

Taflen Wybodaeth Glasu/ Information Sheet – Rhif 6 CYNNAL A CHADW PERLLANNAU IACH/ MAINTAINING A HEALTHY ORCHARD

INTRODUCTION

No fruit tree grows in a totally isolated environment. Each one shares the space that it occupies with a multitude of other plants and animals, ranging from humans to the microscopic, such as bacteria and viruses. Together all these organisms make up an ecosystem within which you have planted your fruit trees.



A quiet corner in a small organic orchard

In this ecosystem there may be some organisms whose existence reduces the capacity of the tree to reach its maximum cropping potential. Under extreme circumstances they may even threaten the life of the tree. These are generally referred to as 'pests' and 'diseases'; pests usually being the animals, such as insects, that prey on the trees and diseases usually being bacterial or fungal in type.

Any fruit grower who wishes to get the best from their fruit trees in terms of an edible crop needs to know something of the nature of the pests and diseases

that may affect their orchard in order to be able to decide if any action is needed as part of the orchard management programme.

The purpose of this leaflet is to describe the most common problems and strategies for coping with them. It does not attempt to be a fully comprehensive description of every pest and disease that could be found in an orchard. In addition there is some good news for those managing an orchard with a range of fruit types and varieties. This will usually be less prone to problems than a commercial orchard which has a large acreage of only a few varieties.

PESTS

Wild animals

Mammals such as rabbits, deer and hares damage the bark of young trees by gnawing. If they remove the bark from a large area or entirely circle the trunk, the tree may die.

It is an expensive but practical option to fence the entire site with wire fencing designed to exclude these animals. Alternatively it is possible to protect individual trees from smaller mammals by using spiral rabbit guards on the trunk and supplementing this with a ring of galvanised wire fencing held firmly with a stake. Purpose made plastic tree shelters also will protect the tree trunks from damage. The height of the protection should be greater than the uppermost reach of the animal from which it is being protected.

Tree guards need to be checked regularly, e.g. on a three month inspection regime, to ensure they are being effective.

Vegetation will grow inside the protection and this should be removed by hand weeding, mulching to a depth of up to 4 inches (10cm) or by spraying with a herbicide such as glyphosate. If the chemical option is chosen, care must be taken not to get any of the liquid on the trunk of a young tree as this can be absorbed through bark and will damage or even kill the tree.



Rabbit damage on 7 year old apple

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Home made but effective squirrel guards on a pear tree

Although young trees are unlikely to be attractive to squirrels, it is difficult to protect older trees from their activities. If squirrels are seriously damaging the trees or stealing the crop it may be necessary to erect squirrel barriers on each tree to prevent them climbing the trunk.

Voles and other very small rodents can get inside tree shelters and will chew the bark especially in the winter. If the area around the tree is kept free from vegetation they will have less protection from

predators such as owls. It is important to check

on a regular basis for vole damage underneath all guards.



Voles have chewed the bark underneath this rabbit guard

Domestic animals



Sturdy protection from sheep

Grazing animals can seriously damage trees and so adequate protection from all domestic animals in the orchard is essential. Each tree must be protected to a level beyond the reach of the animals concerned. Protective fencing must also be strong enough to withstand being pushed over.

All fencing must be inspected as part of a regular maintenance regime. Where the top rails of fences are close to tree branches, care must be taken, when carrying out formative pruning, to remove those branches that will rub against the timber. Any raw area is a site where infection can enter the tree. As these infections are so difficult to treat, prevention is by far the best policy.



Rubbing can cause serious damage to a branch

Insects

There are a range of insect pests that use fruit trees as their natural habitat for the whole or part of their life cycle. The main types are moths and aphids.

Moths



Small ermine moth damage

Some specific moth species use fruit trees to feed the larval (caterpillar) stage of their life cycle. They may feed on the fruit or leaves of the tree, depending on the species, and this may give cause for concern if it significantly reduces the crop. In order to reduce the moth population to a manageable number it is necessary to understand the life cycle so that this can be artificially interrupted at the most effective stage. For example, commercially

available pheromone traps, placed in sufficient quantity at the right season, will interrupt the cycle of the codling moth by

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removing males from the population before they can breed.

Similarly, grease bands will remove the wingless adult females of the winter moth as they climb the tree trunks in spring after over-wintering as pupae in the soil. Whereas the codling moth damages fruit, the winter moth larvae only eat the leaves of the trees. You may choose not to worry about winter moth.



Grease band on 20yr old apple tree

In an orchard with a significant codling moth problem, the scrupulous removal and careful disposal of fallen fruit will also reduce the population before it can pupate. Fallen fruit can be eaten by livestock who will therefore also eat the larvae, but it should not be placed on the compost heap where the moth will continue its lifecycle undisturbed.



Winter moth damage on leaves

Aphids

There are many species of aphids which feed on fruit trees. All of them suck the sap of the tree and when present in large numbers they deprive it of a good deal of its nutrition. Aphids can also carry harmful bacteria and viruses from diseased trees to healthy ones. Most species over-winter as eggs and when these hatch in the spring their population can increase very rapidly. All fruit trees are subject to attack but particularly plums, cherries and apples. The results of their feeding often causes the leaves to curl, protecting the aphids inside them.

