



COUNTY DURHAM
LANDSCAPE GUIDELINES

Hedges

Making a difference where you live



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Hedges in County Durham

Origins

Field boundaries in the County date from many periods and include both ancient and modern features. Many survive from the medieval landscape, and some perhaps from its Saxon roots, but the landscape is dominated by hedgerows and walls established in successive periods of enclosure between the 16th and 19th centuries. In some areas hedgerows from one period are characteristic, but generally field patterns are a complex multi-period mosaic which has developed piece-meal over the centuries.

Early Landscape Development: Prehistoric to Roman

By the time of the Roman invasion a substantial proportion of the county would have been cleared of woodland and worked by British farmers from scattered small farms. Some ancient boundaries from this period (Neolithic, Bronze Age and Iron Age) survive as crop marks or earthworks, particularly in the more pastoral landscapes of the uplands where they have escaped the plough.

The Early Medieval Landscape

The Anglo-Saxon invasion brought a further expansion of settlement and a greater degree of organisation to the landscape. By the time of the Norman Conquest the lowlands of the County were densely settled. Most of the villages in these areas have Anglo-Saxon settlement names; -tun, -ham, -wick, and -worth. The uplands and foothills of the Pennines were less densely populated with scattered villages and seasonal stock farms separated by extensive areas of open moor and woodland. Place names here refer to woodlands and clearings; -ley, -hyrst, -rydding and -wudu. Saxon villages were grouped together into administrative regions or 'shires' centred on larger villages such as West Auckland, Staindrop and Heighington. Some of the oldest boundaries in the county - including the boundaries of the older townships and parishes - date from this period.

The Late Medieval Landscape

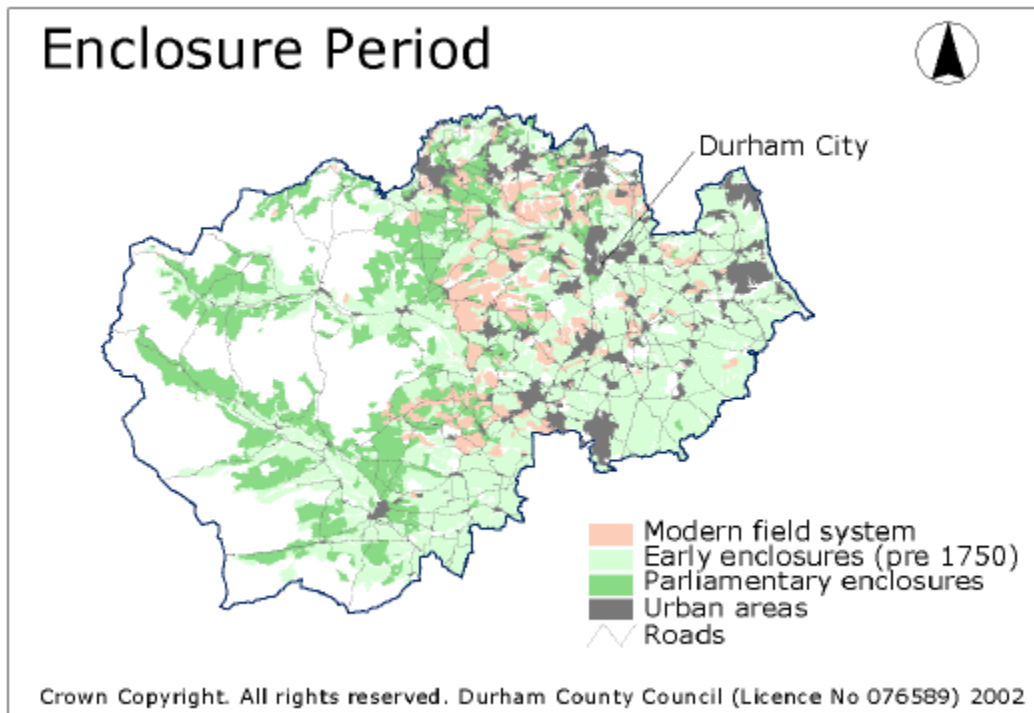
The village system established during the Saxon period became more highly developed in the high Middle Ages. Many villages appear to have been re-structured during the late 11th and 12th century, possibly after some were depopulated in the Norman 'harrying of the north', and show a planned or regular layout typical of green villages in the north east. The period also saw further expansion of settlement into the upland fringes. The land was divided administratively into parishes, most of which were sub-divided into smaller townships. The better township land was divided into large communal arable fields (usually three) in which the land was cultivated in strips or sellions and crops rotated with one field lying fallow each year. Also included in the township land would be common meadows, pastures and woodland together with church glebe and manorial demesne land and small garths or tofts around the village belonging to individual farms. Larger manorial wastes of moorland or fell, over which neighbouring or distant townships often had 'intercommoning' rights, lay outside the township system.

On the more fertile land of the south and east population densities were higher (>10 per 100 acres), townships were typically small, and arable fields covered much of their land leaving small wastes and limited amounts of pasture and meadow. In northern and western districts where land was less productive, population densities were lower (<5 per 100 acres) and townships larger with a more pastoral economy exploiting extensive common wastes. Although the village system continued to operate in these upland areas, some of the land was worked from seasonal livestock farms or shielings and later from individual farmsteads and larger farming estates. The landscape also contained a number of deer parks, particularly in the Pennine fringe, and parts of Weardale and Teesdale were forested. These forests were areas of open moor and woodland managed for the hunting of deer but containing some enclosed meadows or friths for gathering hay to over-winter stock.

Although the medieval landscape was less enclosed than it is today, field boundaries like hedges, ditches, banks, walls, fences and dead hedges of brushwood and stakes were common features. Some boundaries were deliberately planted as live hedges, others were colonised naturally by trees and shrubs. Remnants of woodland vegetation sometimes survived along the boundaries of woodland clearances or assarts. In the town lands of villages, hedges and walls were found along parishes and townships boundaries, around arable fields, meadows and pastures, tofts and garths, along roads and lanes, and occasionally between arable sellions within the town fields. In the more pastoral uplands they would be found around the pastures and meadows of stock farms, along the boundary of the moorland wastes (the head dyke or moor wall) around early intakes from the moor and around forests, friths and deer parks.

These ancient boundaries often survive as individual features within a matrix of later enclosures. Some boundaries have been replanted or rebuilt several times over the intervening centuries and it is common to find later hedgerows and walls preserving ancient alignments.

The Enclosure Period



The enclosure of land since the middle ages has been a steady and continuous process (around 280 ha per annum) in Durham. Two distinct periods of activity, and types of enclosure, can nevertheless be identified, with early enclosure of town fields in the 17th century typical of the arable landscapes of the south and east, and later enclosures of commons and wastes in the 18th & 19th centuries typical of pastoral landscapes of the north and west. Enclosure patterns may be heavily modified on the coalfield by the presence of reclaimed colliery or opencast land.

Early Enclosures 1550-1700

While small scale piecemeal enclosure of town fields occurred from the early medieval period onwards, the majority were enclosed between 1550 and 1700 with activity reaching its peak during the mid 17th century to meet the demands of growing industrial populations in the region. Enclosure brought increases in productivity as former pastures were brought under the plough, grass leys were introduced into arable rotations and greater flexibility was introduced into the management of land and the marketing of produce. Enclosures were largely carried out by agreement between those who had an interest in the land, and were often confirmed by chancery decree in the court of the Bishop of Durham. Beyond the town fields some of the smaller lowland wastes were also enclosed, often surviving in the place name 'moor'.



Aerial photo (UKPerspectives.com) showing early post-medieval enclosures near Cotherstone, Teesdale

Enclosures of this type are found wherever the village system operated and are therefore particularly characteristic of the lowlands and land around villages in the upland fringes and lower dales. During the same period many of the large meadows and pastures of upland farms, estates and parks were subdivided as populations increased and new farms were enclosed from the waste.

Older features such as the boundaries of town fields often survive as linear features running through the field pattern, as do ownership boundaries between farm holdings which were often the first hedges to be planted when land was enclosed.

As they often developed in a piecemeal fashion the hedgerows or walls in any locality may vary in character. Hedgerows are usually dominated by hawthorn and often set on a low bank which may be panned with field stone or occasionally walled on one side. Hedgerow trees are relatively common. Gate posts are usually of locally quarried stone.

Parliamentary Enclosures 1750 -1850

In contrast to the town fields, much of the county's common waste remained open until the mid 18th century and a substantial area (70,000 acres) remains unenclosed to this day at higher altitudes. The late 18th and early 19th centuries saw substantial enclosures as improvements in agricultural technology, growing industrial populations and demand for grain in the Napoleonic wars encouraged larger landowners to increase the productivity and rental value of common land. Over 100,000 acres of moorland, fell and waste was enclosed in the 100 years between 1750 and 1850 under private acts of parliament.



Aerial photo(UKPerspectives.com) showing parliamentary enclosures near Kinninvie, Teesdale

Parliamentary enclosures are a characteristic feature of the upland fringes. They usually lie beyond the older enclosures which surround rural villages and are typical of ridge tops and higher valley sides in the Pennine fringe and of moorland margins and upper dales in the Pennines.

Field patterns are characteristically rectilinear with straight dry stone walls or hawthorn hedges set on low hedge banks. Boundaries of a relatively uniform character may cover extensive area. Hedgerow trees are common in earlier awards but may be absent from later enclosures. Gate posts are usually stone. Larger enclosure awards were accompanied by networks of new roads, usually straight with broad verges set out to standard dimensions.

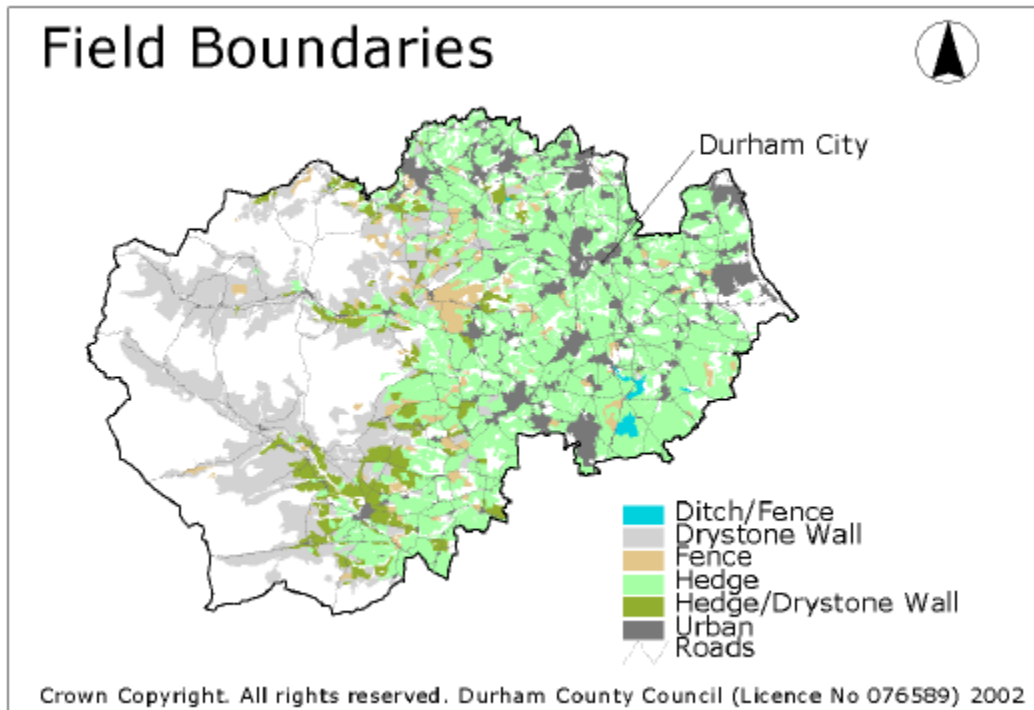
Character

A study of boundaries in County Durham carried out in 1978 (A.J. Bailey) estimated that of around 15,266 km of total field boundaries approximately 63% were hedgerows and the remaining 37% were made up of fences, ditches, earth banks, lines of trees and stone walls.

Hedges are particularly characteristic of the lowlands and dry stone walls of the uplands, with both found together in the transitional landscapes of the Pennine fringe. In the lowland carrs of the Tees Plain, wet ditches and larger stells often serve as field boundaries though many are now supplemented by fences where water levels have been suppressed by drainage. Fences are particularly characteristic of the restored farmland of early opencast coal sites and colliery reclamation schemes.

Species Diversity

Hedgerows in Durham are notably species poor. Bailey's 1978 study, which used standard sampling methods (species per 27m run), estimated that 80% of the county's hedges were one or two species hedges and a further 15% were three species hedges. Hedges of four species and over account for only 5% of the total. The overall mean of 1.75 species was low compared to other English counties as is the sample maximum of seven species.



This low species diversity is partly related to the age of the county's hedges. Older hedgerows tend to be more diverse either because a greater range of species was originally planted or because of gradual colonisation over the years. More recent hedges tend to have been planted with pure hawthorn and have had little time to recruit new species. A high proportion (>50%) of the county's hedges date from the last 250 years or so and can therefore be expected to be species poor. Low diversity is nevertheless a feature even of older hedgerows in Durham. Many Tudor hedges are little different in their species composition to Victorian hedges: both tend to be hawthorn dominated.

This partly reflects the speed and scale of lowland enclosure in Durham which stimulated the development of nurseries supplying hawthorn quicks as early as the 16th century. Lack of colonisation by other species in the intervening years is more difficult to explain but is probably attributable to the scarcity of woodland in the county and its relatively low species diversity, both of which will have limited the seed resource available. The oak-birch and ash woods of the county's uplands are naturally poor in woody species. The more diverse oak and ash woods of the lowlands are on the northern edge of the range of many trees and shrubs found in similar woods to the south. These factors would account for the low diversity of even ancient hedgerows in the region which typically contain only 5 or 6 species.

The dating of hedges from their species composition using 'Hooper's Rule' (Number of species per 30 yards = Age of hedge in centuries) is rarely successful in Durham. In general enclosure period hedges from the 1550's to the 1850's are species poor and often contain only one or two species in a sample 30 yard run. To establish their age accurately, detailed research may be required into the enclosure history of the area. Ancient hedges may be indicated by greater species diversity, often four or five species in a sample run, and by the presence of hazel which is strongly associated with antiquity in Durham. As the replanting of boundaries during later enclosure periods was relatively common, however, the age of hedgerow vegetation is not always a reliable indicator of the antiquity of the boundary as a whole.

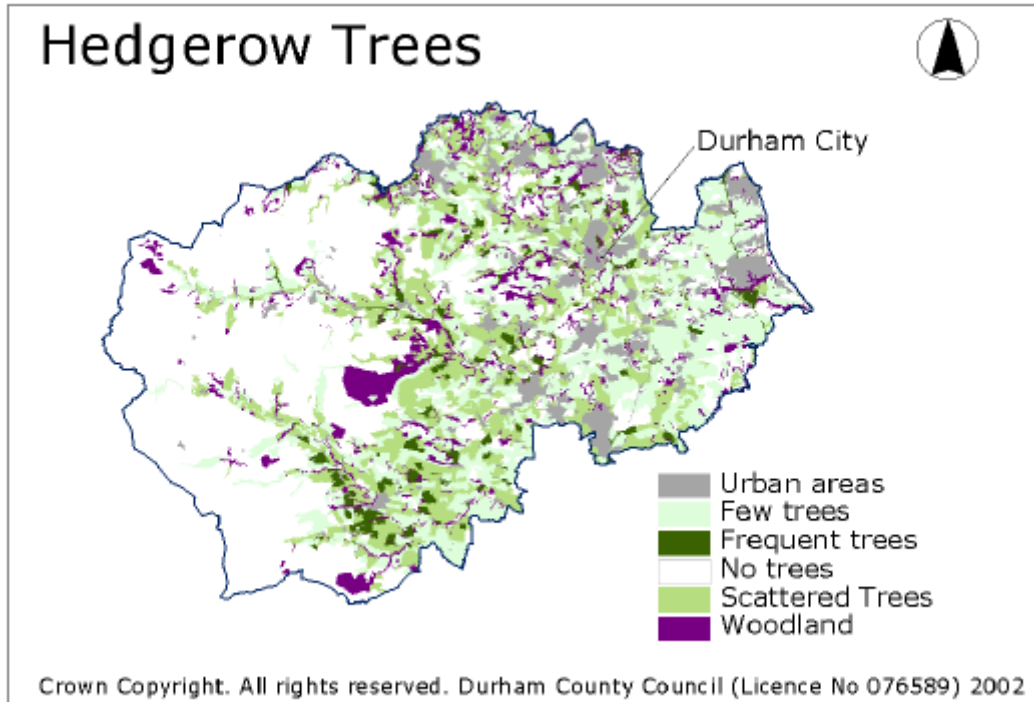
Hedgerow Species

The predominant hedgerow shrub throughout the county is hawthorn, with blackthorn, elder, ash, bramble, rose, holly, hazel, sycamore and wych elm being common but in much smaller numbers. Very occasionally blackthorn, hazel or holly may be dominant. Species found in small numbers as shrubs include plum, crab apple, gorse, oak, rowan, gooseberry, guelder rose, grey willow, bird cherry, field maple and privet. Field maple is largely restricted to the south and east of the county. Holly is sparse on the Magnesian Limestone. Blackthorn is slightly more common in the south.

