

Traditional orchards: restoring and managing mature and neglected orchards

This information note provides guidance on how to assess a neglected orchard that is in poor condition and decide what pruning and other management work may be needed to bring it back into good condition. Other information notes in the series provide guidance on other aspects of orchard management. For an explanation of terms used in this leaflet see the information note TIN021 *Orchard glossary*.

Key points

- The condition of the orchard and the trees within it must be assessed carefully before deciding what work should be undertaken.
- The poor condition of a tree may be caused by a number of different factors, often acting in combination and over a long period of time. The outward symptoms are often similar and it may not be possible to identify the cause(s) of the problem straight away.
- Where a tree is in poor condition it is usually worthwhile trying to save it if possible. Where this involves pruning, any work should be carried out with care and spread over a number of years.
- Reducing the height of the tree and/or balancing its shape to prevent wind throw may be the only restorative pruning required.
- Planting new trees is usually an important part of the long term restoration of an orchard.

Background

Traditional orchards, and the trees within them, may be hundreds of years old.

They have often escaped agricultural 'improvements' and are managed extensively. This makes them important within the historic landscape and for a wide range of wildlife, particularly birds, mammals and insects that utilise dead and decaying wood.

As with other semi-natural habitats, orchards require management. If left unmanaged the sward on the orchard floor will quickly develop into a dense thicket of scrub, swamping the fruit trees. Most fruit trees require regular pruning to keep them healthy and productive.

Assessment of an orchard

The orchard should be thoroughly assessed before any work is carried out and, if necessary, a management plan drafted. This should consider the trees, grassland sward, any other features such as scrub, ponds and hedges and the past and present management, as these will all influence the objectives identified in the management plan.

Once the orchard has been assessed, the management aims should be considered.

Fruit production, usually along with grazing, would have been the original purpose of the orchard. However, this may not be the main aim when restoring it. For most traditional farm orchards the goal will not be maximising commercial fruit production but the retention and preservation of the trees for cultural, historic, landscape and wildlife objectives, combined with a modest crop of fruit.

The current and future use of the orchard, how the sward is and will be managed and whether fruit is or will be produced for market, juicing etc should all be considered. This is important as it may affect the amount of renovation or replanting undertaken, the types of tree planted, and the other capital works required (eg fencing, water supply, tree guards).

Once the aims and objectives have been decided a programme of works and land management can be drawn up.

Getting fruit identified

The species and ideally the variety of each tree should be identified as this will influence how the tree is managed. It may prove to be a rare or desirable variety and so be worth saving and prioritising for restorative work, at least to stimulate new growth to promote grafting or budding material to use for propagating.

Identifying fruit is difficult and time-consuming and there are few experts to offer advice. Current or previous owners may have information on varieties or an expert could be requested as part of a management plan if rare varieties are thought to be present. Sending fruit away to be identified is expensive but an option if there are only a few unknown varieties (see *Other sources of advice* in TIN012).

Local orchard groups may be able to help or it may be possible to have fruit identified at an Apple Day or similar event, where experts are on hand. There are also keys available that can help to at least narrow in on likely varieties.

Assessment of individual tree condition

The next step is to carry out a condition survey of the individual trees within the orchard.

Each tree should be considered in turn, taking the overall objectives for the orchard into account.

Each tree's general health and condition should be checked. This includes how much new growth is being put on, the amount of dieback, dead and decaying wood and any signs of disease. The tree's overall size and shape is important. An unbalanced, top-heavy or lopsided tree may be prone to splitting or blowing over.

The age of the tree, if known, and how much longer it might be expected to live should be taken into account. The typical approximate life spans for different types of fruit tree are:

- plum 50-70 years;
- apple/cherry 80-120 years;
- pear 200-300 years;
- cobnuts indefinitely (as they will send up new wands from the roots).

Once the condition survey has been carried out, a decision can be made as to whether any restorative pruning or other management is required.

The value of mature trees and whether to retain or remove them

Old trees take many years to establish and in terms of their historic and cultural value in the landscape, become more valuable as they get older. Trees with standing dead and decaying wood are nearly always the most important wildlife habitat in the orchard, supporting a whole host of insects and providing nesting holes for birds.