There are various ways in which their population can be reduced:

- Encouraging small insect eating birds, such as tits, to breed in or visit the orchard. Current research indicates that their presence can have a dramatic effect in reducing aphid populations.
- Encouraging other aphid predators such as ladybirds, lacewings and hoverflies.
- Pinching or pruning off the tips of shoots that are heavily infested with aphids and destroying these.
- Spraying the eggs with a 'winter wash chemical'.
- Spraying the foliage with a systemic insecticide.



Woolly aphid sheltering in the crevices of damaged bark

The benefits of a balanced ecosystem

The above insects, as well as certain species of weevils, capsids, scale insects and spider mites, can have a harmful effect on fruit trees if their populations go unchecked. However when mixed types and varieties of fruit trees make up an orchard and a balanced ecosystem is encouraged, which includes birds and beneficial insects, the impact of any one of these predatory species is likely to be minimised.

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DISEASES

Fungi

The most commonly encountered fungal diseases that cause damage to fruit trees are canker, scabs, powdery mildew, silver leaf and honey fungus.



Canker

This is probably the most serious disease of fruit trees because it has the potential to kill them. It can be transmitted to unaffected trees in a number of ways:

- By contact from pruning equipment which has been used on diseased trees.
- By insects and birds.
- By the wind.

The signs of canker are swellings on twigs, branches or the trunks. The swellings split open to reveal the inner tree tissues. If the swelling encircles the twig, branch or trunk the tree will usually die beyond the area of swelling. It is possible to contain the disease by pruning off infected twigs or branches at a point below the canker. When the disease attacks the trunk of a tree it should be dug up and burnt. Any tools used in removal operations should be sterilised with a household disinfectant after use.

Scabs

These diseases affect the leaves and fruits of apples and pears producing dark spots. Heavily infected leaves have a much reduced capacity to photosynthesise and may fall off prematurely. The spotting on the fruit is unsightly but does not affect the eating quality of the fruit when it is peeled. Wet and overcast weather, particularly around blossom time favours scab infection.



Keeping the heads of fruit trees open by pruning to encourage a good air flow through them will help to reduce the likelihood of scabs. There are sprays available to control these diseases but with larger trees spraying to give an adequate coverage of the fungicide is not easy.

Powdery Mildew



This occurs mainly on the young shoots and flower buds of apple and plum. The effect is that of a white powdery growth causing affected buds and leaves to be distorted or to fall off. Pinching or pruning off diseased shoots is one of the easier ways of reducing the impact of the disease. There are chemical sprays available but with larger trees spraying to give an adequate coverage of the fungicide is not easy.

Silver leaf

This is a disease mainly affecting plums. The popular variety 'Victoria' is particularly susceptible. The disease causes the leaf tissues to separate so that the light shines through them creating the silvery effect. This disease also kills branch tissue and causes a brown staining in the wood. The fruiting bodies of the fungus, which produce spores, can appear on older



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wood and are a source of infection to other plum trees.

When a tree is badly infected it should be dug up and burnt. Piles of plum logs should not be left in orchards because they can be a source of infection.

Plum wood is relatively brittle and can snap under the weight of a heavy crop. The damaged branch may then get infected with silver leaf. Supporting heavily laden branches with props can prevent this happening. There are no chemical treatments for this disease.

Honey fungus



This is a closely related group of fungi which can attack a very wide range of woody species. The signs of honey fungus are honey coloured fruiting bodies at the base of trees and the black bootlace-like rhizomorphs seen under the dead bark. It is a common disease in woodlands, established older gardens and old orchards. If replanting in an old orchard, look for signs of the disease on older trees or stumps. The disease can travel from tree to tree through the ground by the black 'bootlaces'. Diseased trees and stumps should be dug up and burnt.

HUMAN BEINGS

Finally, the organism that has the potential to do the most damage to any tree is a human being, especially the one who is responsible for working in the orchard. Often an inexperienced orchard owner will make basic errors through a general lack of knowledge and understanding which can be seriously detrimental to the trees. Examples are:

- Failure to provide adequate protection from wild animals such as voles, hares, rabbits and deer.
- Failure to provide adequate protection from domestic animals such as sheep, horses and goats.
- Failure to water newly planted trees sufficiently in drought conditions, especially those planted late in the planting season (February – March).
- Failure to reposition or to loosen tree ties or to provide sufficient support by staking.
- Using strimmers or mowers too close to the bases of the trees, which can have the same result as an army of rabbits or voles.



In this case, serious strimmer damage has caused die back above the scar tissue and re-growth of the rootstock below. This tree is now useless. It should be discarded and replaced with a new specimen, with protection from similar damage.

All these errors can easily be prevented or rectified by taking simple corrective action as described either in this or in the planting and staking information sheet (no 3 in this series).