Hedgerow Trees

The occurrence of hedgerow trees varies considerably across the county. They tend to be more frequent in pastoral landscapes of early enclosure, less frequent in later parliamentary enclosures or arable landscapes, and absent from high moors and restored farmland. Local variation is considerable and strongly influenced by the management decisions of individual landowners or estates.

The commonest hedgerow tree is ash (60%) with sycamore (15%) and oak (12%) in smaller numbers although either may be characteristic of a particular locality.



Most hedgerow trees were planted in enclosure period hedges and don't necessarily reflect the local native woodland types - though ash and oak are common to most. Wych elm is relatively common although much reduced in recent years by disease. English elm is present in small numbers and has a scattered lowland distribution. Beech is also found in small numbers, often planted as an ornamental species in parklands and estate farmland as, occasionally, is common lime. Other trees found in hedges include holly, rowan, birch, aspen, gean, alder, crab apple, and crack willow. These species have generally colonised hedgerows naturally.

Ground Flora

The field layer of a hedgerow is largely determined by landuse and management. Hedgerows in arable areas often contain common arable weeds and may be affected by the application of herbicides and fertilisers. Hedges in pastoral areas contain typical grassland species and are heavily influenced by grazing pressure. Herbs that are commonly taken as indicators of ancient woodland due to their slow rate of colonisation (dog's mercury, wood anemone, primrose, bluebell) are rare in Durham hedges due to its enclosure history.

Management Traditions



Old laid hedge



Northern laying style



Yorkshire laying style

There is no highly developed tradition of hedge laying in the county although most hedges show signs of laying in the past. The more developed forms of the craft may have been imported into the county at the beginning of the 19th century but never became widely popular or systematically practised. The 'northern style' of laying with the hedge laid low and full with brushing on both sides to protect re-growth from sheep seems likely to have been the most widely practiced form.

Hedgerows in the county today tend either to be tall and unmanaged or low and regularly cut with mechanical flails. In both cases they are rarely entirely stock proof and are often supplemented with fences or wires, rails or netting. The type of hedgerow management depends partly on choices made by individual landowners and partly on the type of farming practised. Low cut hedges tend to be associated with arable farming and are therefore particularly characteristic of lowland areas: tall unmanaged hedges are usually associated with livestock rearing and are more common in the uplands.

Walls

The majority of walls in the county are dry stone walls, and these are particularly characteristic of the uplands of the North Pennines and the Pennine Fringe. Mortared walls are less common and are usually associated with the boundaries of estates and parks although they are occasionally found elsewhere on important boundaries. Low walls of dry or mortared stone occasionally form part of walled hedge-banks.

Dry-stone Walls

There is no one style of dry stone wall unique to County Durham and there is some local variation in walling technique. Ancient walls tend to survive only in fragments and many have been repaired or replaced in subsequent years. Older walls are more likely to be built of irregular stone from the clearance of fields, or rounded cobbles from the river, while later parliamentary enclosure walls are typically built from regular thinly bedded quarry stone. Parliamentary walls tend to be uniform in their dimensions and character although uniformity in style can also arise from long standing local tradition.

Coarse sandstone or millstone grit is the typical walling stone of the North Pennines and the upland fringes although walls may include other material such as whinstones and limestones where they outcrop locally or where they are found in river cobbles or field stone derived from boulder clays. On the East Durham Plateau Magnesian limestone is occasionally used for walling but is not a particularly durable material.

Typical dimensions of parliamentary enclosure walls are: 2' 4" wide at the base and 1' 4" at the top: 4' 6" high with a 9" coping giving a total height of 5' 3". There may be one or two courses of through stones or 'thruffs'. Coping stiles vary with simple oblique coping the most common, although rounded copings or variations of 'buck and doe' coping occur locally and particularly in the north. Coping with turves or sods is occasionally observed in Weardale. Walls reinstated in the restoration of opencast coal sites often have copings and occasionally through bands bedded in mortar or concrete in the absence of thruffs.

On the upland moors sheepfolds, bields (intersecting walls providing shelter for sheep in extreme weather) and shepherd's bothies are also constructed of dry-stone walling.



Wall of thin quarried stone



Wall of rounded cobbles



Biield, sheepfold and bothy

Trends and Pressures

Historical Factors

Changes in agriculture in the C20th had a substantial impact on the county's hedgerows and walls. On arable farms many hedges and trees were lost as fields were amalgamated into larger, more efficient, units. In pastoral landscapes lack of management or abandonment of hedges and walls led to a more progressive decline.

Development in the form of industry, housing, road building and mineral extraction has been responsible for piecemeal but cumulative removal of the boundary network. On the exposed coal measures opencast mining has been a major force for change with over 120 square kilometres of land worked for coal and brick shale in Durham since 1945. It is estimated that this has removed something in the region of 800 km of field boundaries. In recent decades hedgerows and walls have generally been reinstated, and to increasingly high standards. It is likely overall that national trends of losses in excess of 25% in the post war period have been mirrored in Durham, with losses significantly higher in arable districts and on the exposed coalfield.

Current Trends

In recent years the cessation of grant assistance for hedgerow removal and the introduction of the Hedgerow Regulations have slowed the rate of hedgerow removal. Hedgerow decline through lack of management, or poor management, continues to be an issue.

In pastoral areas, particularly in the upland margins where returns from land are low, hedgerow maintenance is often a low priority. Unmanaged hedgerows, reduced by grazing pressure to lines of individual hawthorn trees, are gradually supplanted by post and wire fences or abandoned altogether in favour of larger enclosures and more extensive grazing regimes.



Derelict wall



Neglected hedge



Over-trimmed hedge

In arable areas hedgerows tend to be maintained at a low height by regular mechanical trimming and some show signs of declining in vigour. Trees are often removed to prevent crop shading. Headlands are often narrow or none-existent reducing the nature conservation value of hedges and making them more vulnerable to spray or fertiliser drift.

Schemes such as DEFRA's Countryside Stewardship Scheme and the County Durham Hedgerow Partnership's Field Boundary Restoration Grant Scheme have had some success in providing financial assistance for restoring and renovating existing hedges and planting new ones.

Dry stone walls vary in condition. Those around better quality inby land in the dales tend to be maintained to a higher standard. On more marginal land many walls lie derelict or are removed as a source of stone for walling repairs or building works. Financial assistance for repair and rebuilding of stone walls in the Pennine Dales Environmentally Sensitive Areas has reversed the trend of decline in the upper dales.

Hedges and the Law

Hedgerow Regulations 1997

Under the Hedgerow Regulations 1997, it is against the law to remove most countryside hedgerows without the permission of the local planning authority. These Regulations do not apply to garden hedges. To get permission to remove a countryside hedgerow, you must write to your local authority planning department.

The way in which the Regulations apply to individual hedges can be quite complex. It is therefore advisable to speak to your local planning authority before you formally seek permission to remove a hedge. On receipt of a notice to remove a hedge the local authority will assess it against criteria set out in the Regulations to discover whether it qualifies as an 'important' hedge. To qualify as 'important', the hedgerow must be at least 30 years old and at least 20m long (although shorter hedges can be included if linked to other hedgerows) and meet at least one of eight criteria relating to the hedgerow's archaeological, historical, wildlife or landscape value (see below).

If the authority decides to prohibit the removal of an 'important' hedgerow, it must let you know within 6 weeks. If you remove a hedgerow without permission, irrespective of whether it would be considered to be an important hedge, you may face an unlimited fine. You may also have to replace the hedgerow. More detailed guidance can be found in [The Hedgerows Regulations 1997: a Guide to the Law and Good Practice](#) and [Hedgerow Regulations - Your Questions Answered](#) available from DEFRA

If you are concerned about the removal of a hedgerow, you can check with your local planning authority, which has a register of hedge removal notices available for public inspection.

Nesting Birds

Under Section 1 of the Wildlife and Countryside Act of 1981, it is an offence to intentionally take, damage or destroy the nest of any wild bird while it is in use or being built. Never cut hedgerows during the nesting season (March to August). Hedge trimming is best left until the end of winter to leave fruits and nuts for wildlife. Farmers participating in agri-environment schemes are not permitted to trim hedges between 1 March and 31 July.

If you are aware of hedge cutting work going on during the breeding season, and you know birds are nesting in the hedge, you should inform the contractors of the presence of nesting birds.

The Police have the prime responsibility for enforcing this legislation and every police force now has at least one Wildlife Liaison Officer whose duties include dealing with wildlife issues.

High Hedges

The problems that can be caused by high garden hedges - especially Leylandii - have received a lot of publicity in recent years. Under the anti-social behaviour Act 2003, local authorities now have the power to intervene in disputes between neighbours over high hedges once a complaint has been made. The authority (in County Durham this will be the District Council) will decide whether the hedge is stopping someone's reasonable enjoyment of their home or garden, striking a balance between the complainant's and hedge owner's interests. Where it is needed, the local authority will be able to serve a remedial notice to the hedge owner to identify what they must do to sort the problem out. If they fail to comply with the notice, they could be fined up to £1000.

The complainant must show they have tried to resolve the matter with the hedge owner. Complaints will only be considered where the hedge is evergreen, over two metres high and blocking out light, access or reasonable enjoyment of neighbours' property. If this is the case, local authorities will take a range of factors into account to reach a balanced decision on whether the hedge is a problem. A fee to cover the costs will be charged by the council at their discretion.

The Government has produced a number of publications on high hedges - including guidance on choosing the right garden hedge, guidance on how to settle disputes amicably, and advice on how to register a complaint with your local authority. These can be found on the Communities and Local Government website under the heading of High Hedges.

Hedge planting

Choice of stock and species

Species selection

Hedges in County Durham are largely composed of thorny species, particularly hawthorn, with blackthorn and holly occasionally serving as significant, or more rarely dominant, constituents. These species were preferred for their hardiness and ability to contain stock. Recommended planting mixtures for different parts of the county are given in section X. Depending on the location a combination of 60% hawthorn and 20-25% blackthorn is recommended together with small proportions of other native species such as hazel, holly, guelder rose and crab apple in order to enhance the wildlife value of the hedge. In small numbers, intermixed with the thorns, these species will not detract from a hedge's ability to contain stock. All recommended species will thrive in arrange of soils and may be managed by laying or trimming.

Hedgerow trees are an important though declining feature of the landscape, they can add greatly to the wildlife value of a hedge whilst providing a useful source of shelter for stock. Planting trees into new hedges is strongly recommended, ash and oak are the suggested species. Trees should be planted no closer together than 20m (65'), irregularly spaced to conform with traditional landscape patterns. Holly, due to its ability to tolerate shade, is recommended for hedge planting adjacent to hedgerow trees.

Provenance

The origin or provenance of plant material is a topic currently generating considerable debate in the environmental field. Concern has been expressed that the widespread use of plants grown from foreign seed is eroding the genetic integrity of our native species. This is a complex area of debate and it is not intended to address the arguments in this document in any detail. Durham County Council recommends the use of plants derived from native (seeds derived from British plant stock) preferably local seed sources. Such plants are adapted to local conditions and therefore more likely to establish themselves successfully.

Planting stock

The most commonly available used form of plant material is bare root stock. These are plants supplied with the minimum of soil remaining attached to the root system. Bare root plants may be sold as transplants, undercut or side air pruned stock. The terms used refer to the different methods employed by nurseries to produce a compact root system. This is beneficial because it leads to reduced damage during lifting from the nursery and is an aid to successful establishment.

The most common form of plant material for large scale planting schemes is two year old stock in the size ranges 25-40cm and 40-60cm. Plants of this size and age have been found to be the most successful during the establishment phase. In nursery literature, stock of this size may be described as 1+1, referring to the practice of growing the plant on for one year before transplanting to a new situation where it is grown on for a further year. Or 1u1, meaning that the stock has been grown on in the same position but has had the root system undercut after one years growth.

A recent development in nursery practice is side air pruning. Plants are grown in the field but are claimed to develop a more compact fibrous root system due to the practice of maintaining open air channels between the rows of seedlings. Some species e.g. holly are not usually available as bare root stock but as container grown or cell grown (see below) plants. Avoid containerised plants which may only recently have been potted up. The only significant alternative to bare root stock are cell grown plants. These are grown from seed in small individual containers, resulting in a compact root plug. Cell grown plants are significantly more expensive than the alternatives but do offer proven benefits which can make the initial extra expenditure worthwhile in certain circumstances.

Benefits of Cell grown plants

- Quicker and easier to plant. This is a particular advantage in stony ground, for example on top of old hedge cams.
- Plants are available and can be planted outside of the main planting season (Sept-May) allowing greater flexibility. Field grown plants are often not available until mid-November.

Disadvantages of Cell Grown Stock

- Expense.

- They are not recommended for clayey soils as the roots of the young plants, grown in a peat medium, frequently have difficulty in penetrating the surrounding soil.

Ground Preparation

"The land should be as carefully prepared for hedges as for any productive field crop" A. Vernon 1899.

The nature and condition of the soil and the form of vegetation control to be adopted are the principal considerations when determining an appropriate approach to ground preparation.

Cultivation

Cultivation by ploughing and/or rotovation offers a number of benefits and may be a pre-requisite on some soils. On light free draining soils it is usually not strictly necessary but is often worthwhile as it can greatly speed up planting operations. Cultivate a strip at least 250mm (10") deep by 300mm (12") wide, just prior to planting. On heavy clay soils it is best to start roughly preparing the ground in the winter before planting, allowing the weather to break the soil down to form a more amenable planting medium. Where the soil is known to have a deep pan (an impermeable layer in the soil) or to suffer from compaction e.g. on old reclamation sites, it may be necessary to sub-soil the hedge line in order to avoid problems with drainage or poor rooting which can lead to plant instability. This can be followed by ploughing and/or rotovation.

Hedge banks and hedge cams

Alternatively a hedge 'cam' can be thrown up. This is most simply achieved by turning two plough lines against each other to form a raised planting bed. Alternatively top soil can be imported onto site or excavated from along the edge of the proposed hedge-line. Cams should finish about 350-450mm (14-18") high and may be up to 900mm wide (3ft). Planting should only be undertaken when the ground has settled.

Hedge banks are a more substantial feature usually constructed with imported soils or using material excavated adjacent to the hedge line during ditch digging operations. It is important that the bank be finished with the best quality soil available. In some parts of the County, banks may occasionally be seen which have been built with a low dry stone wall on one or both sides to retain the soil core. Planting on cams or banks keeps the 'feet' of the plants dry whilst also providing greater potential rooting depth. It is a useful option wherever drainage is likely to be a problem or the soils are very thin and is a technique frequently used on restored land. Banks and cams can provide significant wildlife benefits, as the raised material provides bare ground and well drained soils providing nesting and over-wintering sites for many species of animal. These include agriculturally useful species such as ground beetles, many of which are predators of agricultural pests and solitary bee species some of which are important crop pollinators.

Vegetation control (pre-planting)

Vegetation control is an essential pre- (and post) planting operation. Many weed species, particularly grasses, are extremely competitive with new plants for light, nutrients and water. Existing vegetation should be suppressed. The method by which this is achieved should take into account future weed control operations. (See section on aftercare) In addition to the other benefits it offers, cultivation is effective in initially suppressing any existing vegetation on a site. However the ground will rapidly be re-colonised and it is essential that an effective method of long term weed control is adopted post planting. Cultivation of a wide strip, at least 80cm (32"), works well in conjunction with the use of a sheet mulch as it makes planting and the positioning of the mulch far easier. Spraying off weed growth with an appropriate herbicide in the August / September prior to planting is beneficial whatever form of long term weed control is planned. Organic mulches in particular are much more effective where weed growth has been sprayed off prior to their application.