They are the equivalent of veteran trees in parkland and share many of the same features, even though they may be much younger in age. These features include deadwood in the canopy, major limbs, patches of loose and dead bark, sap runs, tears and lightning strikes, rot holes, and hollow trunks and limbs. Therefore, where a mature tree is in poor condition it is almost always worthwhile trying to remedy this and keep the tree alive as long as possible, rather

than replacing it or allowing it to deteriorate further and die prematurely.

Standing or fallen dead and decaying wood need only be removed where the damage has been caused by a pathogen likely to affect the remaining trees, or where they are a safety hazard to people or livestock. Even where the orchard is being managed commercially there should be room for some trees that aren't cropping heavily.

Even trees that appear about to die should not be removed too hastily and some should be left to provide wildlife habitat. Fruit trees are remarkably resilient. Even completely hollow trees may in fact be perfectly healthy and crop for many years to come.

Leaning trees can be propped up or will compensate by producing new growth to balance themselves. Even those which have fallen over can recover by turning a side branch into a new vertical trunk.

Dead trees

If left in place, dead trees will continue to provide valuable habitat for many years. Branches only need be shortened where they look as if they may cause the tree to fall or are dangerous to operations. When reducing limbs, coronet cuts should be used to mimic natural breakages. Such trees take up little space and are unlikely to blow over for many years.

Potential causes of poor condition

There may be a number of reasons for the poor condition of a mature tree, some more easily identified and rectified than others. Sometimes it may be possible to identify the cause of the problem at once, but in practice it may not be immediately obvious.

Many symptoms of poor health may have several different possible causes or be caused by a number of factors in combination. The tree's poor condition may be an ongoing problem or the result of something that occurred a number of years previously. It may be worth delaying any work on it for a season in order to make a detailed assessment.

The following factors, either singly or in combination, may account for the poor health of a tree. They should be considered when assessing the orchard and individual tree as they may warrant some form of remedial work or change in management.

Dead, decaying and diseased wood

Cause

An obvious sign that something may be wrong with a tree is the presence of dead or dying wood. There is a difference between decaying wood and diseased wood.

Decaying and dead wood do not necessarily indicate poor health as trees naturally begin to die back and hollow out once they reach maturity. This process may even help them survive longer, by reducing their chances of blowing over and by recycling nutrients. An otherwise healthy tree can survive with plenty of dead and decaying wood and be providing valuable habitat (see TIN020 *Traditional orchards: orchards and wildlife*).

Where it does indicate poor health, dead and diseased wood is often a symptom of something else, rather than the underlying cause of the tree's ill health. Pathogens usually only attack trees that have been weakened by another factor, such as poor soil conditions.

Symptoms

Trees may be affected by various fungi, bacteria and viruses, which can have a variety of symptoms depending on the exact cause (see TIN019 *Traditional orchards: fruit tree health*). Some of these can reduce yields and damage or even kill trees.

Not all fungi or diseases are harmful, the majority of fungi, including most bracket fungi, are part of the natural decay process and benefit the tree by recycling nutrients. They may even be rare and worth conserving in their own right (see TIN020 *Traditional orchards: orchards and wildlife*).

Care should still be taken to check for signs of debilitating diseases such as silver leaf infections, scab damage and canker.

Some dead wood may be caused by shading and not disease, either from the canopy above or from neighbouring trees.

Remedy

Trees should be checked regularly for signs of disease and damaged wood. Diseased wood should be removed and burnt (well away from the canopy of any fruit or hedgerow trees).

Non-diseased dead and decaying wood should be left wherever possible, particularly large branches and snags, which are of the greatest wildlife benefit. Other factors possibly causing or exacerbating the problem should be considered.

Damage by pests

Cause

Extensively managed traditional orchards are less likely to suffer from insect pest infestations than modern bush orchards as the trees (except in cobnut plots) are widely spaced and there are sufficient natural predators to control most pests. Infestations caused by factors such as unseasonably mild or damp weather may affect any orchard however. As with disease, pests will often only cause significant damage when a tree is already in poor condition and may be a symptom of an underlying problem.

