaves not stems
• Sometimes finely etched yellow rings and lines or brown arcs and V shaped markings
• Leaf margins often distorted or constricted
• A few tubers from stem mottle plants may contain small spots, less frequently arcs

Spraing is caused by either mop top virus (PMTV) or tobacco rattle virus (TRV).
Potato virus Y
(leaf drop streak, severe and rugose mosaic)
Potato virus Y
(leaf drop streak, severe and rugose mosaic)

Symptoms
• Variable according to variety of potato and strain of virus
• Some strains of virus Y cause very mild mosaic symptoms in both first and second year

First year
• Most commonly dark spots or streaks on veins
• Leaves shrivel and drop i.e. leaf drop streak
• Only a mild mottle or mosaic in some varieties e.g. Estima, Wilja and Pentland Squire
• Symptoms will only appear on the stems that virus infected aphids have fed on, so not all stems will necessarily be affected

Second year
• Most commonly plants dwarfed and brittle
• Leaves with severe mosaic and rugose or wrinkled surface
• The leaves appear mottled with random flecks of different shades of green
• All stems of the plant are affected
• Some varieties again react with leaf drop streak - often the more resistant ones
• Generally no tuber symptoms but sometimes cracking or deformation, again some varieties may show mild symptoms e.g. Estima, Premiere, Pentland Squire

Crinkle
• A combination of virus Y with some of the mild mosaic viruses particularly virus X, may accentuate leaf distortion, curling and stunting
Potato virus X
(latent and mild mosaics)

Severe Mosaic, often caused by combinations of two or more mild viruses
Potato virus X
(latent and mild mosaics)

Symptoms

• None or mosaic pattern of light and dark green on leaflets between veins
• Generally no leaf distortion but strains so arise which cause a severe mosaic
Potato cyst nematode (PCN)

Nematode damage to tuber

Yellow nematode cysts of G. rostochiensis

White nematode cysts of G. pallida
Potato cyst nematode (PCN)

Symptoms

- Stunted weak plants
- Dull, sick looking foliage with tendency to wilt
- Lower leaves then whole plant dies prematurely
- Severely diseased plants often in patches
- Small bead like cysts just visible to the naked eye (approx .05mm diameter) attached to roots and tubers
- Between mid-July and mid-August the two species of eelworm can be distinguished by the colour of the developing cysts - golden yellow cysts (*G. rostochiensis*) or creamy white (*G. pallida*)
- Both species have pale cysts initially which turn reddish brown at maturity
Colorado beetle

Adult Colorado beetle

Colorado beetle larva

Colorado beetle eggs
Colorado beetle

Symptoms

• Stripy black and yellow beetle

This pest is not established in Britain, and strict regulations are in place to prevent a population build up. Beetles or larvae suspected of being Colorado beetle should be placed in a container and sent to the Central Science Laboratory, York, with a detailed description of where and when found.
Wireworm
Wireworm

Symptoms

• Wireworms are the larvae of click beetles
• Heaviest infestation occurs after permanent grass
• Wireworms may tunnel deeply into tubers leaving small round holes on the surface
• Damage is usually greater in later lifted crops
Cutworm
Symptoms

- Cutworms are the moth larvae, usually of the turnip moth, which feed on tubers.
- They prefer hot dry conditions and where the adult moth is active - e.g. weedy land or recently weedy land.
- The pest over winters as larvae before pupating in the spring, so can damage very early crops.
Symptoms

- Irregular shaped holes on the tuber surface extending into large cavities
- Particularly prone on heavier soils and in wet conditions
Internal rust spot
Symptoms

- Discrete brown flecks or spots randomly distributed throughout the tuber
- Often difficult to distinguish from some forms of Spraing
- Stress and high temperatures later in the season will often lead to high levels, especially where soil calcium levels are low
- Root damage, limiting calcium uptake will increase risk e.g. nematode root damage
Blackleg

Pale stressed plant due to early blackleg symptoms
Symptoms

Haulm
• Early attack may cause non-emergence or stunted pale-green to yellow foliage, upper leaves rolled, stems black and often greasy in region of ground level and stems easily pulled out
• Late attack may cause collapse of fully developed haulm
• Distinguished from leaf roll and stem canker by presence of blackened stems at ground level or blackened soft pith in dissected stems

Tubers
• Black rot extending from heel end or from lenticels
• The rot may become dry or sunken under dry storage conditions
Black dot
Black dot

Symptoms

• A dark brown-grey blemish over tuber surface similar in appearance to silver scurf but with more irregularly shaped lesions with less well-defined edges.
• Black microsclerotia just visible to the naked eye often give tubers a ‘sooty’ appearance.
• May develop into a silvery sheen on storage.
• Stems, roots and stolons can also be infected giving rise to wilt symptoms but this is uncommon in the UK where infection is usually limited to senescent tissue.
Growth cracks
Growth cracks

Symptoms

• Deep fissures, which are fully calloused, often develop in periods of rapid growth after a dry spell
• Irrigation during dry spells may help to control growth cracking
Peach potato aphid

- Key carrier of PLRV and PVY
- High populations cause some feeding damage
- Controlled by insecticide selected as part of the insecticide management strategy
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