Screefing is a manual method of ground preparation best suited to small projects or when planting into existing hedges. It involves using a spade to "shave" the ground of vegetation. Whilst useful for initially clearing live vegetation from an area it leaves the weeds root systems largely intact and is therefore only useful as a means of controlling weed competition in the short term. It can be useful as a means of facilitating planting prior to the use of a sheet mulch or herbicide control regime.

When to Plant

The planting season

Planting of bare root stock can be undertaken from the end of October to the end of March/early April. During this season the water and nutritional requirements of broad leaved plants are low making them less vulnerable to the stresses of transplantation. Cell grown plants can theoretically be planted all year round but best

results are likely when planted between September and May. They may require attention in the form of watering if planted late in a dry spring.

Wherever possible, planting should be undertaken early in the season. This allows the plants more time to establish a network of feeder roots before the demands of spring are upon them. However in areas with heavy clayey soils it may be advisable to leave planting until the beginning of March, as heavy frosts can cause 'frost heave' where plants are lifted by the expansion of water in the soil. This can lead to the roots of the plants being exposed.

Weather Restrictions and Storage Issues

Planting should not be undertaken during periods of hard frost and snow. When possible, windy or sunny days should be avoided to reduce the possibility of root desiccation.

Bagged plants arriving during a period of inclement weather can be stored for short periods of up to ten days. They should be kept upright in a well ventilated, unheated building with the end tied up to prevent moisture loss. Where the period of storage exceeds a few days it is advisable to add water to the roots. If it is planned to store the plants for long periods of time they should be heeled in. This involves digging a shallow trench, spacing the trees tightly along the edge of the trench, then throwing the earth back into the trench and loosely treading it in. Plants stored in this way can be kept for several weeks or even months if required. Cell grown stock should be protected from frost, provided the roots are kept moist, plants can be stored for several months

Pre-planting, stock assessment and plant handling

'Every year, thousands of trees are planted which are already dead, due to careless handling while being lifted and transported to their planting site.' B. Kiser, B.T.C.V.

Assessment of plant condition

Upon receipt, plants should be carefully checked for signs of physical damage and disease. All forms of planting stock should satisfy British Standard B.S. 3936, having a compact fibrous root system, with a good root/shoot ratio with the balance in favour of the roots.

The diameter of the root collar can be a useful indicator of quality. Its position on a plant can often be determined by a marked change in colour on the main stem. For example in hawthorn there is a change in the bark from olive to a lighter green/orange. Plants in the size range 30-45cm should have a minimum root collar of 5mm diameter. Spindly plants and/or those with long single roots and few fibrous roots should be avoided. Look also for scarred stems and evidence of insect or fungal damage.

It should be noted that a positive assessment based on physical characteristics is no guarantee of plant health. Poor handling prior to receipt can severely prejudice plant survival. This may not be noticeable until some time after planting. For this reason it is best to use a reputable nursery to which it is possible to return if large scale dieback occurs with no obvious cause.

Upon delivery

Upon delivery plants should be inspected to establish their condition. Reject any plants which do not meet the criteria discussed above. Bare root stock should be packed in co-extruded plastic bags (white on the outside, black interior) with the bags tied at the top in order to protect the roots from desiccation. If the roots are found to be dry on inspection but the plants otherwise appear healthy they should be soaked in water before being returned to the bag.

During transportation

During transportation the bagged plants should be carried in a trailer or a well ventilated vehicle to ensure the plants do not overheat. They should be handled carefully to avoid physical damage. If a large number of bags are being transported they should be stood upright rather than stacked on top of one another.

Planting Methods

Plant handling

Plants should be handled with care to avoid physical damage. If planting on sunny days bags should be kept in the shade. Bare root plants should be kept in the bag until the moment of planting in order to minimise the dangers of root desiccation.

Planting methods

Notch (or slit) and pit planting are the two main methods of planting trees and shrubs. Notch planting is the commonest approach but is only acceptable where ground conditions are appropriate and /or with the correct type of stock. The use of planting spades is recommended. Specially designed tools have been developed for cell grown stock.

Notch planting

Advantages

- Quickest option most suitable for lighter soils where the ground has been cultivated.

Disadvantages

- Difficult to ensure that the notch is sufficiently large to accommodate a plant's roots. They must not be constricted at planting but should be spread without being bent back on themselves or broken. (Side air pruned and cell grown stock have an advantage here).
- Difficult to open a notch in hard, stony soils.

It is an inappropriate technique for use in clay or heavy loam soils because-

- Notches are likely to open exposing plant roots during periods of heavy frost or drought.
- The spade will smear the sides of the notch during planting creating a difficult surface for roots to penetrate.
- It can be difficult to ensure that the soil makes contact with the roots; air pockets left around the roots can cause the death or stunting of the plant.

Pit planting

Advantages

- The best method for ensuring planting success, pits should be dug sufficiently large to avoid constriction of the plants root system.
- The only option in certain ground conditions

Disadvantages

- Slower.
- Arduous in stony ground.

Trench planting

Trench planting is a traditional approach which is particularly suitable when planting single-row hedges. A trench is excavated, with the earth thrown up on one side. The plants are then lined-out at appropriate spacing along the opposite side and the trench backfilled. The time between the plants being lined out prior to their roots being buried should be minimised.

Whatever planting method is used you should ensure for bare root transplants that the plant is put in at the same depth at which it grew in the nursery as indicated by the root collar. With cell grown plants it is important to ensure that the plug should be covered by at least 25mm (1") of soil to prevent it drying out and becoming loose in the planting hole.

All plants should be well "firmed" in, to ensure contact between the soil and plant roots.

Planting into existing hedges

Planting into existing hedges will involve the use of the same planting techniques as those outlined in the previous section. It is invariably more difficult to undertake as the root systems of in situ plants can make planting physically difficult, whilst the existing plants will compete for light, moisture and nutrients with any new plants. For small gaps it is preferable to lay existing plant material into the gap. These laid stems will then shoot along their length to provide fresh stems to fill the gap.

When planting into an existing hedge ground preparation options are largely limited to vegetation control. If herbicides are to be used care must be taken not to spray out the existing hedge plants, freshly coppiced stools are particularly vulnerable. If spraying of hedge base vegetation is to occur it should be undertaken prior to any coppicing activity. Herbicides should not be used indiscriminately in the bases of old hedges where the ground vegetation may well be of significant conservation value. Screefing is a preferable, though

more labour intensive option. Due to its competitive nature any elder plants should be cut out and the stumps treated with a herbicide.

Shading is a problem when gapping up hedges. Where the existing plants are not being coppiced some pruning may be beneficial. If planting into small gaps (up to 2 metres) is unavoidable shade tolerant species such as hazel and holly should be used. Planting into larger gaps where shading is less of an issue should involve a wider range of species. Traditionally blackthorn was used in gapping up hawthorn hedges, there being a widespread belief that hawthorn does not do well when planted into existing hawthorn hedges. The older plants are believed in some way to retard the growth of the new. A method for planting new trees into existing hedgerows is illustrated on the companion guidance card.

Soil ameliorants and root-dips

Soil ameliorants include artificial fertilisers, manure and peat. As a general rule there is no need to use soil additives in hedge planting schemes, their use in certain circumstances may even be counter productive. Consequently their use is not generally recommended. B) Root dipping plants into a polymer gel is a service commonly offered by nurseries. The gel is designed to absorb water from the soil holding it in reserve for times of drought. There is limited experimental evidence which suggests that some brands of polymer dip can improve growth and survival rates of plants in the field. However the opinion of the Arboricultural Advisory and Information Service is that:

"These products are unlikely to yield benefits to newly planted trees in terms of survival or sustained growth improvement during long periods of drought. Good weed control is generally the most effective way of minimising moisture stress of newly planted trees." S.J.Hodge

Such treatments may be useful in helping to prevent root desiccation during planting. It is an inexpensive operation which most nurseries can arrange to undertake prior to supplying the plants.

Plant spacing

For new planting, the County Durham Hedgerow Partnership recommends planting 5 plants per metre. Hedges are generally planted either in single lines with 20cm (8") between plants or in offset rows 40cm (16") apart with 15cm (6") between rows. For inter-planting between coppiced sections, 4 plants per metre is usually sufficient. Spacing between plants should be determined by the likely future management. Closer spacing, in conjunction with an appropriate trimming regime (can allow for the production of a dense stock resistant barrier whilst delaying the need for hedge-laying. Hedges to be managed by laying can be planted at lower densities. Historically in County Durham offset double rows have been the preferred option. Many farmers state a preference for this method suggesting that it provides a stouter barrier, although inevitably some authorities have claimed that a single row planting will provide an equally robust barrier (Vernon 1899, Beddal 1950).

It is worth noting that single row planting is easier to undertake in some situations. Due to the ease of access to the plants it is also simpler to maintain when herbicides or organic mulches are to be used. Single row planting is the best option if it is intended to manage the hedge by laying in a 'single brushed style' (see Technical Advice Sheet 1 Hedgelaying and Coppicing) whilst offset rows are preferable for most northern styles.

Pruning

Pruning new hedge plants back to 10-15cm (4"- 6") after the first years growth is a traditional practice undertaken during the dormant season to encourage multiple shoot growth and a bushy growth form (Illustration 10). It can also be undertaken immediately after planting and is a useful technique when used in conjunction with a sheet mulch. Most broadleaved plants can cope with pruning but for some species such as hazel and crab apple the response may be less immediate than for hawthorn. Holly should never be pruned in this way. Hedgerow trees should also be left unless specifically seeking to improve their growth form.

Whilst primarily undertaken to encourage a dense hedge bottom, pruning can also be useful when undertaking late plantings of bare rooted stock. By delaying leaf burst the plants water requirements are reduced allowing it more time to establish an effective root network. Note that it is important that plants in leaf should not be subjected to this form of pruning as it leads to a severe disruption of root growth, which may be more significant in the longer term than any initial problems with moisture stress.

Pruning can also be beneficial in exposed sites where "wind-rock" can be a problem. Wind-rock occurs where the wind causes new plants to socket in their planting hole, this can cause damage to roots and instability in

the plant. Cutting back reduces wind resistance and allows the plants more time to establish a stable root network.

A notable disadvantage of pruning in areas of high soil fertility is that adjacent weed growth can physically swamp the new plants. Hedge-layers are not keen on pruning as the resultant growth form is less suitable for hedge-laying. An alternative which also encourages the development of a dense base is to plant the hedge plants at an angle of 45 degrees all leaning in the same direction along the hedge-line, pointing uphill if on an incline. This stimulates the growth of shoots along the stem of the plant which at close spacing will interweave with neighbouring plants. This method is difficult to undertake when using sheet mulches. Note that hedgerow trees should always be planted upright.

Aftercare

Preventing animal damage

Rabbits, hares, deer, sheep, cattle and horses all pose a threat to young trees and shrubs, particularly during the winter months. If any of these are present, or likely to be in the future, the plants will require protection. For livestock a fence will be required. This should be placed far enough from the plants to prevent browsing, usually at least 1m (3' 3") for cattle, 1.5m (4' 10") for horses.

For rabbits and hares, rabbit fencing is usually the best option. New or existing stock fences can be made rabbit proof by attaching rabbit netting. Alternatively rabbit guards can be used. All types of guard tend to force plants to grow upwards. This is not an issue where laying is intended but if a dense bushy base is required protection by fencing is a better option. The costs in a high density planting scheme are similar. Guards are most useful for smaller sections and gapping up. Provided that they are supported in some way they can also offer some defence against wind-rock; but if the exposure is significant the guard itself may be a problem by increasing the overall wind resistance of the hedge.

Currently there are 4 main types of guard available. A comparison is shown in the table overleaf. In some situations the threat from rabbits may be minimal and the use of guards and/or fences undesirable due to the potential for attracting unwanted human attention to the new plants. Stumping plants down to 10cm after planting can be a useful exercise in such areas, reducing their visibility and attractiveness to vandals.

The need for weed Control

"The fact is that success or failure almost entirely depends upon the preparation of the soil and the removal of weeds as fast as they appear for the first four or five years." Vernon

Weeds, particularly grasses, are extremely effective at competing with trees and shrubs for light, nutrients and water. Broad-leaved weeds on fertile sites can physically overwhelm new plants and retard growth or even kill plants by shading them out. Some form of weed control is essential for at least three years or, in areas where establishment and growth is poor (for example on reclaimed land), for five years.

Options for weed control

A number of options exist varying in cost, complexity and environmental sensitivity. The simplest option is hand weeding, however this is time consuming and, in the absence of labour, generally only viable for short sections of hedge.

Strimming is occasionally used to control weeds in planting schemes. While this can help prevent plants from being physically overwhelmed and can reduce competition from broadleaved herbs, on its own it is not a recommended approach. Where the main competition to new plants is coming from grasses it can be counter productive as grass becomes more vigorously competitive when cut.

Mulches can be effective in suppressing weeds with the added advantages of retaining soil moisture and maintaining a higher soil temperature favourable to root growth. It is important that any vegetation on the site is initially suppressed prior to the application of the mulch. A number of options are being trialled by the County Durham Hedgerow Partnership at Houghall College Farm and viewing of these can be arranged. The choice of mulch is between sheet mulches made of polythene, polypropylene or various types of natural and manufactured fibre, and loose organic materials such as well rotted farmyard manure, straw and wood chips.

Sheet Mulches

Sheet mulches can be bought from horticultural suppliers and many tree nurseries. They vary in strength, durability and effectiveness. Biodegradable mulches are available and have been trialled by the County Durham Hedgerow Partnership. Whilst effective, they proved to have a very limited lifespan. Polythene and woven polypropylene currently offer the most effective performance overall, the latter being considerably more

robust than the former. Whatever material is employed it should be impervious to light. The emplacement of sheet mulches is time consuming but if correctly positioned they can be highly effective and greatly reduce the need for future input providing that they remain intact.

Any holes in the mulch will be exploited by weeds. This can be a particular problem with pre-laid sheet mulches into which slits are cut to allow planting. Weed growth through such holes can significantly reduce the effectiveness of the mulch. Initially at least this problem can be avoided by spraying off the planting area prior to the application of the mulch. Subsequent weed growth can be spot treated if required.

Planting the trees, pruning them back and then placing the mulch over the top, largely avoids this problem as only small incisions are made in the sheet. If the existing ground vegetation has not been sprayed prior to planting the sheet mulch will need to be weighed down with debris around the plants as regenerating weeds underneath the mulch can cause it to lift up over the cut plants.

Even with sheet mulch, stumped-back plants can be vulnerable to shading out by adjacent weed growth. This is a particular problem on fertile sites. Where this occurs the vegetation must be cut back. Some problems are peculiar to sheet mulches. The following points need to be considered when contemplating their use.

a) Voles will sometimes burrow underneath a mulch and strip the bark from new planted trees, whilst foxes have been known to rip up sheet mulches in pursuit of voles. Voles occur most commonly in rank grassland. Vole guards are available to protect plants from their attentions.

b) Non-breathable mulches made from materials such as polythene and spun-bonded polypropylene should not be used on poorly draining sites for example, on heavy soils and reclaimed land. This will include many former opencast sites. Anaerobic conditions may develop under the sheet which can cause the death of the tree.

c) Sheet mulches are often visually intrusive. There is also the issue of what happens to the residue of the mulch after it has outlived its usefulness. Many of the materials sold as sheet mulch take some account of these issues and come in subdued colours made of materials which will degrade over time. For some materials, for example polythene and polypropylene, this period of decay is of uncertain duration and the residue may ultimately require removal.

d) If extensive beating up (replacement of failed plants) proves necessary this is made more difficult where a sheet mulch is in place. It would be best to beat up with cell grown plants in this situation.

Organic mulches

Organic mulches such as straw, woodchip and well rotted farmyard manure are cheap and readily available to many landowners. They are simple to apply although it is relatively labour intensive work. Experimental evidence suggests that over a one year period they can be as effective as herbicidal control, after that the material will require renewal. For organic mulches to be at their most effective a depth of at least 10cm (4") should be applied onto a weed free substrate. Weeds can colonise these mulches and vigorous weeds such as thistles may grow through them. Organic mulches can be effective but for long term weed control some hand weeding or occasional spot herbicide application is likely to be necessary. They will require renewing every year for the duration of the maintenance period.