Symptoms

Defoliation or damaged leaves are often signs of insect pests. It may be possible to identify the type of pest from the particular type of damage (see TIN019 on *Fruit tree health*).

Remedy

It should be asked whether a tree is suffering from pest damage or is already stressed for another reason as solving this may negate the need for pest control. Traditional orchards managed with little or no use of pesticides provide the richest wildlife habitat and if fruit production is not the main aim, a certain loss of yield can be tolerated.

Biological pest control methods are preferable and if pesticides are used they should be targeted at specific infestations. Broad spectrum sprays should be avoided as they also eliminate beneficial predatory and pollinating insects.

Unsuitable soil conditions

Cause

Poor drainage, soil structure, depth or pH may all have an adverse effect on fruit trees, often affecting groups of trees rather than single ones. Trees suffering in this manner, particularly younger trees, may have been planted in the wrong place to start with and there may be little scope to improve the situation.

The conditions may have been created following planting. Drains may have deteriorated or the soil become compacted by machinery or animals, which may be reversible.

Symptoms

These may include poor, stunted growth, dieback, low yields of small fruit and yellowing leaves, but there is no specific symptom.

Remedy

Soil samples should be taken and if necessary a trial pit dug in the vicinity to check the soil structure. If compaction is a problem then subsoiling between tree rows may be an option, although this risks damaging tree roots and should only be considered as a last resort.

Where drains or ditches have become blocked or filled in, unblocking and restoring them may improve drainage. However, if a diverse ground flora has developed that contains species that require wet conditions, it may be best to manage the area for these instead.

Also, any cultivation of land over 2 ha in area, which has remained uncultivated in the previous 15 years, requires screening by Natural England to assess whether an Environmental Impact Assessment is required.

Poor nutrition

Cause

Starvation through a lack of nutrients can be caused by the gradual leaching or removal of nutrients from the soil over time and, along with a shortage of water, through competition from grass and weeds growing underneath or from adjacent trees or hedges.

Such nutrient and water shortages usually only affect young trees and are unlikely to be a problem in a mature orchard. However, competition can affect mature trees that have been weakened for another reason.

Symptoms

Competition results in poor, stunted growth. Weak growth, small fruits, small, often yellowing leaves and early defoliation are symptomatic of nutrient deficiencies (see TIN019 *Fruit tree health*). Mildew, wilting and subsequent dieback may be signs of water shortage.

Remedy

Removing competition around the tree base and mulching with well-rotted farmyard manure or bark chippings will keep moisture in and act as a slow release fertiliser (see TIN014 *Planting and establishing fruit trees*).

Adding inorganic or quick release fertilisers may cause more harm than good, as this introduces a sudden supply of nutrients that can damage the relationship between the trees and their mycorrhizal fungi. These fungi are important in maintaining tree vigour as well as protecting trees from many sources of stress, including pathogens (see TIN019 *Traditional orchards: fruit tree health*).

Soil tests looking at the major nutrients, pH and organic content should be taken before adding any form of nutrients.

Damage by grazing animals

Cause

Young trees are most at risk from grazing animals, but even mature trees can be damaged. Browsing of lower branches can occur when cattle or horses are put into orchards intended for sheep grazing. Trees can also be damaged, and even pushed over, by stock leaning or rubbing against them.

Sheep, horses, rabbits and hares will strip bark from trunks if allowed. They can cause considerable damage, even to mature trees. Primitive and hill sheep breeds are more likely to strip bark and try to reach over the tops of guards to nibble young growth.

The extent of damage may be affected by the amount and quality of grazing available, or when this can't be accessed eg during snow or flooding.

Poaching around the base of trees where stock have sheltered can cause damage by compacting and enriching the soil. This can affect the root/mycorrhizal association in a similar way to adding fertilisers. It is more problematic in wet conditions and on cattle-grazed sites.

Symptoms

Where trees have been browsed, the lower branches will have been stripped of leaves and twigs. Trees that have not been pruned for a while may have lower branches bare of foliage due to shading, but won't show the same damage and tearing. Where trees have been pushed over rather than leaning naturally there should be some signs of rubbing on the bark.

