

This information was adapted from our Community Orchardling Certificate. If you'd like to access more in-depth information, develop your practical skills, and meet other growers, check out our courses at <https://theorchardproject.org.uk/accredited-courses/>

## Pests & Disease

### Aphids

Aphids suck sap from leaves and shoots causing leaf curling and tip distortion. They multiply very quickly and can stunt growth, but they are rarely a major problem in the long term. The first few years are key, since this is when young trees are at their most vulnerable. Even severe infestations have little long-term impact on larger trees. Control aphids by removing or rubbing them off by hand, washing them off with water pressure, or introduce ladybird larvae directly onto the affected tree. You can also use garlic spray.



Ladybird sizing up aphids and ant 'farmer' via Pixabay

### Apple Sawfly

Similar to codling moth, sawfly larvae live inside apples. However, they occur much earlier in the season, inhabiting young fruit. Because the larvae often eat the central reproductive core, trees tend to drop infected fruits, so sawfly can actually assist with fruit thinning.

Larvae that fail to penetrate the apple's outer skin cause the familiar ribbon shaped scars or blemishes on ripened apples. These apples remain both good to eat and have fertile seeds.

You can break the apple sawfly lifecycle by removing fallen fruit.



Apple sawfly maggot and damage, by Russell Miller

### Codling moth

Codling moth larvae live inside apples. They are hard to distinguish from apple sawfly larvae but occur much later in the season. They inhabit maturing fruit and are the maggots we all dread when biting into an apple. Many infested fruits will fall prematurely as the tree rejects them, but larvae can move between fruits, causing significant damage.

Pheromone traps can be used from late May to control codling moths. They can also be controlled by tying cardboard or sacking around the trunk in the summer when the caterpillars are looking for somewhere to pupate; in the winter these materials can be removed and destroyed. However, codling moths will always be present. If you build up natural populations of parasitic wasps, you will reduce their impact.

### Pear midge

The larvae of these tiny flies can decimate a pear crop. The fruitlets turn black before dropping off. It's worth removing infested fruitlets to break the insect's lifecycle. Hoeing around the base of the tree might expose and kill pupating larvae.



Pear midge damage by APictche (Own work) [CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0/>)], via Wikimedia Commons.

### Winter moth

Winter moth caterpillars feed on young leaves, flowers, and fruit in the spring. The wingless females climb the trunk between October and April - grease bands will prevent them, but they trap everything, so it's preferable to remove them by hand whenever possible.



*Operophtera brumata* caterpillar by Gyorgy Csoka, Hungary Forest Research Institute, Bugwood.org [CC BY 3.0 us], via Wikimedia Commons.

### Leaf miners

Several insects have larva that feed on leaf tissue – including some moths, sawflies, flies, and beetles. The problem is usually just cosmetic.



Leaf miner evidence by James Lindsey at Ecology of Commanster [CC BY-SA 2.5 or CC BY-SA 3.0], via Wikimedia Commons

### Birds

Birds are great but they can become a problem if they attack buds, blossom, and fruit too much. Netting is often the only option to prevent birds eating fruit.

### Squirrels

Grey squirrels can be a severe pest, especially with nut crops. Where trees have a clear stem, e.g. walnut, baffles may prevent squirrels from accessing the tree.

### Dogs

Dogs can ring bark even older trees in seconds and tree guards are usually an unattractive necessity. The only way to protect trees is by putting sturdy guards around them.

### People

Sometimes people are the biggest pests in urban orchards because they can snap trees when harvesting fruit or deliberately vandalise trees. Involving the local community as much as possible in the planting, aftercare and harvesting helps to foster a sense of pride in the trees and this can help to reduce future damage.

## Diseases: Bacterial

### Bacterial canker - *Prunus* spp.

#### Cause

Common on cherries and plums, but also affects apricots, peaches, and ornamental *Prunus* species. Plants growing in poorly drained soil are more susceptible to this disease.

Bacterial canker enters via leaves in summer, leaf scars in autumn and through bark, injuries or pruning wounds. Small cankers develop and survive over winter.

#### Symptoms

**Leaves** – ‘shothole’ brown spots, often ringed with a yellow halo that appear in summer. Leaves dry, causing premature leaf fall. **Bark** - Shallow hollows that exude gum and cankers. In canker, bark becomes darker, looks wet and shrivelled. Cankers can kill the branch completely, causing the tree to die back. The whole tree is at risk if cankers circle its stem.

#### Remedy

- Prune off affected growth during July/August, as far back as clean cambium.
- Trees often recover and become immune.
- Avoid pruning in winter months.
- Good tool hygiene when pruning.
- Choose disease resistant rootstock and cultivars, e.g. Myrobalan and ‘Marjorie’s Seedling’ for plum and F12/1, ‘Merton Glory’, ‘Merton Premier’ for cherry.



Bacterial canker, by Rosser1954 Roger Griffith [Public domain], via Wikimedia Commons



Bacterial canker on ‘Morello’ cherry, by Russell Miller.

### Fireblight – mainly pears and apples

#### Cause

Affects apples, quinces, and related trees, particularly pears (not *Prunus*). Hawthorn can harbour fireblight. Spreads easily from plant to plant by rain splashes, birds, insects, and infected tools. Warm and wet weather conditions and late spring are riskiest times. For this reason, late flowering varieties are particularly susceptible.