Chemical control methods

Herbicides are the most commonly used option for weed control in large scale planting schemes. If properly used they can be extremely effective. They have the advantage over most mulches of being initially cheaper and quicker to apply. However over the 3-5 years of a maintenance scheme they can prove to be a more expensive option, depending upon the regime followed. It is not intended to discuss herbicide regimes or products in detail here, the potential user is referred to Forestry Commission Field book 8 (The use of Herbicides in the Forest) available from H.M.S.O. A few general comments are worth making here. Firstly the person using the herbicides (unless born before 1964) must be a trained operative holding a valid license or working under the direct supervision of a certificate holder in order to comply with regulations concerning the control of pesticides. There is a greater risk to operatives and the environment in the use of these products than any of the alternatives.

The most effective weed control regimes seek to maintain bare earth around the new plants. Assuming the ground is clear of weeds in the immediate aftermath of planting 'residual' herbicides may be applied. These prevent the growth of weed species for a period of time after their initial application. As these start to break down there is a follow up with a contact herbicide applied directly onto the weed growth. Care must be taken in the use of these as many trees and shrubs are as susceptible to their effects as the target species. Spray guards or weed wipers should be used.

Timing is important in the use of herbicides. Trees and shrubs are particularly at risk from competition between April and June. Whatever regime is used should ensure the control of weeds during this period. Depending upon the rate of weed growth earlier is better. Applying herbicides after this period if they have not been used previously in the season is often a futile gesture. A comparison of different approaches to weed control types used on experimental plots by the Durham Hedgerow Partnership, and notes concerning their relative advantages/disadvantages is given below.

Beating up

Beating up is the process of replacing failed plants. Planting schemes should be monitored and failed plants replaced at the earliest opportunity as it becomes more difficult to fill gaps as the hedge matures. Where there is extensive dieback some thought needs to be given to the likely cause in order to avoid repetition of the problem. Most grant schemes will require beating up as a matter of course. Further advice and information on the issues touched upon in this document is available from Durham County Council (Tel: 0191 3834078) or the Tyne Tees Farming and Wildlife Advisory Group (Tel: 01833 630880).

TYPE OF HEDGE GUARD (prices quoted per 500)	ADVANTAGES	DISADVANTAGES
Polypropylene wraps (approx 11p - 13.5p per unit, 2003 price)	<ol style="list-style-type: none"> 1. Quickest type to put on in good ground conditions and when plants are not too bushy. 2. Self supporting. 3. Suitable for use where herbicides to be used as the casing protects the plants from spray drift. 4. Can be used with plants which have been stumped back. 	<ol style="list-style-type: none"> 1. May cause root constriction resulting in poorer growth. 2. No use in hard/stony soils. 3. No good for holly, other bushy plants will need side shoots pruning to allow the quill to fit. 4. Plants forced to grow up rather than out.
Spiral guards - transparent or coloured (approx 12 - 14p per unit, 2003 price; canes 4-5p) Transparent guards would appear to encourage greater growth rates.	<ol style="list-style-type: none"> 1. Minimal wind resistance useful on exposed sites. 2. Can be fitted around most plants (not holly) though may leave protruding shoots to be consumed by rabbits. 	<ol style="list-style-type: none"> 1. Need to be used with a cane. 2. Relatively slow to put on. 3. Requires care if used in conjunction with herbicide weed control regimes. 4. Not suitable for use with plants which have been stumped back. 5. Bushy plants may need pruning to allow fitting.
Net guards. (approx. 26p per unit, canes 4-5p, may need two)	<ol style="list-style-type: none"> 1. Mesh allows better circulation of air around plant. 2. Can be used with plants which have been stumped back. 3. Some versions come with a skirt to protect against herbicides. 4. Wider body allows relatively easy placement over bushy plants including holly. 5. Allows for bushier growth form than spirals or polypropylene wraps. 	<ol style="list-style-type: none"> 1. Requires two canes in exposed sites or a stake. Guards with solid sections have too much wind resistance for exposed sites. 2. Some versions require special tools to attach canes to guards. 3. Relatively slow to put on. 4. If not properly positioned rabbits can work their way under the edge of the guard.
Mesh guard. (approx. 19p per unit)	<ol style="list-style-type: none"> 1. Allows free air circulation around the plant. 2. No cane required except on exposed sites. 3. Guard fitted prior to planting can be done off-site. 4. The guard and shrub are planted together saving time. 	<ol style="list-style-type: none"> 1. Requires care if used in conjunction with herbicide weed control regimes. 2. Difficult to use on old hedge banks where soil is relatively compacted. Some people find the wraps comparatively time consuming to put on 3. Some problems experienced in dry conditions; difficulty in firming soil around roots/guard.

WEED CONTROL OPTIONS	ADVANTAGES	DISADVANTAGES
Polypropylene sheet mulch	<ol style="list-style-type: none"> 1. Strong material, easy to cut and position. 2. Cheapest sheet mulch option after polythene. 3. Relatively rip proof especially the woven version. 4. Durable should survive the ideal aftercare period of 5 years. 	<ol style="list-style-type: none"> 1. May cause problems due to constriction of plant stems as plants grow if material is tight around the stem and fails to degrade. 2. Although sold as being photo-degradable seems likely to be fairly persistent at least in the medium term. May need to be removed in the future. 3. Not suitable for use on wet sites.
Polythene sheet mulch	<ol style="list-style-type: none"> 1. Cheapest sheet mulch option. 2. Probably most effective mulch in retaining soil moisture and warming the soil. 3. Heavier grades have good durability. 4. Little maintenance required. 5. Allows unrestricted stem expansion. 	<ol style="list-style-type: none"> 1. Not as robust as polypropylene, requires more care during placement. 2. Tears relatively easily. 3. Photo-degradable BUT likely to be fairly persistent at least in the medium term. Likely to breakdown into shreds. If these are not picked out they may cause a nuisance. 4. Not suitable for use on wet sites.
Fully biodegradable e.g. flax mulch	<ol style="list-style-type: none"> 1. Easy to cut and position. 2. Fully biodegradable so no problem residues to deal with. 3. Can be used on wet sites. 	<ol style="list-style-type: none"> 1. Expensive. 2. In trials only provided weed control for one season.
Partially biodegradable e.g. Wulch	<ol style="list-style-type: none"> 1. Least obtrusive sheet mulch. 2. Relatively easy to use but otherwise little to recommend it. 	<ol style="list-style-type: none"> 1. Most expensive type of sheet mulch trialled. 2. Not wholly biodegradable, may need removal in the long term.
Farmyard manure	<ol style="list-style-type: none"> 1. Cheap and readily available. 2. Reasonably easy to apply. 3. No unsightly residues. 	<ol style="list-style-type: none"> 1. Must be properly composted otherwise will cause weed problems. 2. Not suitable for use on wet sites.
Wood chip	<ol style="list-style-type: none"> 1. Relatively cheap. 2. Easy to apply and re-apply. 3. No unsightly residues. 	<ol style="list-style-type: none"> 1. Must be properly composted, otherwise micro-organisms in the material will compete with the plants for nitrogen as the mulch decomposes. 2. Can be scattered by wind in exposed sites. 3. Least effective organic mulch.
Straw	<ol style="list-style-type: none"> 1. Cheap and readily available. 2. Reasonably easy to apply. 3. No unsightly residue. 4. Most effective organic mulch used in experimental plots. 	<ol style="list-style-type: none"> 1. As the straw rots down micro-organisms will compete with the plants for nitrates. 2. Application fairly laborious.
Chemical control	<ol style="list-style-type: none"> 1. Only option to compete with sheet mulches in overall effectiveness. 2. Cheap in the short term but costs over the life of a scheme compare unfavourably with cheaper sheet mulches. 3. Quick to apply BUT must be undertaken with care if not to be counter productive. 	<ol style="list-style-type: none"> 1. If not applied with care can cause environmental damage and or death to the hedge plants. 2. Should only be used by a trained operator. 3. Applications required at least twice a year to be effective.

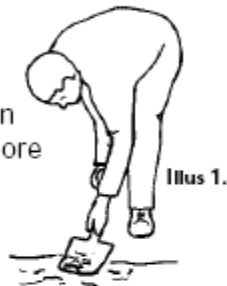
Hedge-planting – a step-by-step guide

Reproduced from the Durham Hedgerow Partnership [Field Boundaries Technical Guidance Card 2: Hedge Planting and Restoration](#)

STAGES IN PLANTING

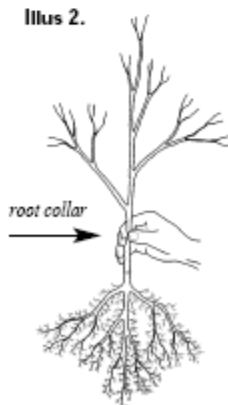
1— Ground Preparation

Suppress any existing vegetation to reduce competition with the planting stock. If using herbicides, apply in late summer prior to planting. Cultivation both suppresses weeds and makes planting quicker and cheaper. Screening, the process of shaving off the ground vegetation with a spade, may be more appropriate for short sections or interplanting between coppice stools. (illus 1)



2— Stock Assessment

Ensure planting stock is of the appropriate species, provenance and size. Bare root stock should have a compact fibrous root system with a good root to shoot ratio (illus 2) with the balance being in favour of the roots. Avoid plants with long single roots with little fibrous material. For all types of planting stock including cell grown,



(illus 3) the root collar diameter can be a useful indicator of health. Plants 30-45cm (12-18") should have a minimum root collar diameter of 5mm (1/5"). The position of the root collar can be determined on most species by a change in stem colour. Reject spindly plants and those showing evidence of physical damage, desiccation or disease.



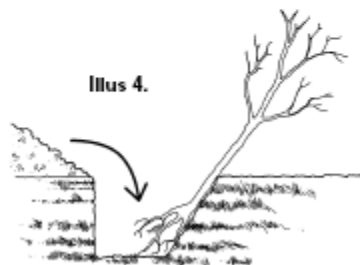
3— Plant handling and storage pre-planting

Bare root plants should be supplied in polythene bag, usually in bundles of 25 or 50. **Handle with care!**

- Keep plants in bags during transport.
- Avoid overheating stock e.g. ensure adequate ventilation when transporting in vehicles.
- Avoid stacking bags - the plants at the bottom of the pile will be damaged.
- Plants that are to be used within 7-10 days may be kept bagged up but will require storage in a cool frost free shed or similar.
- Stored plants should be watered regularly to ensure the roots are kept damp.

If bare root plants are to be stored for longer periods they should be 'heeled in' (**illus 4**).

Dig a trench cutting one side at a 50° angle casting the spoil onto the opposite side. Space the plants tightly along the



trench against the angled side. The spoil is then cast back over the plant roots and lightly firmed in. **Plants can be stored for several months by this method.**

Cell grown stock can be stored for several months, provided that the root cells are kept damp and protected from frost. As with all planting stock, handle and transport in a way which avoids physical damage.

4— When to plant

Plant bare root stock between November and the end of March. Cell grown stock may be planted from September to May. Early season planting is preferable. Avoid planting on sunny, windy days. Damp overcast weather is ideal. **Never plant when snow is on the ground or during periods of hard frost.**

5— Plant handling during planting

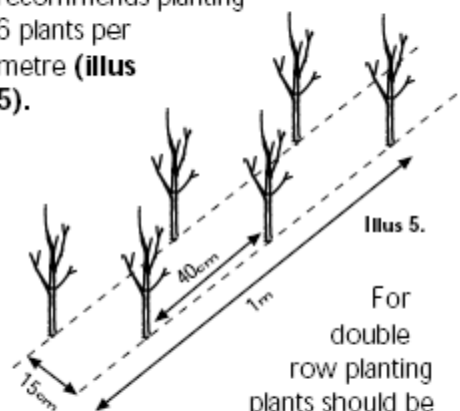
Keep plants in the bag until they are to be planted. Do not leave plants lying around outside of the bags as the vulnerable root systems can rapidly

dry out. If planting in sunny conditions keep bagged plants in the shade.

6— Planting specifications

If receiving grant aid planting spacings should be as specified.

For new hedges the Durham Hedgerow Project recommends planting 6 plants per metre (**illus 5**).



15cm (6") between rows.

For single row planting space plants 20cm (8" approx.) apart.

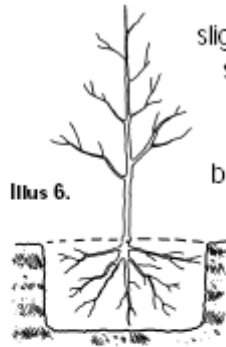
For interplanting between coppiced sections 4 plants per metre (on average) is usually sufficient, spacing being dependent upon the density of coppice stools.

7— Planting methods

Pit planting

Suitable for all stock types, required for container grown and plants over 90cm.

Excavate a pit sufficiently large to accommodate the roots without constraint. Remove the plant from the bag and hold it in the centre of the pit with the root collar just below ground level. Scoop the earth back into the pit crumbling any large clods and removing any large stones. Gently pull the plant



slightly to allow earth to settle around the roots. Use the ball of the foot to firm the loose earth back into the pit. Take care not to scrape the bark of the plant. Ensure the root collar finishes at ground level. (illus 6)

Trench Planting

When planting a single row of hedge plants, excavate a trench to the appropriate depth and width allowing sufficient room for the roots. Place the spoil on one side of the trench and line the plants out on the opposite side. Replace the spoil in the trench and firm the loose soil around the plants using the ball of the foot. Take care not to damage the bark and ensure the root collar is level with the ground.

Slit or Notch planting

Suitable for small bare root and cell grown plants. This is best undertaken where the ground has been cultivated.

Do not use on heavy clay soils.

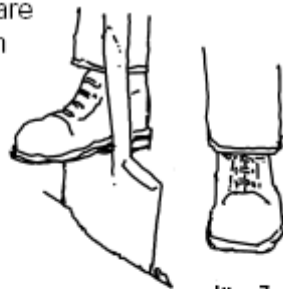
Insert a spade into the earth to the desired depth, then move it forwards and backwards to open up the notch (illus 7).

Sweep the plant into the hole from the side ensuring the roots are not constrained.



illus 8.

Using the ball of the foot, press the edges of the notch together taking care not to scrape the bark (illus 8). Ensure the root collar finishes level with the ground and that the

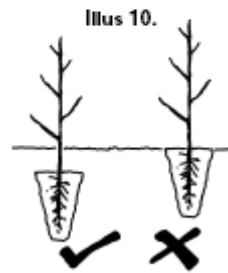


illus 7.

plant finishes upright. Depending upon ground conditions and the extent of the root system, it may be necessary to create a larger notch by cutting at right angles to the first slit to open up a T or L shaped notch. (illus 9)



illus 9.



illus 10.

When planting cell grown stock, the root plug should be covered by at least 25mm (1") of soil to prevent it drying out and becoming loose in the planting hole. (illus 10)

8— Application of mulches

Hedgerow mulching should ideally be at least 1m (3') wide, mulch mats 1m (3') square.

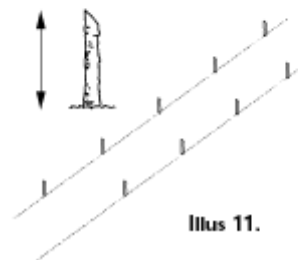
Mulches should be applied immediately after planting, loose organic mulches will be most effective if existing vegetation has been sprayed off prior to application. They should be applied to a minimum depth of 100mm (4").

There are two options for applying sheet mulches. Both benefit from the prior suppression of existing vegetation. Cultivation is the best option.

1. Laying the sheet mulch after planting.

Plant in the required pattern e.g. double row hedge, prune back to a height of 100-125mm (4-5').

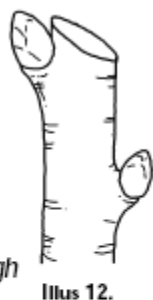
(illus 11)



illus 11.

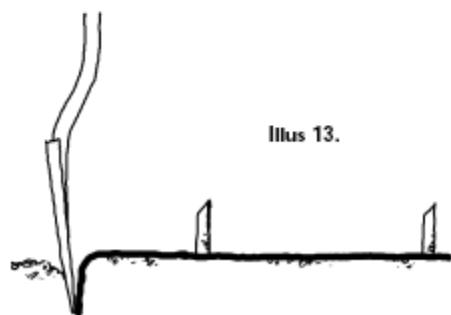
Pruning cuts are made at an angle of 45°, where possible just above a budding point **(illus 12)**.

Do not prune holly or hedgerow trees. These should be planted through the mulch.



illus 12.