The symptoms of poaching are fairly obvious. There will be bare ground, often rutted and cut where it has been trampled by livestock under the trees. Bare ground can also be caused by shading from the canopy of the fruit tree but this will not be rutted.

Remedy

Stock-proof guards, appropriate for the type of stock grazing the orchard, can be used to protect the trees (see TIN014 *Planting and establishing fruit trees*) but may be impractical in an orchard with many existing trees.

It may be possible to prevent browsing by removing some of the lower branches. However, this shouldn't compromise the shape and balance of the tree.

Bark stripping of mature trees by sheep and horses can be prevented by wrapping hessian or chicken wire fairly tightly around the trunk with an overlap and folding it in on itself. The wire should not be attached directly to the tree, so that it can be adjusted at a later date as the tree's girth increases; although the growth rate of mature trees should be fairly slow. It should not be attached loosely enough to allow animals to rub it against the bark, as this will damage the bark and potentially allow the stock to remove it.

As with any guard it will need checking to ensure it is still stock proof and not growing into or damaging the tree in any way.

Sheep are most likely to strip bark during late winter when the sap starts to rise and grass is no longer fresh. Supplementary feeding may prevent this or they can be kept out of the field at this time. Changing the stock to a different breed or simply to animals that haven't developed a 'taste' for bark stripping, may also prevent this.

Reducing stocking levels and removing stock during wet conditions should remedy any poaching problems. The position of existing gates, fences and feeders should also be considered, along with the possible need for additional capital works.

Where there is any botanical or wildlife interest the grazing should be tailored accordingly (see TIN020 *Orchards and wildlife*).

Excessive shade

Cause

This is normally from neighbouring trees, hedges or buildings and is due to neglect, where the fruit trees and surrounding vegetation have not been managed for a number of years and allowed to grow unchecked. A hedge or windbreak can create a sheltered, favourable micro-climate for fruit production but can also prevent sufficient light and air getting through. Excessive shade, created as the tree's canopy closes over its lower branches can also have the same effect.

Shading encourages pests, disease and fungal infections.

Symptoms

Shading can prevent fruit and shoot production, with the buds within the wood lying dormant. Eventually the shaded wood will start to die off.

Remedy

Where trees have been planted too close together and outgrown their space it may be necessary to sacrifice some in order to save others. Overgrown hedges can be laid and hedgerow trees pollarded, but their own conservation value should be considered. They may also be acting as a windbreak.

Excessive competition from scrub, climbers and other plants

Cause

If not actively controlled or suppressed by cutting or grazing, scrub and climbing plants, particularly bramble and ivy, can rapidly overwhelm fruit trees. As well as competing with the tree for water and nutrients they can shade the branches and increase the chances of the tree blowing over.

Mistletoe is a parasitic plant found mainly on apple trees. Large plants will reduce host growth on the infected branch but only major infestations of mistletoe will have a significant effect on the tree's health, as mistletoe is only partially parasitic and can photosynthesise for itself.

Symptoms

It is usually fairly obvious where scrub and climbers are taking over an orchard. The only difficulty may be in spotting where the fruit trees are!

Lichens and mosses can normally be ignored. They do not absorb food or moisture from the tree and are rarely thick enough to create a damp enough atmosphere to increase the chances of disease. As with fungi, they may be rare species themselves (see TIN020 *Orchards and wildlife*).

Large mistletoe infestations may shade the crop and discourage the breaking of dormant buds and hence new growth. The evergreen leaves may also increase the risk of wind throw or winter storm damage. However, mistletoe has its own conservation value (see TIN020) and should be preserved where possible.

Remedy

Scrub is an important part of the mosaic of habitats found in orchards (see TIN020) but it should usually be confined to field edges or open areas and removed from amongst the fruit trees themselves, particularly where these have a rich invertebrate, moss or lichen flora.

Climbers and scrub may be left on a few trees to provide cover for nesting birds and associated invertebrates when there is little scrub in the rest of the field.

Suckers growing up from the rootstock can form dense thickets and may look like trees in their own right. They will be competing with the mother tree for light, water and nutrients and should be removed.