#### Symptoms

**Flowers leaves and twigs** – appear burnt. Usually affects all aerial parts of the tree.

**Fruits** turn brown or black and become shrivelled but remain attached to the tree. **Bark** – cankers may develop in advanced infection; sunken, discoloured oozing patches surrounded by irregular cracks in the bark. The translucent amber or reddish ooze contains masses of bacteria and can cause secondary infections. If **heartwood** is exposed, it may reveal a reddish-brown discolouration.

#### Remedy

- Prune back 60cm below affected area, in dry weather.
- Trees may recover and not be re-infected. Trees older than 20 years are rarely affected.
- Remove young trees and shrubs entirely.
- Avoid pruning in winter months.
- Good tool hygiene when pruning and burn infected wood.
- Check other plants for infection.
- Choose early flowering cultivars and disease resistant cultivars, e.g. ‘Old Home’ pear, ‘Pyrodwarf’ rootstock.



Fireblight on pear, by Ninjatacoshell. Via Wikimedia commons.



Fireblight in cut stem with foxy red staining, from RHS.org.uk

## Diseases: Fungal

### Apple powdery mildew – all fruit trees

#### Cause

Affects all fruit trees and is usually caused by drought stress.

#### Symptoms

**Shoot and leaves** covered in white powdery coating. The disease causes stunting of shoots on young trees and the reduction of flowers and spurs on older trees.

#### Remedy

- Prune off mildewed twigs in spring.
- Ensure tree is well-watered, there is no competition from weeds, and mulch well.
- Thin congested growth.
- Choose drought-resistant cultivars.



Apple powdery mildew by Jonathan Billinger [CC BY-SA 2.0] via Wikimedia Commons

### Fungal canker – apples and pears

#### Cause

Fungal canker affects the majority of fruit trees, but most often apples and pears. It is caused by wind-borne fungus invading natural openings or scars left by fallen leaf stalks and pruning. It is often problematic on heavy and poorly drained soils.

#### Symptoms

**Branches and trunk** - Sunken lesions and fissures appear, surrounded by cracked or corky, brown, flaky bark. Branches may swell up around the infected area. Fruiting bodies appear - tiny white dots in summer, red dots in autumn. If left unchecked it will cause misshapen growth, eventually girdling branches and causing die-back. The whole tree is at risk if cankers circle stem.

#### Remedy

- Prune back to clean cambium and burn infected wood.
- Larger branches can have affected wood scraped away with a sharp knife.



Canker on apple, by Russell Miller

### Fruit brown rot – apples, pears and plums

#### Cause

A fungus that affects the fruit of apples, pears, and plums.

#### Symptoms

**Fruit** - first develops brown areas of soft decaying flesh, quickly cover fruit. Concentric rings of yellowish white mould. It then shrivels and may stay on tree.

#### Remedy

- Remove and burn affected fruit.



Brown rot on apple, by Arthuco1 [GFDL or CC BY-SA 3.0], via Wikimedia Commons



## Scab (black spot) – apples and pears

### Cause

Scab is a fungal disease of apples, pears, and sometimes peach trees. Worse in areas with high rainfall and humidity or with poorly drained soil.

### Symptoms

**Leaves** - become puckered and develop dark, rounded, dusty blotches and fall prematurely. **Young shoots** can also develop pimple-like blisters which turn to cracks and scabs. **Fruit** develops brown or blackish corky scabs, cracks, and blisters on the skin. These are usually only skin-deep and do not affect the yield or flavour. However, affected fruit may split and become infected with something else.

### Remedy

- Burn affected leaves and fruit in autumn.
- Prune scabby shoots in winter.
- Plant in mounds if soil poorly drained.



Apple scab, by Margalob (Own work) [CC BY-SA 4.0], via Wikimedia Commons



Scab on pear, by Russell Miller

## Silver leaf - *Prunus*

### Cause

From fungal brackets on previously infected branches during autumn. Spores carried in the air infect new trees by entering through wounds. Branches fatter than 5cm are more susceptible. Spreads more in damp, calm days between 18-20°C.

### Symptoms

**Leaves** develop a silvery sheen, caused by air in the tissues. **Foliage and shoots** then discolour and wither, dying off progressively as the disease works back along the branch. **Heartwood** develops a purplish stain. **Trunk** may bear small, purple, or brown fungal bracket growths with a wavy margin and a whitish woolly upper surface.

### Remedy

- Prune back 15cm below stained area, in dry weather.
- Prune only in summer - maintain open structure.
- Remove and burn any fungal brackets.
- Choose early flowering cultivars and disease resistant cultivars, e.g. 'Black Prince', 'Blaisdon Red', 'Jefferson', 'Marjorie's Seedling', 'Merton Gem', 'Monarch', 'Pershore Yellow Egg', 'Purple Pershore' and 'River's Early Prolific'.



Silver Leaf and weevil damage on plum, by Russell Miller



Silver Leaf by *Strobilomyces*, CC BY-SA 3.0 via Wikimedia Commons

## Phytophthora (root rot) – all fruit trees

### Cause

Not actually a fungus but oomycetes. No plants are immune. They are host-specific, so can spread from related plants when there is poor orchard hygiene.

### Symptoms

**Roots** – rotten. **Leaves** – wilt and turn black. Whole plant dies.

### Remedy

- Improve soil drainage.



Phytophthora by Andrej Kunca, National Forest Centre - Slovakia, Bugwood.org CC 3.0