Secure the end of the mulch, unroll 3-4m (9-13') whilst holding the roll above the stumps. Pull the mulch down over the plants, secure the windward side of the mulch in the ground either by cutting a notch and folding the material down into it or by placing the spade 75mm (3") in from the edge of the roll and pressing down with the spade to force the material into the ground **(illus 13)**.

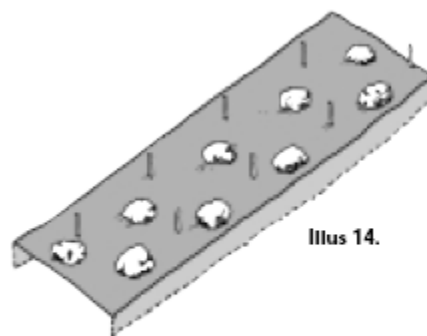


illus 13.

The approach used depends upon the strength of the material. This process is repeated on the leeward side.

Depending upon the mulch material used, the stumps may now be protruding through, where this is not the case a small incision should be made in the mulch to allow the stump to poke through.

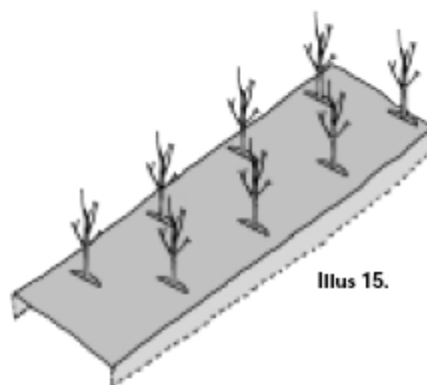
Place stones or clods of earth or other debris on the sheet to prevent it lifting up over the stumps. **(illus14)**



illus 14.

2. Laying the sheet mulch prior to planting

Secure the end of the roll and unroll the mulch in manageable sections, Secure the windward side by folding 50-75mm (2-3") of the edge over into a slit as described above. Repeat the exercise for the leeward side. Notch plant the trees through slits cut as appropriate into the mulch **(illus 15)**.

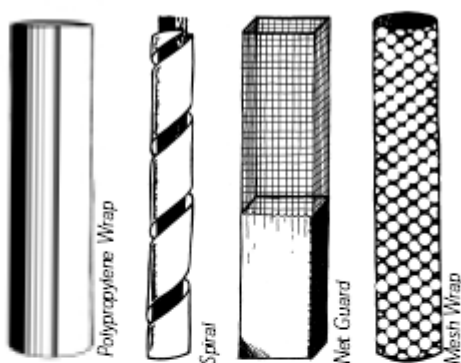


illus 15.

9— Placement of tree shelters and guards

Rabbits pose a major threat to young trees. Where they are a potential problem plants must be protected by guards or rabbit fencing.

Four types of guard commonly used in hedge planting projects are shown **(illus 16)**.



Illus 16.

They can all be used with sheet mulches. An incision will need to be made into the material for all the guards except the shelters.

With the exception of meshwraps, place the guards after planting. Spirals and shelters will require support in the form of one or more canes depending upon the likely degree of exposure to the wind. Some forms of guard may require attaching to the cane. The base of a guard should be in contact with the surface. Spiral guards needs to be pushed up to 50mm into the ground; Polypropylene wraps up to 75mm into the ground. Mesh wraps are placed on the plant prior to planting and then the shrub and guard are planted together so that 100mm of the guard is in the ground. Larger shelters for hedgerow trees require the support of stakes. These should be positioned prior to planting to avoid damaging the roots. Some designs have a fluted end at the top of the shelter to reduce friction damage. Ensure the base of the shelter is in contact with the soil then attach to the stake.

10— Hedgerow trees

Hedgerow trees can be planted as per other hedge plants.

To establish hedgerow trees in existing hedges, the Forestry Commission

recommend cutting a notch into the hedge to accommodate the new tree. Using a tree shelter in conjunction with a mulch mat or section of sheet mulch will help to establish the new tree. (illus. 17)



Illus 17.

11— Aftercare is the most neglected aspect of hedgerow establishment and the most common cause of plant failure.

Weed control (particularly grass) must be undertaken for at least 3 years after planting. Strimmers should not be used. Cutting stimulates a greater uptake of nutrients and water by the weeds. If using organic mulches renew them as required. Inspect and maintain sheet mulches. If using chemicals in preference to mulches apply residual herbicides after planting follow up as required with additional treatments, contact herbicides can most safely be applied using a form of weedwiper to avoid drift. Always follow the product instructions. Planting schemes should be regularly inspected and any dead plants should be replaced.

Regulations have been brought in concerning the use and storage of pesticides. Certificates of competence are required by any contractor who uses pesticides. Volunteer groups are classed as contractors and need to meet these requirements.

Key Points

- Order planting stock of the correct size, species and provenance.
- Inspect the condition of stock upon receipt. Reject damaged and unhealthy plants.
- Ensure stock is handled and stored correctly.
- Suppress existing ground vegetation. Cultivation offers many advantages but may lead to weed problems; it is best used in conjunction with sheet mulches.
- The planting season runs from Oct to the end of March. Early winter plantings are the most successful. Avoid periods of hard frost, snow and windy sunny weather.
- Pit planting is preferable in heavy clay soils as ground frost can cause notches to open up.
- The importance of aftercare cannot be over emphasised. Effective weed control is essential if a scheme is to be successful.
- Ensure new plants are protected from animal damage.

Hedge laying and coppicing

Hedgelaying is a traditional form of hedgerow management. It involves the partial severing of woody plants, at a point just above ground level. The cut stems, known as pleachers or plashers, are then laid over and interwoven to form a living fence. Most broadleaved woody shrubs and trees can be successfully laid including, hawthorn, blackthorn, holly, hazel, ash, and rose. Coppicing is a more drastic form of management involving the cutting back of plants to ankle height, which is used on plants which are beyond laying. When successful it results in the growth of new stems from the stump.

A casual assessment of old hedges in the County reveals that hedge-laying was at one time far more widely practiced than today. In common with many labour intensive agricultural practices it has declined in popularity since the Second World War as maintenance by mechanical trimmers and the use of wire fences have come to be seen as more cost effective alternatives.

Recently, interest has been renewed in Hedgelaying as a result of changing priorities in countryside policy, coupled with the recognition that many hedges, widely regarded as being a key component in the character of the English countryside, are in decline due to neglect and poor management.

Why lay hedges?

In the past, hedge-laying was a routine management operation undertaken to maintain hedges in a stock-proof condition. It also has a key role to play in ensuring the long term survival of hedgerows. Periodic laying can greatly increase the natural lifespan of hedge plants; the process stimulates the growth of new shoots and can reinvigorate all but the most senile of plants.

Hedges which are allowed to grow out will over time get thin at the base and in the continued absence of management grow out into lines of trees with little value as a fence. Eventually plants start to die off and gaps develop. If no action is taken, the hedge will ultimately disappear. This form of neglect is one of the main causes of hedgerow decline.

Hedges can be kept in a functional state for a considerable period of time by trimming alone but ultimately start to get thin at the base losing their ability to contain stock. If no remedial treatment is applied, the plants will in time lose their vigour and start to die off. This process is accelerated where trimming is particularly severe. The increasingly widespread presence of gaps in many trimmed hedges bears testimony to this ongoing process.

Hedgelaying (or coppicing) is essential to the long-term survival of hedgerows. When used in conjunction with an appropriate trimming regime hedges can be maintained in a functional, vigorous state indefinitely. In the long run this approach is more cost effective than fencing and offers greater benefits in the form of shelter for stock and cover for game and other wildlife.



Old pleachers in a Teesdale hedge.



Old un-managed hedge in decline.



A heavily trimmed hedge showing the development of gaps

Assessing the suitability of hedges for laying

Ultimately all hedges require laying if they are to be retained. How frequently it should be undertaken will depend on the rate of growth and whether or not the hedge is required to serve as a stock proof barrier.

Ideally hedges should be laid when the untrimmed stems reach 2.4 -5m (8-16') high with a stem diameter at base between 50-100mm (2- 4"). Depending upon soil and the climate, with a new hedge this will usually be achieved after 8 -15 years, with previously laid hedges between 7-12 years. Hedges which are older and larger than this can be laid successfully but require more skill and time and consequently entail more expense.

For some hedges it may be worth considering coppicing, this involves the felling of hedges to ankle height. This is discussed in more detail in a later section. This is the most pragmatic option where stems prove to be very brittle, or unmanageably large.

Hedges which have been maintained by trimming can usually be successfully laid although it will generally require the suspension of trimming of the hedge top for 2-5 years to allow sufficient leader shoot growth to develop. In the interim the sides can be kept trimmed if required. Older hedges whose bases have become particularly gnarled with time and or suffered damage from sheep or patch up fencing jobs may realistically only be salvageable by coppicing

Timing of operations

Hedge management is best undertaken during the plant's dormant season i.e. between mid –October and the end of March. Periods of extended frost should be avoided whilst high winds can make the cut plants unmanageable. The laying of old brittle plants and coppicing, particularly of moribund plants is best undertaken in March or even early April when the sap is rising, though consideration must then be given to the possible disturbance of nesting birds. Whenever possible, work should be undertaken in the later months of the season as many birds, particularly members of the thrush family, rely heavily on hawthorn berries as a winter food resource.

It is particularly important to the wildlife on a farm that work be programmed on a rotational basis; it can have a significant negative impact on both the landscape and the wildlife if all the hedges on a holding receive management at the same time. If coppicing, it may be appropriate to leave a number of mature shrubs in the hedge line (one every 10-20m) to minimise the impact on wildlife and the landscape. These could be coppiced at a later date. There are also advantages to be gained from having hedges at varying stages of growth. This provides a wider range of habitat conditions which is likely to encourage a more diverse range of wildlife on the farm.

The craft of hedge-laying

The following section discusses and describes the actual process of hedge-laying; it aims to provide background information to supplement the technical guidance card on this topic. It is not intended to suggest that the use of these documents alone will enable the novice to undertake hedge-laying without some form of instruction. Hedgelaying is a skilled craft particularly when it involves the laying of larger plants. Expert advice and instruction should be sought.

As with many crafts hedge-laying is partly a science and partly an artistic endeavour. As such there are many different views on how a hedge should be laid 'properly'. It is not unusual to put two experienced and able hedge-layers together and get two strongly argued cases for the superior merits of one or other approach. Generally however disagreements arise on the basis of what may be described as stylistic differences with certain key elements being common and integral to all styles.

Local styles

Not all styles aim to provide an immediate barrier when laying. Variations in farming practices and requirements have led to a variety of styles evolving in different parts of the country. For example the Cumberland and some Northumberland styles traditionally involved the hedge being laid very 'hard' i.e. with the loss of much of the 'body' of the plants. Practiced in its most extreme form the Cumberland style involves stripping all the side branches off a plant, with only the main stem being laid and this being put down very low. This approach evolved with traditional crop rotations where fields were alternated between pastoral and arable usage. Hedges were laid during the arable phase allowing them time to grow up before they were required to retain stock again.



Hard-laid hedge: Cumberland style

It contrasts strongly with the Midlands or 'standard' hedge traditionally a cattle hedge, where plants are laid to form a high hedge 1.35m (4' 6") as an instant barrier. Ultimately all styles aim to create a hedge impenetrable to stock, whether in the short or long term. Central to the achievement of this is the laying over of stems from just above ground level. This is a critical feature of successful hedge-laying and the commonest mistake seen in untrained or poorly trained hedgers.

If stems are laid too high off the ground then it is generally impossible to fill the bottom of the hedge properly. This can provide stock with the opportunity to force their way under the hedge. In the long term, failure to lay at the correct point also creates problems for the next person to lay the hedge as most of the new growth which will form the next crop of stems for laying; commonly described as 'pleachers' or 'plashers'; will sprout from just below the point at which the stem is laid over. This makes it difficult for the next person to avoid repeating the mistake.

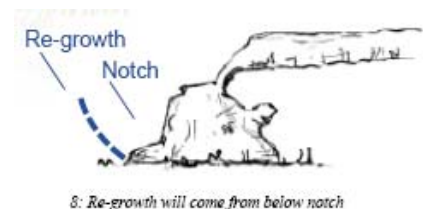
In some cases it may prove impossible to lay every plant sufficiently low. Where this is the case, care should be taken to ensure that some new growth arises from the base of the plant. This can be accomplished by cutting a nick in the stump 50-125mm (2-5") above ground.



Large stem showing the pliable 'hinge' starting just above ground level



A stem laid too high: easy for lambs to find their way under



Re-growth will come from below the notch

If large numbers of plants in the hedge can only be laid high it may be necessary to root lay. Instead of cutting into the plants stem the root system is exposed and partially severed to enable the hedge layer to lay the plant in the required direction.

Cutting is traditionally undertaken with a 'billhook' or axe; most modern practitioners will supplement these tools with a chainsaw. The cut is made on the opposite side of the face to the direction of lay. This is largely determined by the site conditions and the 'handedness' of the hedge layer, right handed workers invariably lay to their left when possible. Where not dictated by site restrictions, direction is largely a matter of personal preference. But if the hedge is on a significant slope plants are always laid uphill.

Where there is a strong prevailing wind and no better reason for doing otherwise it is preferable to lay the plants with the wind as their natural growth form will incline them to lay over more easily in this direction. It is important that the attachment of the pleacher to the stump is secure and that the remaining cambium layer, effectively the plumbing system of the plant, be undamaged.

Stems should be laid over rather than forced. The skill of hedge-laying lies in determining the optimum depth of cut required for a given stem, this being at the point where the pleacher can be laid using little more than

its own weight. Pleachers which have been forced or laid whilst still too thick will either split back on themselves up the stem or split down into the ground, both of these outcomes are considered undesirable, particularly the latter as it is believed to encourage rot in the base of the plant. Obviously pleachers which have been cut too far through run the risk of being insufficiently attached to the stump to survive.



9. Root laying

Large stems too brittle or otherwise difficult to lay conventionally can be dealt with by exposing the root system, severing those at the front and the back of the stem (relative to the direction of laying) and base and side roots as required until the plant can be manoeuvred into the desired position.

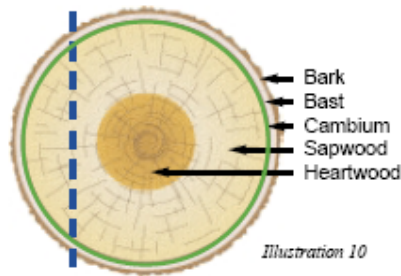


Illustration 10



Root-laying

The cambium and some of the sapwood must remain intact

An inflexible stem that has split downwards

Having laid the stem over there will be a stub remaining at the back of the pleacher; these should always be removed, being cut down to the point at which the split starts and at an angle which leads rainwater away from the split. Experienced practitioners will tend to use an axe or billhook to remove the stump; beginners are advised to use a bow saw until they gain proficiency with their tools. Large stumps are more easily removed by chainsaws. Removing the stump prevents material from gathering in the split thereby reducing the opportunities for rot to occur in the stool. It also ensures that any re-growth at the back of the stool will arise from the base.



Cleaning off the stub



Stubs removed showing re-growth from the base of the stool



Stems laid into a gap showing re-growth along their length

Angle of lay

The angle at which pleachers are laid varies from the horizontal to 45 degrees. This is largely dependent upon the style of the hedger but will also vary according to the initial condition of the hedge. Gappy hedges and particularly overgrown hedges (often the two go together) will often require pleachers to be laid to the ground in order to fill the gaps.

Effectively it is inappropriate to talk about a correct angle for pleachers to be laid. Different styles have their proponents but it is of more importance that the hedge be laid in accordance with the key principles of good practice and that it fulfils its function. From an aesthetic perspective it is preferable to have continuity in any single hedge.

Whilst there are many regional variations in hedge-laying all styles can be broadly categorised on the basis of whether the stems are laid over the stools in line with the hedge, or either, have all of the pleachers offset on one side (single brushing) or pleachers offset alternately on both sides of the hedge line (double brushing).

Laying over the stools

Most northern styles tend to lay with the line of the hedge. With this approach successive stems are laid directly over the stools of previously laid plants, providing protection from stock for the new basal shoots. As the new growth emerges it grows up through the layers of material above locking these firmly in place. The end result is an exceedingly dense and robust hedge. This method is not without its critics, laying over the stools retards new basal growth due to the shade cast by the covering layers. This means that much of the strong new growth arises from the laid stems rather than the base of the plant which can restrict the number of new pleachers available when the hedge is next to be laid. In practice this is usually not a significant problem and can be dealt with by relaying the old existing stems and then laying the new growth off these.