The use of herbicides to clear scrub should be avoided as it will harm other plants, although the stumps of large scrubby plants could be treated with systemic herbicide to prevent them re-growing. Brush cutters or other tools can be used. Cuttings should be cleared and either removed from the site or burnt or put in piles away from any trees.

As well as manually controlling the scrub, the underlying reasons for the lack of grazing that led to it becoming a problem must be considered. If a suitable grazing or regular cutting regime is not reintroduced then the scrub will simply grow back. Cobnut plots may be more suitable for cutting than grazing. The inclusion of infrastructure to make the orchard 'grazeable' such as fencing, gates and water supply should also be considered.

Mistletoe is very difficult to remove from a tree. Any herbicides used can also damage the host tree and the mistletoe will regrow if pruned off. The only way to remove a mistletoe plant is to cut off the branch at the point that it is growing from. In cases where it is affecting the tree, mistletoe can be thinned manually to reduce its impact on the tree. If cut and sold at Christmas, the berry-bearing female plants can be a valuable crop. The less valuable male plants can be pruned more severely but leaving enough for pollination.

Over pruning

Cause

Over-heavy pruning, often the result of a one-off 'hack', usually occurs after a tree or orchard has been left unpruned for a number of years. As with under-pruning, it is detrimental to the tree.

Cobnut trees are more resilient to heavy pruning than fruit trees and, provided they are healthy, may benefit from this treatment.

Symptoms

Over-pruning may kill a tree, particularly if it is old or already stressed. Providing it is healthy, over-pruning stimulates dormant buds to burst and form numerous water shoots, as the tree tries to compensate for the severe wounding (as with coppicing or pollarding).

After a tree has been heavily pruned the new growth may appear yellow and sickly. This is not necessarily due to disease or stress, but because the bud producing the growth has been exposed to more light than went to form it the previous year. It should recover the following year.

Remedy

The majority of the new water shoots should be removed, especially those that are growing towards the tree's centre, overcrowded or vigorously upright. If necessary, entire clusters should be removed. While a few are useful for forming fruiting wood a few years down the line, dense clumps divert the tree's strength, create shade and are susceptible to pests and disease.

New water shoots can be nipped out before early September while they are still green and have not yet hardened. If left any later than this, they should be removed with secateurs.

The remaining shoots should be pruned lightly or the tips pinched out to discourage further vigorous upright growth and encourage lateral growth. Alternatively, a few can be pruned hard to encourage strong regrowth which will draw up the tree's energies. These can then be removed at a later date, once the tree's vigour has been controlled.

Lack of pruning

Cause

Often a neglected orchard will not have been pruned for a number of years and the trees allowed to grow unchecked. Some types of fruit tree require less maintenance pruning than others but most require some pruning to keep them in good health.

Symptoms

A neglected tree that has suffered from a long-term lack of pruning may become dominated by upright growing branches, with the only live growth on the outer branches and twigs with lots of small fruit on overcrowded, complex spur systems. If the tree is still growing vigorously this peripheral growth forms a dense umbrella-like canopy, shading the tree below. This prevents any new vegetative growth forming so the tree gradually dies off underneath, leaving the lower limbs bare. Branches may become overly long and heavy, putting them at risk of splitting.

As a result, the tree may be top-heavy and unbalanced due to uneven growth or the loss of limbs to storm damage. Such trees are then more susceptible to wind throw. Damage can also lead to infection by pathogens and subsequently disease.

Lack of pruning can also put a strain on the rootstock to support so much growth.

Remedy

The question is whether to carry out restorative pruning or not. Where no regular maintenance pruning has been carried out for a number of years, then restorative pruning may need to be undertaken. There is no hard and fast difference between the two and both follow the same principles. Restorative pruning simply tends to be more severe in the amount of wood removed, with the aim of rejuvenating the tree so that a regular programme of maintenance pruning can be established. However, with old trees the amount of regular pruning required may be minimal.

In a healthy, vigorous tree restorative pruning can have a number of benefits, rejuvenating the tree and helping to prolong its lifespan. Opening up the canopy lets in light and air, stimulating new growth and maintaining an open framework of strong branches capable of supporting the often-heavy weight of fruit.