One undeniable problem of this style is that it can be very difficult to disentangle the stems when it comes to relaying the hedge.

Single brushing

Single brushed styles are the norm in the midlands and south east of the country, being epitomised by the 'Midlands' or 'standard' hedge. Single brushing works best where the hedge has been planted in a single row. It involves laying all of the pleachers just out of line with the hedge in order to create a barrier to stock on one side with the stumps being exposed on the other.



Northumbrian style sheep hedge



Yorkshire style hedge



Midland style hedge

Such styles rely heavily on staking in order to retain the pleachers in place and to provide them with additional support, gained by weaving the pleachers between the stakes. They tend to have a greater finished height having evolved mainly as 'bullock fences'. This system avoids any problems of new growth suppression by ensuring there is plenty of light available at the base of the plant to stimulate new shoots. At the same time it ensures that there is ready access to these new shoots when the time comes to relay the hedge. The main disadvantage with single brushing is that where stock are kept on both sides of a hedge the new growth from the base is exposed to damage from grazing animals and will require protection.

Double brushing

Double brushing is a traditional pattern seen in sheep country, particularly in Wales and to a lesser extent those English counties bordering the principality. In practice it often blurs with simply laying over the stumps. When undertaken in its purest form it involves laying pleachers out alternately on both sides of the hedge, weaving the main stem around a stake and using the bushy end of the plant to protect the stumps of previously laid pleachers. This results in a wider hedge with a denser base which in common with the northern English styles is generally laid lower than the Midlands style. Similar criticisms are made of the approach as of the laid in line style but once again it is possible to create a very dense effective barrier.

The hedge-laying tradition in County Durham

In County Durham there is scant evidence for a strong and distinct regional style of hedge-laying. What evidence there is, in the form of the recollections and practices of older farmers and the visual evidence of old pleachers in hedges, is derived mainly from the traditional sheep farming areas. It suggests a relatively uncomplicated approach, with hedges being laid low (20-25 degrees) and over the stumps. Stakes were employed in various patterns or simply not used with the more pliable material being intertwined to provide strength. Binding, the practice of interweaving hazel rods between stakes along the top of the hedge to prevent cattle lifting the hedge, appears to have been seldom used.

The preservation of distinct cultural landscapes is an issue of widespread interest. Hedges are an important component of our landscape heritage. Where there is a local style of management which influences their appearance in the landscape it is preferable, where practical, to continue that practice. In the case of County Durham there does not appear to be a strong case for arguing that hedge-laying should take a particular form. However it is suggested that the following points be taken into account.

Whatever style or hybrid of styles is adopted the work should be undertaken in accordance with the basic principles of good practice common to all styles. If the hedge is to contain sheep it is better to go for a low wide style in order to ensure a dense stock-proof base. This often offers benefits in the form of cover to wildlife and game. Dead wood should be left in the hedge base as this is a valuable food resource for many invertebrates.

Where stock is kept on both sides of a hedge, in the absence of a ditch it is necessary to lay over the stumps or to double brush. Hedges which are only required to be stock-proof on one side may be worth single brushing if the stakes are available, particularly if the hedge is likely to be laid again. Binding such hedges is

unnecessary except where cattle have immediate access to the hedge and whilst not unattractive in itself is not considered particularly desirable, particularly in the dales where it is felt unlikely that it would have been a traditional practice.

Irrespective of the style employed it should be consistent and the hedge left in a well finished uniform state, stray sections of material should be woven into the hedge or trimmed off. Stakes, if used, should be evenly spaced and set at the same height. The use of dead material to fill out the hedge in places is acceptable but should not form a significant component of the finished hedge.

Coppicing

Coppicing involves cutting the plant down to ankle height, 75-125mm (3-5") off the ground. It is essential that stumps are cut no higher than this to ensure that re-growth comes from the base of the plant to allow a thick base to develop. Stumps should be cut cleanly off without ripping the bark and at an angle (20-30 degrees) to prevent water gathering on the surface. Depending upon how vigorous the plants are when coppiced they should regenerate very rapidly to provide layable stems in 6-10 years.

Evidently this is a drastic form of management and ideally should only be undertaken after consultation. The survival rate can be variable and it is likely that significant replanting will be required. Many hedge-layers do not favour coppicing hedges as they can be more difficult to lay in the future, however in some circumstances it may be the only viable option. When it is successful it shares with hedge-laying the advantage of rejuvenating the hedge and extending its life span. Successful regeneration is likely to be best achieved by undertaking the work when the sap is starting to rise in March, but before the bird nesting season.



A good example of coppicing



A previously coppiced hedge prior to laying

Aftercare or laid and coppiced hedges

Where livestock have access to newly laid hedges they may require temporary fencing to prevent stock from browsing the new growth, the need for this will vary according to the initial state of the hedge and the style and ability of the craftsman. If a hedge has been coppiced fencing is essential. In both cases the fence should be situated sufficiently far from the hedge line to prevent stock reaching through the wire, most grant aided schemes will specify a required distance. Where cleavers or other climbers are perceived to be smothering the hedge they should be removed. Laid hedges can either be left to grow on until the next time they require laying or maintained by trimming. If the latter the machine operator should ensure they cut above the line of any stakes.

A well laid hedge managed by trimming can survive up to 50 years before starting to go thin at the base and losing its stock-proof qualities. Coppiced hedges when suitably re-grown can be managed as with new hedges by laying or trimming or a combination of the two.

Hedge-laying and coppicing – a step-by-step guide

Reproduced from the Durham Hedgerow Partnership [Field Boundaries Technical Guidance Card 1 hedge Laying and Coppicing](#)



Using a hook to lever a pleacher over

4 Using the billhook or axe as a lever, open a split down the stem to 50mm (2") above ground level. At the same time, support the stem (cut stems are referred to as pleachers) with the free hand.

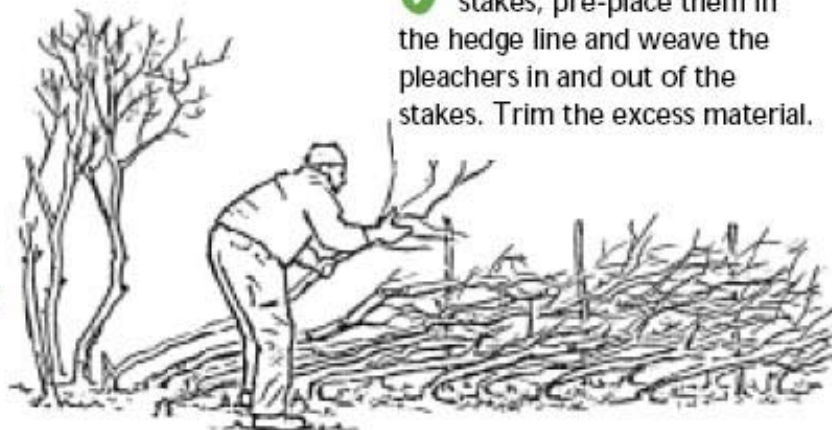


Taking a pleacher down to the hedge line

5 When the pleacher feels as if it will lay over under its own weight, bring it down into the hedge line. The stem should bend in a curve from just above ground level.

6 If building the hedge around stakes, pre-place them in the hedge line and weave the pleachers in and out of the stakes. Trim the excess material.

Weaving a pleacher around the stakes



7 Trim the stubs off at the base, angling them away from the split. This minimises the chance of rot and ensures re-growth comes from the base.



Trimming the stub



Finished work

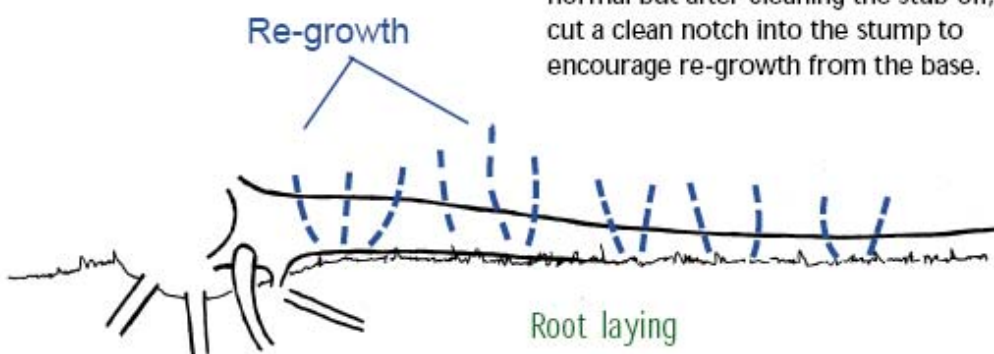
8 The finished hedge should be full at the base, the stumps cleaned and all material woven into the hedge or trimmed off.

Special Circumstances



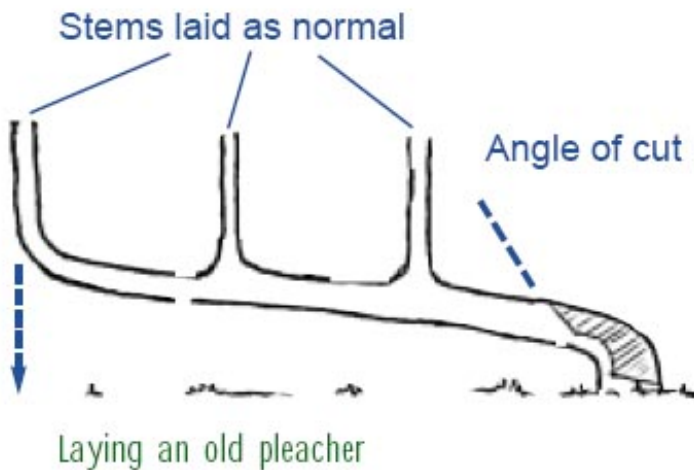
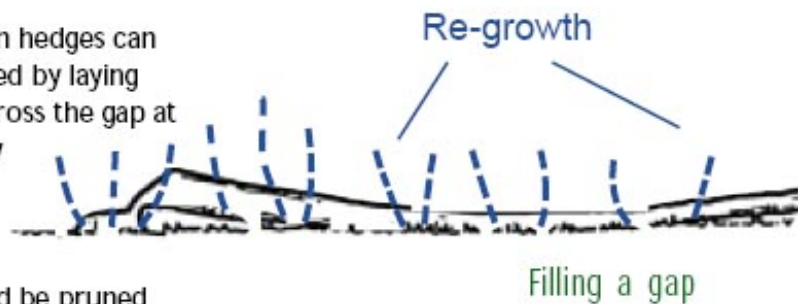
laid high

9 Where a stem cannot be laid sufficiently low from the base, e.g. where it is growing from an old or multi-stemmed stump, lay the stem as normal but after cleaning the stub off, cut a clean notch into the stump to encourage re-growth from the base.

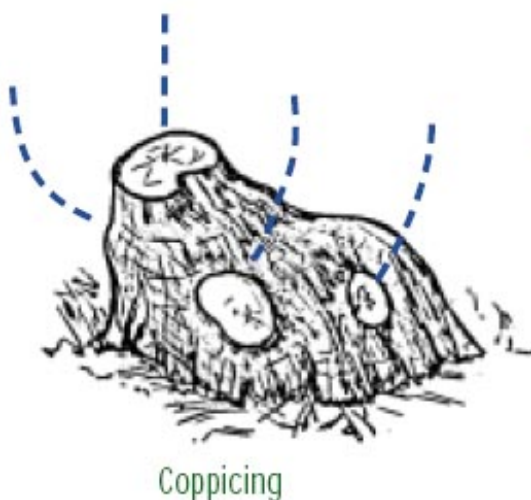


10 Large stems that are too brittle or difficult to lay conventionally can be dealt with by exposing the root system. This can be done by severing the roots at the front and the back of the stem (relative to the direction of laying). The base and side roots can be removed as required until the plant can be manoeuvred into the desired position. Once down, the stumps should be cleaned and soil heaped over any exposed roots.

11 Small gaps in hedges can often be filled by laying existing plants across the gap at ground level. Any excess brush holding the main stem off the ground should be pruned off. The stem can be pinned down if necessary. New growth will regenerate from the stem to fill the gap.



12 Relaying old stems. Old stems can usually be retained when relaying a hedge. Where the old stem has risen over time it can be re-laid as shown to ensure there are no gaps in the hedge bottom, with the new stems being laid as normal.



13 Coppicing. Where plants are considered too large, brittle or distorted in their growth form (e.g. due to long term repeated trimming) it may be more appropriate to coppice. This involves felling the plant to leave a stump between 50-100mm (2-4") high with a sloping top to shed water off the cut surface to minimise the chances of rot.

Styles of Hedgelaying



Top view of
Typical pleacher

14 Single brushing. The pleachers are laid slightly to one side of the hedge line. The stems are interwoven around the stakes to provide structural strength. Single brushing is typically seen in 'Midlands' style hedges and often laid relatively high. It is also commonly finished with hazel rods wrapped around the tops of the stakes as binding.

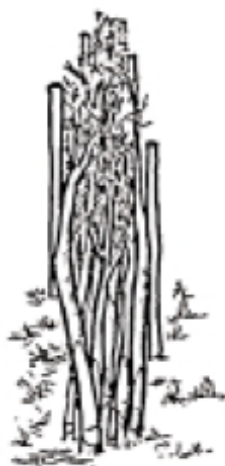


Top view of
Single Brush

15 Double brushing. The pleachers are alternately laid out either side of the hedge line and the stumps are covered by brush. Double brushing forms a very dense wide hedge of varying height. This particular style is used in Wales to control sheep.



Top view of
Double Brush



Laid Over

16 Laid over. Plants are laid over straight down the centre of the hedge and the stumps are covered by brush. Hedges laid this way are relatively low but very dense. This style is typically seen in the north of England where sheep are present and may or may not feature stakes.

Key Points

- Hedgelaying and coppicing should usually be undertaken between the end of October and the end of March, avoiding frosty weather. For wildlife it is best to leave the hedge until all the berries have been taken.
- For old hedges, coppicing and laying is best undertaken early spring (March). The large stems are less brittle as the sap rises.
- Cuts should be made on the opposite side of the stem to the direction the hedge is laid. Avoid splitting the stem below ground level.
- Always ensure the tip of a pleacher finishes higher than the base.
- Hedges should normally be laid uphill.
- Coppiced hedges and the base of pleachers require protection from stock.
- Always wear appropriate protective clothing. If using a chainsaw, be aware of the danger of hidden wire and nails.

Hedge trimming

Trimming is a traditional method of hedgerow maintenance which when undertaken correctly is a highly efficient form of management. Mechanised trimming is now the norm but has been linked with hedgerow dieback and it is well known that the widespread practice of annual cutting greatly reduces the availability of food resources for wildlife. This sheet discusses these issues and suggests management regimes which aim to maintain and enhance the hedgerow resource and its value to wildlife without impacting on efficient farm management practices.

Introduction

One of the most positive steps a landowner can take to improve hedgerow management on their holding is to do less cutting and trimming. Allowing for larger hedges and cutting them less frequently can have significant benefits in terms of the health of the hedge and its value to wildlife.

The most recent assessment of the state of the countryside (Countryside Survey 2000) suggests that in England and Wales the overall decline in the length of hedgerows reported from the 1980's and 90's may have been reversed, i.e. more hedges are now being planted and brought into positive management than are being removed or becoming derelict. However concerns remain about the quality and health of the majority of the resource, much of which is poorly managed and declining in vigour.

The increasingly widespread presence of gaps, particularly in heavily trimmed hedges, will not have escaped the notice of anyone who lives or works in the countryside.

Hedgerows are principally under threat from two processes, neglect, where hedges are allowed to grow out into lines of trees which eventually decline, ultimately leading to the disappearance of the feature, and an over-reliance on trimming as a form of management. As noted above in Hedge-laying and Coppicing, in order to ensure the long term survival of a hedge it will periodically require laying or coppicing.

The Process of decline in trimmed hedges

Trimming stimulates the growth of multiple shoots just below the point at which cutting is undertaken, this results in an extremely dense growth form which can form an excellent source of shelter whilst serving as a formidable barrier to stock (Illustration 1). When correctly managed hedges can be maintained in this state for many years. With the passage of time they will however start to become gappy at the base, as a result of the shading out of lower stems by the dense top growth (Illustration 2).

Where this not undertaken, hedge plants may survive for many years but the hedge will become increasingly derelict and dysfunctional as individual plants. Hedges allowed to deteriorate to this state offer little value to the farm and will require extensive work to return them to a functional state.