While the branches beneath the outer canopy may not have any young growth, they are a potential source of it. Pruning can encourage dormant buds to break and produce new vegetative growth.

Cutting back hard to a side branch can also direct the tree's energies into horizontal, fruit-producing growth (see TIN017 *Traditional orchards: maintenance pruning*). Removing crossing branches and damaged or infected wood helps prevent disease.

Restorative pruning can also help maintain a balanced, more manageable shape by reducing the height of the crown. This lessens the risk of wind throw and storm damage. Reducing the height of a tree is often called dehorning, particularly when referring to pears and plums which are prone to sending up strong, vertical branches.

Where the fruit is not being picked by hand, reducing the height of the tree and balancing its shape to prevent wind throw is often the only restorative pruning that needs to be carried out.

Some types of fruit tree, including plums, damsons and perry pears don't necessarily require much pruning to reduce their height as they tend to self-prune by shedding limbs as they mature.

Hard pruning is not always desirable. If the tree is particularly old and slow growing, pruning may kill it prematurely rather than prolonging its life. Growth may have slowed to just a few millimetres per year if the tree hasn't been pruned for many years. If some live wood remains and the tree is showing signs of new growth, at least half of which is healthy, then some judicious pruning should prove beneficial.

The effect of pruning on the different habitats within an orchard should also be considered. Some dead and decaying wood should be left in the trees for wildlife. Any shade tolerant species in the sward such as bluebell or bird's-nest orchid should be taken into consideration as well, as these may die out if too much light is let in.

Restorative pruning

If it is decided that pruning will be beneficial, the next stage is to determine what wood to remove.

What to remove first

Wood showing obvious signs of disease such as canker or silver leaf should be removed first. If pruning for fruit production, all dead or decaying wood would also be removed. However, when managing for conservation dead wood should be left because so many species rely on it.

A compromise should be maintained between the needs of the tree and those organisms living on it. Large trees that are reasonably healthy are better able to support some damaged or decaying wood. Where the orchard is being managed expressly for conservation rather than for fruit production, coronet cuts should be made and snags left to create wildlife habitat.

Large branches that appear unsafe, overlong and likely to split or are making the tree unbalanced should be reduced in length and weight. Also remove low branches which obstruct passage or risk of being damaged by livestock; badly placed branches which are crossing or growing through the centre of the crown, and vigorous upright branches with little lateral growth.

What to remove next

Depending on the existing shape and vigour of the tree, restorative pruning can involve heading back (partially removing) branches to stimulate fresh growth from that point. This may then need to be thinned in due course. Restorative pruning may also involve removing branches completely in order to create a better balance and leave ample light and space for those remaining, and to stimulate the breaking of adventitious buds on wood below.

The height of the canopy may need reducing to prevent wind throw and make the fruit more accessible for harvesting, or lifting to allow grazing or cutting of the sward.

Smaller cuts are useful to stimulate new growth in order to restore the balance between fruiting and vegetative growth. Numerous small cuts will generally stimulate the production of more water shoots compared to making fewer, larger cuts, particularly on vigorous trees. These can be a problem if they are not subsequently thinned out.

Smaller wounds are more likely to callus and heal over, although this will depend on the vigour of the tree. This should help prevent decay and potentially disease entering the tree at that point.

Larger cuts are usually required where the objective is to rebalance the tree, to reduce its height or restore the original shape. The impact of these should be less noticeable and create a more naturalistic shape. On the other hand, the creation of large wounds on major limbs is more likely to result in decay. This is less of a problem where a certain amount of decay can be tolerated or actively encouraged. This may be carried out to enhance the deadwood habitat in less intensively managed orchards, on otherwise healthy trees where the benefits of pruning outweigh the risks associated with allowing some decay. This can also include branches that aren't important to the tree's overall structural soundness (eg where an overly long side branch is shortened to reduce its weight).

When shaping the tree it is important to visualise it from above as this is the direction the light is coming from. Branches that do not appear to be close together from the ground may be over-shading one another.