A well-managed hedge



An over-trimmed hedge in need of laying



Gaps forming in an over-trimmed hedge

Accelerators of decline

The process of decline is accelerated where hedges are regularly cut back to the same point. This practice results in the build up of scar tissue which is increasingly unable to support healthy shoot growth. Eventually the plant is unable to put out enough foliage to support itself and dies.

This process of decline can be seen in many hedges across the county. Overzealous trimming when undertaken on a regular basis will also accelerate the natural rate of decline. Most hedgerow species (holly is an exception to this) are able to survive an occasional heavy pruning but cannot tolerate it on an annual basis.

Unfortunately both of these practices are widely undertaken and are responsible for much of the deterioration evident in hedges across the County. Alternative approaches are examined in the following sections.

Hedge trimming Good Practice

The principles of good practice for hedge trimming are summarised below in Key Points. Current practice favours the annual trimming of hedges, with cutting being undertaken in the late summer or autumn. We would suggest that generally speaking this is unnecessary and that it can be detrimental to the health of a hedge and greatly reduce its value to wildlife. Evidently in some situations such as roadsides or where access may be impeded by excessive growth, annual trimming will be necessary, however in most cases it is not and it is often counter-productive. In practice most hedges would appear to be subjected to annual trimming because there is a widespread perception that it makes the hedge look tidy.

It has been suggested that older growth is unmanageable by the available machinery and that the finish when cutting older material is unsightly but in fact many modern machines are more than capable of dealing with two or even three year old growth and the finish is dictated more by the condition of the cutting tool than any other factor. Where blunt machinery is employed the finish will inevitably be poor.

It has also been suggested that the cuttings from older growth being more profuse and harder than one year old growth can provide problems for livestock farmers with cut thorns lodging in the feet of cattle and becoming entangled in the fleeces of sheep, creating a handling problem. However discussion with farmers participating in Countryside Stewardship schemes suggests that such concerns are largely unfounded. Well maintained machinery employed in the correct manner i.e. with trimming starting at the top of the hedge so that falling material catches on lower growth and is therefore subjected to the mulching action of a second cut can largely overcome these potential problems.

Arguments against annual cutting

Less frequent cutting can be a factor in maintaining the long term health of a hedge, however as we will discuss shortly the intensity and system of cutting is a more fundamental issue. The principal advantage of cutting less frequently is to enhance the value of the hedgerow resource to wildlife.

Most hedge plants do not flower freely on wood less than two years old. One of the glories of spring is the blanket of flowers which adorn untrimmed plants. It seems to pass largely un-remarked that many annually trimmed hedges bear little blossom. Aesthetic considerations aside, this is of considerable importance to wildlife on the farm. Hawthorn in particular is a major source of nourishment, in the form of nectar and pollen, to newly emerging insects at a time of year when few other sources are available. As well as providing a food source for other species, notably birds, some of these insects are beneficial in an agricultural context, particularly pollinating species. Inevitably if flowering is restricted fruiting will be too. Berries are a key autumn and winter food source for many birds including declining species such as the Song Thrush and migrants such as the Fieldfare and Redwing.

Whilst it is difficult to establish the extent to which wild bees and other pollinators organisms are able to exert a positive influence on crops, research has demonstrated that wild pollinators particularly bumble bees can improve the yields of crops such as field beans and fruiting species such as strawberries. They may also be valuable in increasing the uniformity of crop ripening in oilseed rape, where non uniform ripening leads to seed loss.

"Bumble bees provide an essential pollination service for some crops and wild flowers. In some cases this is a background pollination service which can be supplemented by bringing in honey bee hives when the crop is flowering. In others cases bumble bees are the only effective pollinators". S. Corbet, N. Saville, J. Osbourne



A blackthorn hedge in bloom



Wild bees are important pollinators



A Redwing feeding on hawthorn berries

Recommendations for cutting frequency

In order to ensure an annual supply of food resources on the farm for wildlife some hedges should be left uncut every year. Standard recommendations suggest that cutting be undertaken on a rotational basis across the farm, with hedges being cut every two or three years. This would entail either half or one third of a farms hedges being cut in any one year.

This is the simplest approach but any system of management which leaves part of the hedgerow network, or even just part of a hedge uncut every year will have positive benefits for wildlife. For example, where a hedge borders a wide verge on one side with a crop on the other the hedge could be managed on a two or three year cutting rotation.

If annual cutting is deemed a necessity you should avoid cutting back to the same point each time. Trials have shown that hedge plants regenerate more vigorously if they are cut back above the point of the previous cut in the following year. This will also result in greater levels of flowering and fruiting. Ideally this system should be followed for three years with the hedge being trimmed back to the original point in the third year. This will result initially in a severe finish, however occasional heavy trimming has been found to stimulate strong shoot regeneration from the cut stems, resulting in a denser and more effective hedge.



Dense high hedges attract the greatest variety of bird life

The Economics of Sustainable Hedge Cutting

A study undertaken by Silsoe College suggests that there are actually savings to be made by cutting less frequently even when taking account of the effects of crop shading. Using three models for an arable, dairy and mixed farm their results showed significant savings could be made in all cases by changing from an annual to a three yearly cutting regime. Such a regime has considerable benefits for the continued vigour of the hedge and for wildlife.

Trimming coppiced, laid and new hedges

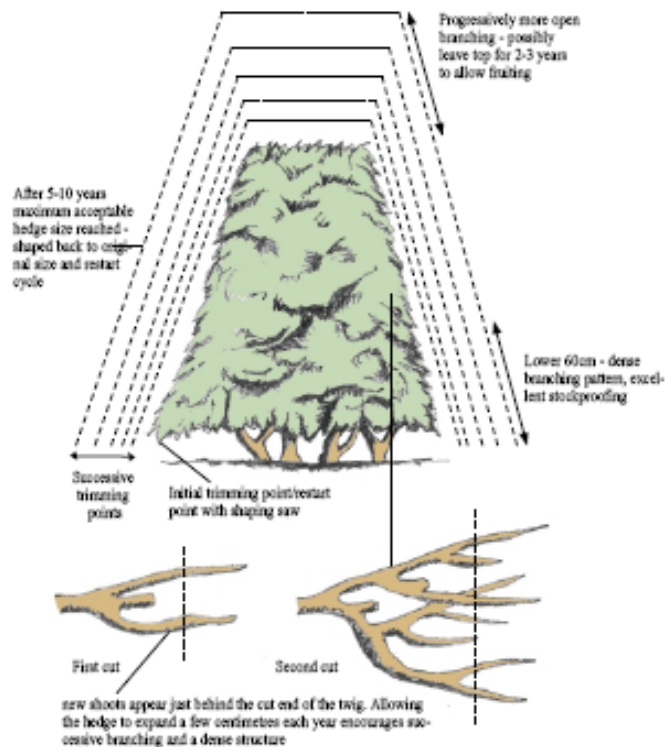
New growth regenerating from carefully laid hedges will come up very strongly. Generally it is considered best not to cut in the first year, but in order to ensure a dense finish cutting should be left no longer than this unless the hedge is being managed on a long term laying rotation or being allowed to grow out for other reasons. When cutting laid hedges cutting should be undertaken in the same direction as the hedge was laid and care should be exercised to avoid any stakes which may have been used. Coppiced and new hedges should not be trimmed with machinery until three years old. Light trimming to stimulate a denser growth form can then be undertaken every other year, with the cutting point being raised each time until the hedge achieves the desired size and shape.

Timing of Cutting

The golden rule is never cut during the bird nesting season (mid –March to end of July). Wherever possible cutting should be delayed until the winter when the berries have been taken by the birds. Hedges which are to be managed on a two year rotation should be cut from the end of January –beginning of March) in order to maximise berry production, autumn cut hedges should ideally be left uncut for three years.

Size and Shape

Generally speaking the greater the volume of a hedge the better it is for wildlife, the R.S.P.B. recommends that hedges should be kept at least 1.4m high by 1.2m wide. Larger hedges also offer considerably better shelter to stock. For example, "downwind of a hedge of 1.5m (5') in height the shelter value for cattle extends 1.9m (6') into the field, and 9.1m (30') for sheep." (Hedge Shelter and Shape. FWAG technical Information Sheet).



Bear in mind that different species have different requirements therefore if you have no specific wildlife objectives the ideal is to aim to produce a variety of hedge sizes across the farm. Hedges on a north/south alignment, adjacent to tracks or at field corners represent the best choice for hedges that are to be allowed to grow out as they will have the least impact on crops. Dense hedges a least 6'6" (2m) high attract the greatest variety of birds.

Much has been written about the ideal shape for hedges, it is suggested here that the optimal shape is one which allows light to reach the lower branches of the hedge plants. This will allow the maintenance of a dense hedge base for the longest period of time. In areas where heavy snowfalls hedges cut into an A or flat topped A shape will shed snow more readily than parallel sided hedges.



'A' shaped and rounded hedges shed snow more readily

FWAG may be able to offer assistance in drawing up a hedgerow management plan for the farm. They are also a useful source of advice if you wish to manage for a particular species.

Field Margins

For many species of wildlife including game birds an even more important factor than the volume of the hedge is the management of adjacent vegetation in the field margin. Vegetated field margins provide cover and nesting/over-wintering sites for organisms which are otherwise unable to persist on farmland. Grey Partridge make extensive use of well managed field margins as nesting sites and as a source of food for the adults and chicks. The dramatic decline in Grey Partridge numbers has been linked to the absence of these resources. Arable farmers often complain that field margins are a nuisance, being a source of pests and weeds however there is an argument that these are largely self inflicted problems.

'Why is it that species such as cleavers and bare brome have suddenly become grass and broadleaved weed "public enemy number one" , when years ago they were present but never serious pests ? Misplaced agrochemicals killed off the existing competitive swards, created bare ground and with the addition of misplaced fertilisers, provided a foothold for invasive, competitive, nitrogen loving species such as these. Invasive weeds in field margins are a problem of our own making.' Nick Southerton and Robin Page: Game Conservancy.

Aside from the wildlife benefits in agronomic terms it makes sense to manage field margins in a fashion which favours the establishment of a dense perennial sward able to exclude problem species. This strip should be at least one metre wide, under IAC's rules it is currently (March 2001) permissible to maintain a 2m strip either side of the centre line of a hedge without affecting eligibility for this subsidy. Countryside Stewardship includes payment options for 2m and 6m margins, these options are worth considering and can often make sound financial sense, particularly when it is remembered that the field edge invariably produces the lowest yields.

Arable field margins do require management. With the margin ideally being cut on a rotational basis, in conjunction with the hedge trimming every two or three years. When erecting livestock fences adjacent to hedges. It is similarly beneficial to allow for the inclusion of at least a one metre margin. This will benefit wildlife but will also relieve livestock pressure on a hedge. Bark stripping and damage to the base of the hedge, including puddling can affect the vigour of hedge plants and reduce their ability to offer shelter.

Excellent technical advice on methods for limiting spray drift and fertiliser application into hedge bases is contained in the TIBRE (Targeted Inputs for a Better Rural Environment) Handbook available from SNH (Scottish Natural Heritage). This handbook contains detailed advice on how commercial and environmental benefits can be gained through the modification of existing practice and the application of technology. It is highly recommended to arable farmers. Obtainable from, Scottish Natural Heritage, 2/5 Anderson place, Edinburgh, EH6 5NP. Tel: 0131 446 2423. Fax 0131 446 2405

Hedgerow Trees

Hedgerow trees can make a huge contribution to the wildlife value of a hedge and are a key landscape feature in many parts of the county. Many existing trees are nearing the end of their life and if not replaced will have a major impact on the character of the landscape. Ash saplings exist in many hedges and represent the simplest way to replenish the existing tree stock since all that is required is for some plants to be spared the attentions of the flail.

The choice of which plants to allow to grow on should be determined by the straightness of the stem of the existing plant, there is no point allowing a plant to grow off a stem which in later years will be unable to support itself. Ideally trees should be no closer than 20m and irregularly spaced along the hedge line. Attaching high visibility tags will help the hedge-cutter to identify which plants are to be left.

Key Points

- Where possible, avoid trimming annually. Trimming every two or three years can be cheaper and is better for the long term health of the hedge.
- Where a hedge has to be trimmed annually, consider whether the whole hedge needs trimming or whether the top or one or more sides can be cut less frequently.
- Never cut hedgerows during the nesting season (March to August). Late winter, avoiding periods of very hard frost, are the best months for hedge trimming.
- Plan hedgerow management on a farm on a rotational basis. Talk to F.W.A.G. about farm management plans.
- Leave some saplings to grow into hedgerow trees.

- Ensure your machinery is in good order and that the cutting edges are kept sharp.
- Before commencing trimming, check the hedge for lengths of stray fencing wire.
- If a hedge has been laid, make sure you cut above the height of any stakes and that you do not catch the laid stems. Trimming should be undertaken in the direction of lay.
- When trimming, start at the top of the hedge and work downwards.
- On strong growth use a shape saw or consider an alternative management approach i.e. hedge-laying or coppicing.
- Aim to produce a variety of hedge sizes on the farm.
- The shape to which a hedge is cut is of less importance to wildlife than the size at which it is maintained, however, there are advantages to cutting hedges with sloping sides.
- When a hedge gets gappy or thin at the base allow it to grow on to be laid. In extreme cases, consider coppicing
- Plant any gaps in the hedge with native species using shrubs such as blackthorn, and holly with the occasional crab apple and hazel.
- In an arable situation or when erecting new fences adjacent to a hedge allow a minimum one metre margin of undisturbed vegetation.

Hedge translocation

Hedge translocation involves moving the entire hedge and hedge bank (if present). In some circumstances this may be only a matter of a few meters – for example to improve sightlines at a road junction – in others cases it may involve transporting the hedge to a new location some distance away, or to a temporary holding area for re-instatement in its original location.

Hedges can be translocated in their entirety – usually after trimming to manageable proportions – or they can be coppiced – cut to near ground level - and translocated as root stocks. Moving the whole hedge retains more of the hedgerow habitat and brings instant visual maturity to its new location. Moving coppiced root stocks makes gapping-up operations easier, can help stocks recover from the shock of inevitable root damage by reducing water demand in the first growing season, and stimulate the regeneration of new shoots in a denser form.

Translocation is a specialist operation and may not be appropriate in all circumstances. The advantages of translocation are that the existing woody vegetation and ground flora of the hedge are preserved along with its visual maturity and character. Even with coppiced root stocks, the speed of growth from the established roots is usually faster than that from newly planted transplants. A translocated hedge also usually requires less maintenance than a newly planted one.

The disadvantages of translocation are higher costs, greater physical disturbance of the receptor site, and in some cases, the importation of undesirable weeds like cleavers, docks and thistles. The increased costs of translocation are usually offset in some degree by the costs of grubbing out and disposal of the old hedge and reduced maintenance requirements. Translocation is a relatively quick operation with lengths of over 50m a day fairly typical.

The viability of a hedge as a subject for translocation is easier to assess during winter months when age, condition and structure is clearer. Older hedges are generally less vigorous and correspondingly less easy to move successfully. Stools in old hedges may be found at considerable distances apart. The horizontal limbs of old laid hedges can be difficult to accommodate in a deep excavator bucket. Old hedge are nevertheless more likely to have a high historical and ecological value

The most appropriate techniques for an individual site will depend on a number of circumstances. Before work is carried out the methodology should be discussed and agreed with the County Council's Landscape Team who will be able to give detailed advice.

Key Points

- Translocation should only be carried out when plants are dormant – usually between November and late February - and outside of the nesting season for birds. It is an offence to disturb nesting birds under the Wildlife and Countryside Act. Avoid wet or frosty weather.
- The hedge should be trimmed to a manageable height and width, or coppiced to around 300mm above ground level. This is higher than a normal coppice cut but may help in manoeuvring stools.
- Any constraints or hazards should be identified – underground and overhead services, culverts, field gates etc. Working on roadside hedges is likely to require traffic management and the permission of the highway authority.
- Machinery should be chosen to suit the situation. A tracked excavator with an adapted or '3 in 1' bucket is used in most circumstances to lift the hedgerow sections. The wider the bucket, the smaller number of lateral cuts through the hedge. A JCB or similar excavator is often used to prepare the trench that will receive the hedge. Despite the best efforts of the operator, each 'bite' can differ in depth. This variation will be increased in sandy soils or dry conditions where soil can be lost from below the stocks. The use of two machines, one to lift sections of hedge and the other to modify the receiving ditch is often the best approach. A suitably qualified banksman, armed with a chainsaw or pruning saw, is useful to free entwined branches and trim roots cleanly, direct machine operators, and ensure that each bite is settled into a matching excavation.
- Care must be taken to minimise damage to the roots and disturbance to the root ball. Some damage is inevitable as roots intertwine, and the 'bites' of a bucket will inevitably result in a percentage of loss over any given length. Any heavily disturbed or damaged sections should be discarded.
- Topsoil should be removed from the receptor site and stored in a convenient location for use later in the process. If an upstanding bank is being moved, the receptor site can be left flat and the surface of the subsoil broken up with a toothed bucket. If a hedge without a bank is being moved, a shallow ditch of the

same depth as the excavated hedgerow units, but slightly wider, should be excavated, and the surface of the base similarly broken up.

- Individual sections should be placed as close to each other as possible and in a true line, with stems vertical. Any exposed roots should be covered as quickly as possible. Gaps should be filled with friable topsoil and the whole bank profiled taking care not to bruise the stems. A combination of hand and machine work may be necessary.
- Any gaps should be planted up with transplants of species already present in the hedge. Transplants should be 40-60cms in height and planted at around 5 plants per linear meter.
- Consideration should be given to planting hedgerow trees in larger gaps. These should generally be Ash or Common Oak in County Durham. Trees can be planted at similar or slightly larger sizes and protected by tree shelters or identified with stakes to alert flail operators to their presence.
- The hedge may need to be watered in thoroughly if working in dry weather, taking care not to wash soil away from the root stocks.
- The finished hedge should be fenced against stock where necessary. Stock proof fences should be erected at least 1m from the base of the hedge.
- The performance of the hedge should be monitored over at least the first season. Watering may be necessary in particularly dry spells if the hedge is showing signs of stress. New transplants will require normal weed control operations. Any stems that have clearly not survived can be stumped back and the gaps filled with transplants, but give the plants a chance to recover as many of those showing signs of stress in the early months will recover in time.

Example: roadside hedge translocation along C165 February 2009



Trench excavated to roadside with back-hoe.



Trench excavated to rear of hedge.

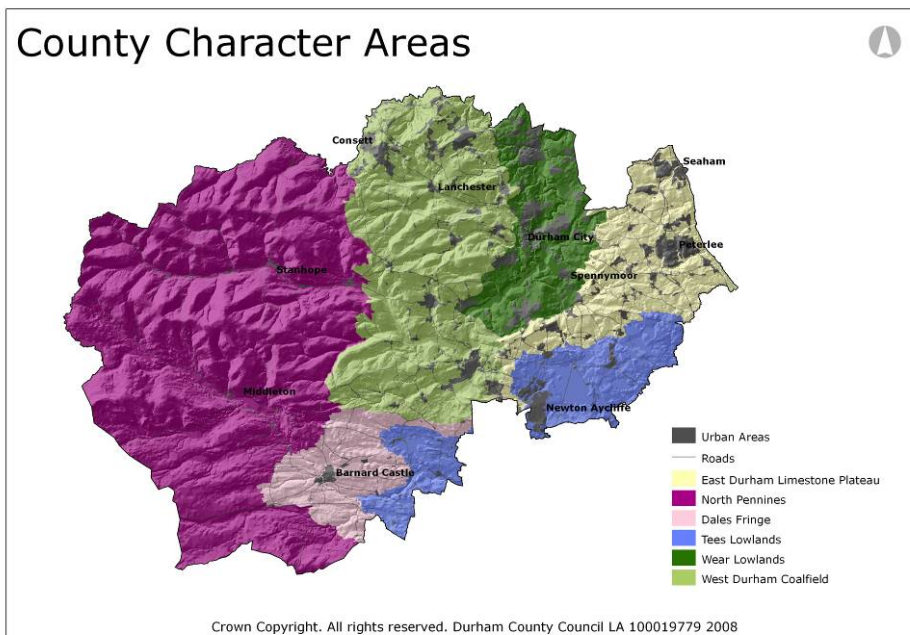


Sections lifted with 2m wide 4 in 1 bucket.



Trans-located hedge in leaf in May of the same year.

Hedgerow Species Mix



Hedgerow Species Mix

The species mixes given below are based on the composition of hedges found across the County in different landscapes.

Some species have been omitted, either because they usually colonise new hedges rapidly, are difficult to propagate, are not good hedging plants, or in some cases because they aren't commercially available, or there is a danger of cultivated forms being substituted for native varieties.

Notes

These species mixes are recommended for hedges planted under the Durham Hedgerow Partnership Field Boundary Restoration Grant scheme.

Hedgerow trees are typically planted at >20m apart.

Percentage bands indicate the total combined percentage for the species listed.

Area	Major species			Minor species
	Percentage	60%	20-25%	10-15%
North Pennines	Hawthorn	Blackthorn	Hazel, Holly	Bird Cherry, Dog Rose, Rowan.
Dales Fringe	Hawthorn	Blackthorn	Hazel, Holly	Bird Cherry, Dog Rose, Rowan, Wild Privet
West Durham Coalfield	Hawthorn	Blackthorn	Hazel, Holly	Crab Apple, Bird Cherry, Guelder Rose, Dog Rose, Rowan, Wild Privet
Wear Lowlands	Hawthorn	Blackthorn	Hazel, Holly	Crab Apple, Guelder Rose, Dog Rose, Wild Privet
East Durham Limestone	Hawthorn	Blackthorn	Hazel	Field Maple, Holly, Crab Apple, Dog Rose, Wild Privet
Tees Lowlands	Hawthorn	Blackthorn	Hazel, Holly, Field Maple	Crab Apple, Guelder Rose, Dog Rose, Wild Privet
Hedgerow trees	Ash, Common Oak (lowlands) / Ash, Sessile Oak (uplands)			

Help & advice

Organisations

Durham Hedgerow Partnership (see Appendix 1): Made up of organisations and individuals committed to promoting the appreciation and conservation of hedges in the Durham Biodiversity Partnership area, the Partnership publishes guidance and administers the Field Boundary Restoration Grant (see Appendix 2).

Sue Mullinger
Natural Environment
Durham County Council
County Hall
Durham
DH1 5UQ
T 0101 3834078
E sue.mullinger@durham.gov.uk

Tyne Tees Farming and Wildlife Advisory Group (FWAG): Advice for farmers and land managers on conservation issues.

Enterprise House
Harmire Enterprise Park
Barnard Castle
Co Durham
DL12 8XT
T 01833 696634
E tynetees@fwag.org.uk

Durham Wildlife Trust (www.wildlifetrust.org.uk). Advice on nature conservation issues. Links to specialist groups giving advice on individual species (Red Squirrel, Otter, Water Vole, Bats, Badger, Butterflies).

Rainton Meadows
Chilton Moor
Houghton-le-Spring
Tyne & Wear
DH4 6PU
T 0191 5843112
F 0191 5843934
E info@durhamwt.co.uk

Durham Biodiversity Partnership (www.durhambiodiversity.org.uk). The Durham Biodiversity Action Plan – including hedgerow action plans - can be accessed or downloaded from this site.

The National Hedgelaying Society (www.hedgelaying.org.uk) offers advice on hedgerow management, conservation, competitions and courses.

The Secretary NHLS
88 Manor Road
Toddington
Bedfordshire
LU5 6AJ
E nhls.enquiries@googlemail.com

LANTRA (www.lantra.co.uk) supports the training and business development needs of employers, employees and volunteers in environmental and land-based industries.

Lantra House
Stoneleigh Park
Coventry
Warwickshire
CV8 2LG
T 0845 707 8007
E connect@lantra.co.uk

BTCV (www2.btcv.org.uk) support countryside volunteers; courses; skills training.

Sedum House
Mallard Way
Doncaster
DN4 8DB
T 01302 388 883
F 01302 311 531
E information@btcv.org.uk

Grants and funding

Field Boundary Restoration grant. The Durham Hedgerow Partnership provides financial assistance for the renovation and planting of hedges through the Field Boundary Restoration Grant Scheme. The grant is funded by the County Durham Environmental Trust.

The grant is available within the Durham Biodiversity Partnership area, which covers the local authority areas of County Durham, Gateshead, South Tyneside, Sunderland and Darlington. It is administered by Tyne Tees Farming and Wildlife Advisory Group (FWAG), Durham County Council Durham and Durham Biodiversity Partnership. For more information see Appendix 2

Environmental Stewardship. Environmental Stewardship is an agri-environment scheme that provides funding to farmers and other land managers in England who deliver effective environmental management on their land.

Natural England
PO Box 578
Newcastle upon Tyne
NE15 8WW
T 0300 060 1117
F 0300 060 1127
E iss.newcastle@naturalengland.org.uk

County Durham Environmental Trust (CDENT)

CDENT provide grants through the Landfill Tax Credit Scheme on projects which offer significant and lasting benefit for the environment and people in areas served by contributing waste management companies. For more information visit the CDENT website (www.cdent.co.uk) or contact them on 0191 383 4630.

Publications

A Farmers Guide to Hedgerow and Field Boundary Management. Nick Southerton and Robin Page. The Game Conservancy Trust. 1998.

Hedgelaying Explained. Valerie Greaves. National Hedgelaying Society.

Hedgerow Management and Nature Conservation. T.A.Watt and G.P.Buckley. Wye College Press 1994.

Hedging- a practical handbook. Alan Brooks and Elizabeth Agate. British Trust for Conservation Volunteers. 1998.

New Hedges in the Countryside. Murray Maclean. Farming Press. 1992.

The Hedgerows Regulations 1997: a Guide to the Law and Good Practice DEFRA

Hedgerow Regulations - Your Questions Answered DEFRA



Durham Hedgerow Partnership

The Durham Hedgerow Partnership brings together organisations and individuals committed to promoting the appreciation and conservation of hedgerows in the Durham Biodiversity Partnership area. Its objectives include:

Raising awareness and promoting good practice

The partnership publishes guidance on planting, laying and trimming hedges in the form of guidance sheets and cab-cards. It promotes and sponsors training in hedgerow management, and runs the annual County Durham Hedge-laying and Dry-stone walling Competition

Providing Grants for Hedgerow Planting and Renovation

The partnership provides grants for planting and restoring hedges through the Field Boundary Restoration Grant Scheme with the financial support of Durham County Council, City of Sunderland, South Tyneside Council, Gateshead Council, Darlington Borough Council, and the County Durham Environmental Trust. New sponsors are being sought to expand this programme.

Generating Income through Sponsorships and Partnerships

The partnership seeks to attract financial resources from national government and the European Union together with sponsorship from local partners. Individual sponsors are being sought for events and publications.

Contributing to the Durham Biodiversity Action Plan for Hedgerows

The partnership assists in the production of the Hedgerow Biodiversity Action Plan, which identifies priorities for action and provides a focus for the partnership's activities.

Influencing the Development of Legislation and Policy

The partnership seeks to influence the development of national legislation and policies on hedgerow protection and conservation.

Hedgerow Surveys

The partnership is involved in studies designed to provide more information on the county's hedgerows and which assist in targeting resources on important features like ancient and species rich hedgerows and provide the basis for monitoring progress.

Partners

Key partners include farmers and landowners and their representatives, local authorities and a range of nature conservation bodies. They include:

- County Durham Environmental Trust
- East Durham and Houghall Community College
- National Farmers Union,
- Department for Environment Food and Rural Affairs
- Natural England
- Durham Wildlife Trust
- ADAS
- Lantra
- Upper Teesdale Agricultural Support Services (UTASS)
- Durham County Council
- City of Sunderland Council
- South Tyneside Council
- Gateshead Council
- Darlington Borough Council
- Tyne Tees Farming and Wildlife Advisory Group

Contact

For more information contact Sue Mullinger, Natural Environment, County Hall, Durham, DH1 5UQ
Telephone: 0191 3834078, email: sue.mullinger@durham.gov.uk

Rates of Payment and Eligible Items of Work

A standard rate of payment is available for a range of works listed below. These are set at approximately 50% of the market rate. The maximum grant paid is £4,000.

HEDGEROWS

Hedge laying (average stem size <4" at base)	£5.00/m
Hedge laying (average stem size 4-6" at base)	£6.00/m
Hedge laying (average stem size >6" at base)	£7.00/m
Binding	£0.25/m
Hedge coppicing	£3.00/m
Hedge gapping up (4 plants per metre)	£2.40/m
Hedge replanting / new planting (minimum 5 plants per metre)	£2.40/m
Organic mulch	£0.75/m
Straw mulch	£0.45/m
Hedge guards and cane (per plant)	£0.30
Hedge cane new / restoration	£0.75/m

HEDGEROW TREES

Tree planting (per plant)	£0.50
Tree tube and stake	£0.95

FENCING

Supplement for removal of old fence	£0.50/m
Sheep fencing	£2.00/m
Rabbit fencing	£2.00/m
Rabbit netting	£1.00/m
Post and wire fencing	£1.20/m
Permanent electric fencing	£1.20/m

Discretionary grants are available for stiles/gates and stone faced hedgebank restoration.

If you need this information summarised in another language or format such as Braille or talking tape, please call 0191 383 4076

Further information

Field Boundary Restoration Grant and Durham Hedgerow Partnership

County Durham
Simon Chivers / Sue Mullinger
Landscape Section
Environment
Durham County Council, County Hall
Durham DH1 5UG
Tel: (0191) 383 3426 / (0191) 383 4078
email: landscape@durham.gov.uk

Gateshead, South Tyneside, Sunderland, Darlington

Andy Lees
Durham Biodiversity Partnership,
Durham Wildlife Trust,
Rainton Meadows,
Houghton le Spring,
Durham DH4 6TU
Tel: (0191) 584 3112
email: andylees@durhambiodiversity.org.uk

All Areas

Vicki Knowles / Jenny Seaford
Tyne Tees FWAG, Enterprise House,
Harrishire Business Park,
Barmaid Castle, County Durham DL12 6XT
Tel: (01833) 696634
email: tynetees@fwag.org.uk



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Field Boundary Restoration Grant



Field Boundary Restoration Grant

For centuries, hedgerows have been an important part of Durham's landscape, serving as living fences and providing shelter for livestock. At the same time, they provide an important habitat for wildlife. However, recent studies show this important resource is declining through neglect or inappropriate management.

The Durham Hedgerow Partnership tackles hedgerow loss by bringing together farmers, landowners, local authorities and nature conservation groups committed to promoting the appreciation and conservation of hedgerows.

One way in which the Partnership is helping to conserve these important features is through the Field Boundary Restoration Grant Scheme. With funding from Local Authorities and the County Durham Environmental Trust, grants are available for hedgerow restoration and planting in Gateshead, South Tyneside, Sunderland, Darlington and County Durham.



Aims of Grant

The aim of this grant is to generate the greatest benefits by funding:

- Hedgerow restoration to ensure the long term viability and rejuvenation of hedges.
- Maintenance of hedges of particular wildlife, landscape, historical or wildlife value and those which contribute most to habitat connectivity at a landscape-scale.
- New planting at the restoration of relict or former hedgerow boundaries.
- New hedgerows which contribute most to habitat connectivity.

Works Eligible for Grant

Field Boundary Restoration Grants are available for the following:

- Hedgerow restoration by laying, coppicing and planting
- Creation of new hedgerows
- Planting hedgerow trees
- Protective fencing where appropriate
- Restoration of other boundary features

Grants for similar work may be available through the Environmental Stewardship scheme. Contact Natural England and DEFRA Tel: 0191 229 5500 E-mail: northeast@naturalengland.org.uk www.defra.gov.uk

Who Can Apply?

Any individual or organization can apply for the grant. Whoever applies must be able to control the management of the land for the length of the agreement (5 years).

Who Can Undertake the Work?

The work can be undertaken by a contractor or by the applicant, the rate of grant will remain the same in both cases but we will expect the same standard of work.

Work undertaken by voluntary groups will be paid grant on the basis of material costs only.

Conditions Attached to the Grant

To qualify for grant, the scheme should:

- have the permission of the landowner
- be in keeping with the local landscape character
- not be receiving grant aid from another source
- not have already been carried out
- not involve works which are a requirement of planning permission
- not be part of a garden
- be maintained for 5 years
- be visible from a road or public right of way
- be completed by 31st March

Payment of Grant

The grant will be paid in full following a satisfactory site inspection by the Project Officer.

Next Steps

The grant is administered by Durham County Council, Durham Biodiversity Partnership and Tyne Tees FWAG. You should contact one of the Project Officers before starting any work.