Apples and pears respond better to pruning than stone fruits (see TIN017 on maintenance pruning). They can therefore be developed into a more ordered framework, with a network of permanent main branches supporting lateral, fruit bearing branches which can be renewed every few years.

Suckers

Any suckers arising between the rootstock and scion should be removed. If left they can eventually overtake the grafted variety completely. Some trees, particularly plums, may have root suckers growing around the base of the tree from below ground level. They are usually different in appearance to the variety (unless the variety has been grown on its own rootstock) and, being younger and thinner, they should be readily distinguishable. Trees grown on their own roots, such as some plum and damson varieties, will come true from suckers and these can be replanted as young trees.

Some apple and pear trees may be top worked with a stem builder between the rootstock and variety. On these trees, suckers arising anywhere below the top grafting union should be removed.

Timing of pruning

Restorative pruning of apples and pears should be carried out in winter while the tree is dormant, ideally in late winter and during dry, frost-free weather. This promotes vegetative growth and reduces the risk of frost damaging the exposed tissues.

Stone fruits (plums, damsons, gages and cherries) should only be pruned in summer between May and September, to minimise the risk of silver leaf infection (see TIN017 on maintenance pruning).

Spreading the work

Renovating a neglected tree sympathetically takes time. It is important not to tackle all the pruning tasks in one season but to plan them carefully. The general presumption should be to leave wood on rather than take it off. It can always be cut off the following year but a limb can't be stuck back on!

Work should be carried out over two or more years, preferably longer, to avoid overly stressing the tree. This also allows time to assess how the tree is responding before continuing the work. No more than one-third of the woody growth in the crown of the tree should be removed from a tree in one year.

If the tree grows strongly in the first year after pruning then it is probably in good health. If growth is very strong then the tree may have been over-pruned. With more appropriate management it should recover in a couple of years.

An overnight improvement should not be expected as the beneficial effects may not be evident for several years. If growth is still weak after 3-4 years then either the pruning was too light or the tree is failing. Providing a tree is healthy it can lose a surprisingly large amount of wood during a five-year period and yet increase in size and cropping.

Restorative pruning of cobnuts

Long-neglected cobnut trees may have grown far taller than the desirable 2 m and require more drastic pruning to restore them. In many cases the original central trunk will have rotted away and new wands grown up from the roots, resulting in what looks like a coppice stool. As cobnuts are resilient to hard pruning they can be cut back to close to ground level (assuming they are on their own roots), encouraging new wands to grow from the base. A number of wands can then be selected to form the framework of the tree, as with formative pruning (see TIN016 *Traditional orchards: formative pruning*). This method has the disadvantage that the new stems are prone to rabbit and other grazing damage.

Another approach is to cut the tree to 1.2 m, select the best eight or so branches to form the future framework and then remove the remaining branches to ground level.

Grafted trees should not be cut back below the original graft, and any wands coming from below this point removed, if the grafted variety is to be maintained.

What to do with the prunings

Restorative pruning can leave behind a lot of dead material which can make good wildlife habitat. Ideally the larger branches and trunks should be left in situ or stacked in a corner of the field to rot down. Smaller branches can be stacked in brush piles for wildlife. Alternatively, apple wood in particular is attractive for turning and larger pieces could be used for sculpture or furniture making.

In order to reduce the risk of infection, it may be necessary to remove diseased wood from the site and burn it (well away from the canopy of any fruit or hedgerow trees).

Further information

Natural England Technical Information Notes are available to download from the Natural England website: www.naturalengland.org.uk.

This note is aimed at managers of traditional orchards and agri-environment scheme land

management advisers. Other notes in the series include:

- TIN012 *Traditional orchards: a summary*
- TIN013 *Traditional orchards: site and tree selection*
- TIN014 *Traditional orchards: planting and establishing fruit trees*
- TIN015 *Traditional orchards: an introduction to pruning*
- TIN016 *Traditional orchards: formative pruning of young trees*
- TIN017 *Traditional orchards: maintenance pruning*
- TIN019 *Traditional orchards: fruit tree health*

- TIN020 *Traditional orchards: orchards and wildlife*
- TIN021 *Traditional orchards: glossary*

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